Choosing the Right Assistive Technology Device(s) for Your Child

To determine the assistive technology needs of a child, an AT assessment should be conducted. The assessment can be conducted by the school, an independent agency, or an individual consultant. This assessment should take place in a child’s customary environments -- home, school, and community.

It is important that the assessment address the child’s strengths as well as his/her weaknesses. It is key, when discussing how the child participates in his/her world, to hear the perspectives of teachers, parents and siblings, as well as that of the child. The discussion should not be limited merely to what skills the child possesses but should include the ways in which a child communicates, what he likes and dislikes, and what kind of strategies and interventions are helpful in interacting with the child. Consideration must be taken on how a child’s need for AT might change depending on the environment, for example on the playground, the classroom, a friend’s house or in a public place like a mall or library. This type of input will provide clues as to what technology might work and how well your child will respond to it.

The end result of an assessment is a recommendation for specific devices and services. Once it is agreed that assistive technology would benefit a child, issues related to design and selection of the device, as well as maintenance, repair, and replacement of devices should be considered. Training (to use the device) and ongoing technical assistance is necessary not only for the child, but also for family members, teachers, service providers, and other people who are significantly involved in a student's life. It is also important to integrate and coordinate any assistive technology with therapies, interventions, or services provided by education and rehabilitation plans and programs.

Acquiring assistive technology does not just happen once in a lifetime. The type of devices your child needs may change depending on the child’s age, abilities, physical status, and features of the immediate environment. Change in your child’s life may necessitate a re-assessment of his or her assistive technology needs.

Learning More about Assistive Technology

Parents can help to identify potential AT for their child if they learn about the choices that are available. A good place to start is often with speech-Language therapists, occupational therapists and school professionals. There are many organizations that provide AT information and training to consumers and families such as parent training and Information centers (PTIs), community technology centers, state assistive technology programs and rehabilitation centers. If possible you should visit an AT center with your child to see and try out various devices and equipment. Some AT centers offer lending programs that allow families to borrow devices for a trial period.

The Family Center on Technology and Disability (FCTD) offers a wide range of assistive technology resources for disability organizations, AT providers, educators and families of children with disabilities. Families are always welcome to visit the FCTD web site (www.fctd.info) to find other AT and disability organizations and to learn more about assistive technology.

The following list includes several organizations that offer a various resources on AT.
Alliance for Technology Access - www.ataccess.org
Abledata - www.abledata.com
Assistivetech.net - www.assistivetech.net
AbilityHub - www.abilityhub.com
AT Training Online Project - www.atto.buffalo.edu
Technical Assistance Alliance for Parent Centers - www.taalliance.org
Association of State Technology Act Programs - www.ataporg.org/stateatprojects.asp
What Is Assistive Technology?
Assistive technology is any kind of technology that can be used to enhance the functional independence of a person with a disability. Often, for people with disabilities, accomplishing daily tasks such as talking with friends, going to school and work, or participating in recreational activities is a challenge. Assistive Technology (AT) devices are tools to help to overcome those challenges and enable people living with disabilities to enhance their quality of life and lead more independent lives.

Assistive technology can be anything from a simple (low-tech) device such as a magnifying glass, to a complex (high-tech) device, such as a computerized communication system. It can be big — an automated van lift for a wheelchair — or small — a Velcro attached grip attached to a pen or fork for example, for eating and writing. Assistive technology can also be a substitute — such as an augmentative communication device that provides vocal output for a child who cannot communicate with her voice.

Meeting Challenges with Assistive Technology
Assistive technology helps to level the playing field for individuals with disabilities by providing them a way to fully engage in life activities. An individual may use assistive technology to travel about, participate in recreational and social activities, learn, work, communicate with others, and much more.

Here are several examples of AT that enables people with disabilities to enter into the community and interact with others.

• For greater independence with mobility and travel, people with physical disabilities may utilize mobility aids, such as wheelchairs, scooters, and walkers. Adapted car seats and vehicle wheelchair restraints promote safe travel.
• Hand-held GPS devices help persons with visual impairments navigate busy city streets and utilize public transportation.
• Building modifications at work sites, such as ramps, automatic door openers, grab bars, and wider doorways mean fewer Barriers to employment, businesses, and community spaces, such as libraries, churches, and shopping malls.
• Special computer software and hardware, such as voice recognition programs and screen enlargement programs, enable persons with mobility and sensory impairments to carry out educational or work-related tasks.
• Education and work aids such as automatic page turners, book holders, and adapted pencil grips enable children to participate in classroom activities.
• Bowling balls with hand-grips and one-handed fishing reels are a few examples of how technology can be adapted for sporting activities. Light-weight wheelchairs have been designed for organized sports, such as basketball, tennis, and racing.
• Adaptive switches make it possible for a child with limited motor skills to play with toys and games.
• Accessibly designed movie theaters provide closed captioning and audio description for moviegoers with hearing and visual difficulties.
• Devices to assist a person with daily living tasks, such as cooking, dressing, and grooming, are available for people with special needs. For example, a medication dispenser with an alarm can be set to remind a person with memory loss to take daily medication. A person with use of only one hand can use a one-handed cutting board and a cabinet mounted can opener to cook meals with improved independence and safety.
Keep in mind that even if your child does not require assistive technology at the moment, he or she may benefit from using it in the future. Therefore, the law requires that your child’s AT needs be considered continually as long as your child has an IEP.

**Obtaining a Formal AT Evaluation for Your Child**

If the IEP team is unable to determine what AT devices and services are best for your child, then a formal AT evaluation may be needed. The evaluation should be performed by a qualified professional in a timely fashion. This may present a problem, as there is a shortage of qualified AT evaluators in many areas of the country. The school system may choose to use its own personnel to conduct the evaluation, but if parents disagree with the recommendations, they have the right to an independent evaluation at district expense. Be aware, however, that parents may have to assume the cost of an independent evaluation if the results do not differ from the one provided by the school system and if the system can show that the original evaluation was appropriate.

**Disagreeing with the school about assistive technology**

You have the right to disagree with the school’s decisions concerning assistive technology. Some situations in which parents and school personnel should meet to resolve disagreements include when:

- You disagree in writing with the IEP
- You believe your child is not receiving appropriate assistive technology devices and/or services
- You think additional devices and/or services are needed

When differences arise, try to resolve them informally first. If you can’t work out a solution that is satisfactory, you can take more formal steps to reach a satisfactory resolution. The procedures for taking more formal action vary from state to state, but may include mediation, a due process hearing, or filing a formal complaint with the state.

You can get state-specific information from the Consortium for Appropriate Dispute Resolution in Special Education (CADRE) at [http://www.directionservice.org/cadre/index.cfm](http://www.directionservice.org/cadre/index.cfm). You can also contact a Parent Training and Information Center, a Parent Advocacy Center, a Tech Act Center, or an Alliance for Technology Access Center (in some cases, these will be the same organization).

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Parents are a child’s most effective advocate. It is crucial that parents be prepared and informed when meeting with the IEP team. Learn about the AT choices available. Assistive technology can be an invaluable part of your child’s daily life. AT can allow children to participate more fully with their peers and increase their functionality. It is important to advocate strongly for assistive technology in your child’s IEP to ensure that he/she has every opportunity to reach their full potential.
Questions to Consider

The following questions should be taken into consideration in determining what AT devices will best suit your child:

• What does your child need to do but is unable to do because of his/her disability?
  *Make sure to consider these 5 areas of functioning*: physical, communication, cognitive, social/emotional, academic.

• What are your child’s customary environments?
  (Classroom, playground, bus, gym, cafeteria)

• What are your child’s biggest educational challenges?
  (Communication, mobility, reading, writing, behavior)

• What assistive technology tools are available to help your child overcome these challenges?
  Make sure to consider both high-tech and low-tech options.

• What criteria will be used to later determine if the AT has been successful in helping your child in his/her educational program?

• What are your child’s preferences in areas such as color and style?
  A child may resist using a piece of equipment that he/she thinks is “nerdy” and sets him apart from the rest of the class. A device that is less conspicuous may be preferred by the child in order to better “fit-in.”

After listing possible AT tools that the team thinks might help your child, the team needs to decide which device to try first. Sometimes a number of tools will need to be tried before an appropriate one is decided upon. The IEP team should discuss the following:

• What are the specific features of the AT device that can help your child?

• How long will this device or program remain a suitable AT device for your child? — 6 months, 1 year, 5 years?
  It is important to plan for important transitions in your child’s life when considering AT options.

• What tools or devices are readily available from the school, the district, or a loan library?

• Who will need to be trained to ensure that your child gets the maximum benefit from the AT device?
  Often AT devices go unused simply because the appropriate people are not trained on how to use the device. Find out who needs to be trained—teachers, aides, family members—and identify sources of training. Often the school system has people qualified to provide AT training. Other sources include AT vendors, parent training and information centers, and state Tech Act programs.

• Is the device compatible with other devices and/or programs?

• Can the device serve more than one purpose?

After deciding upon an appropriate AT device to try, the IEP team needs to acquire the device for the student to experiment with. During this trial period, the team—including the parents—should collect the following data:

• How often did the child use the device?

• Did it help the child do something he/she could not do before? Is it efficient?

• Is the child comfortable using the device?

• Is it convenient for use in the child’s usual environments?

• How was the success of the device measured?

Sometimes a child may need to experiment with several devices before finding the right one. After trying different options the IEP team should come to a conclusion about what device is most appropriate for the child.

• Document in writing that the IEP team considered assistive technology.

• Document in the IEP what AT devices and services are most appropriate for the child.
Where to Start

In order to determine if a child is eligible for special education services, an evaluation must be conducted. The school system is required to provide the evaluation at no cost to the family. The law requires that particular procedures be followed in the development of the IEP. Each student’s IEP must be developed by a team of knowledgeable persons and must be reviewed at least once a year. The team usually includes the child’s teacher, the parents, the child, if appropriate, a school system representative who is qualified to provide or supervise the provision of special education, and other individuals at the parents’ or school’s request.

As their child’s strongest advocate, it is important that families insist that assistive technology devices and services be included in the written IEP. School districts are responsible for providing assistive technology devices and services if it is determined by an IEP team that the child needs them to benefit from his or her educational program. Lack of availability or cost cannot be used as an excuse for denying AT devices or services. In addition, a child is allowed to take a device home if it is needed to enable him or her to benefit from his educational program as determined by the IEP team. Training of teachers’ aides and the student may also be listed in the IEP as AT services.

The term “assistive technology” may never appear on the IEP forms used by your child’s school. Instead the form may use terms such as “accommodations, supports, program modifications or supplementary aids and services.” No matter what form is used by the IEP team in your child’s school, the law requires that the assistive technology needs of the child must be considered.

Determining Assistive Technology Needs

The IEP team determines the assistive technology needs of the child through an assessment process. It is important to consider the child’s strengths as well as their weaknesses, their likes and dislikes, and what strategies are helpful in interacting with the child. A child’s AT needs will change depending on their environment — at home, at school, or out in public at a library or at the mall — so the perspectives of family members and teachers, as well as the student, should all be taken into consideration.

Understanding the IEP

The Individuals with Disabilities Education Act (IDEA) requires public schools to make available to all eligible children with disabilities a free appropriate public education (FAPE) in the least restrictive environment appropriate to their individual needs.

The law requires that public schools develop appropriate Individualized Education Programs (IEPs) for each child. The IEP is a written plan for educating a child with a disability. The IEP describes the student’s specific special education needs as well as any related services, including assistive technology.
**W**

**Web Accessibility:**
Universal accessibility to the Web means that all people, regardless of their physical or developmental abilities or impairments, have access to Web-based information and services. Making Web pages accessible is accomplished by designing them to allow the effective use of adaptive technologies to access their content.

See also, Screen Reader

**Word Prediction Programs:**
Word prediction programs allow the user to select a desired word from an on-screen list located in the prediction window. The computer-generated list predicts words from the first or second letter(s) typed by the user. The word may then be selected from the list and inserted into the text by typing a number, clicking the mouse, or scanning with a switch.

Example: Word prediction programs speed up the time it takes Johanna, a young woman with quadriplegia, to communicate her needs to her personal assistant (PA). Instead of typing out full words, a drop down list of common words, beginning with the initial letters entered, appears allowing the entire word to be simply “clicked” instead of typed out in full. Word prediction programs also help Chad, a sixth grader with learning disabilities, when he is writing papers for school. Often he can only recall parts of a word or can spell a word phonetically, but cannot correctly spell the word. Word prediction programs allow Chad to type in a few letters, or type in a word’s phonetic spelling, and then present him with correctly spelled alternatives.

**X**

**X-10 Unit:**
X-10 is a communications “language” that allows compatible products to talk to each other using the existing electrical wiring in the home. Most X-10 compatible products are very affordable and the fact that they talk over existing wires in your home means that no costly rewiring is necessary. Installation is simple, a transmitter plugs (or wires) in at one location in the home and sends its control signal (on, off, dim, bright) to a receiver which plugs (or wires) into another location in the home.
**T**

**Talking Word Processors:**
Talking word processors (TWP) are writing software programs that provide audio feedback as the student writes. As each letter is typed and each word is written, the TWP will “speak” it back to the user. Many of these inexpensive writing programs also incorporate powerful tools for reading. Students with learning disabilities often find that having written material read aloud helps them to better edit, comprehend and organize their projects. Once a file (i.e. story from a book, assignment, article or typed information) is imported into a talking word processor, the text can be read aloud to the student. These TWP programs offer other adjustments as well, such as enlarging the size of the text, and changing the color of the foreground, background, and highlighting box, to assist students in following along as the text is read.

**Touch Screens:**
A touch screen is a device placed on or built into the computer monitor that allows direct activation of the computer, or selection of a program, through a touch on the screen.

**TTD or TTY:**
A telecommunication device for the deaf TTY/TDD is a device with a keyboard that sends and receives typed messages over a telephone line.

**U**

**Universal Design:**
Universal design is the design of products and environments so they are usable by a wide range of people. Examples of universally designed environments include buildings with ramps, curb cuts, and automatic doors.

**Universal Design for Learning:**
Universal Design for Learning (UDL) is the design of instructional materials and activities that make learning goals achievable by individuals with wide differences in their abilities to see, hear, speak, move, read, write, understand English, attend, organize, engage and remember. Universal Design for Learning is achievable via flexible curricular materials and activities that provide alternatives for students with differing abilities. These alternatives are built into the instructional design and operating systems of educational materials; they are not added on after-the-fact.

**V**

**Voice Recognition:**
Different types of voice recognition systems (also called speech recognition) are available. Voice recognition allows the user to speak to the computer, instead of using a keyboard or mouse, to input data or control computer functions. Voice recognition systems can be used to create text documents such as letters or email, to browse the Internet, and to navigate among applications and menus.

1 Touchscreen - Photo courtesy of Mayer Johnson
2. TTY Phone
Prosthetic and Orthotics:
Prosthetic and orthotics include replacement, substitution or augmentation of missing or malfunctioning body parts with artificial limbs or other orthotic aids. This includes splints, braces, foot orthosis, helmets, restraints, and supports.

Screen Enlargement Programs:
Screen enlargement programs magnify a section of the screen, increasing the visibility for users with limited vision. Most screen enlargement programs have variable magnification levels and some offer text-to-speech options.

Screen Reader:
A screen reader is a software program that uses synthesized speech to “speak” graphics and text out loud. This type of program is used by people with limited vision or blindness.

Example: Teri has been blind from birth. A screen reader allows her to access visual information on a computer screen. A piece of software installed in her computer goes “behind the scenes” and reads the text that exists behind the graphic Web pages that sighted people read.

Seating and Positioning Aids:
Seating and positioning aids offer modifications to wheelchairs or other seating systems. They provide greater body stability, upright posture or reduction of pressure on the skin surface. Equipment includes wheelchair cushions, trunk/head supports, modular seating, and seating lifts.

Switches and Switch Software:
Switches offer an alternative method to provide input into a computer when it is not possible to use a more direct access method, such as a standard keyboard or mouse. Switches come in various sizes, shapes, colors, methods of activation, and placement options. An interface device and software program are usually required to connect the switch to the computer and interpret the operation of the switch.

Some software programs have been developed specifically for use with a switch and can employ on-screen scanning. With on-screen scanning, the computer highlights the options available to the user depending upon what action he or she wants the computer to take. The highlights are done either by sound, visual cue or both. When a visual or auditory prompt indicates a specific keyboard or mouse function, the user activates the switch and the desired function occurs.

Other programs have built-in options to allow switch use. Many standard software programs can be accessed through a switch with the use of additional software and devices.

1 Switch - Photo courtesy of Tash
Mobility and Transportation Aids

Mobility and transportation aids include products that help mobility-impaired persons move within their environment, and give them independence in personal transportation. These products include standing or walking aids, transfer aids, stair lifts, walkers, scooters, wheelchairs and three-wheeled chairs, adapted bikes and tricycles, car seats or beds, stretchers, patient chairs, ramps, recliners, strollers, travel chairs, wheelchair trays, driving controls, seat belts, vehicle conversions, patient and wheelchair lifts, wheelchair loaders/carriers and wheelchair restraint systems.

Onscreen Keyboard:

On-screen keyboards are software images of a standard or modified keyboard placed on the computer screen by software. The keys are selected by a mouse, touch screen, trackball, joystick, switch, or electronic pointing device.

Example: Brad, a young boy with limited mobility and severe verbal impairments, uses onscreen keyboards to communicate with those around him. Through these keyboards (both pre-formatted keyboards and those designed by his parents to meet his specific needs) and selecting options on the screen, he is able to relay concepts, needs and thoughts more easily.

Optical Character Recognition and Scanners:

Optical character recognition (OCR) software works with a scanner to convert images from a printed page into a standard computer file. With OCR software, the resulting computer file can be edited. Pictures and photographs do not require OCR software to be manipulated.

Example: Pierre is a high school student who was diagnosed with Stargardt disease (inherited juvenile macular degeneration) at age 10. He has been legally blind since age 12. Much of his schoolwork is available electronically, and he uses his screen reader to scan the text. Often, however, documents are only available in hard copy. These documents are scanned into his computer using a basic scanner with OCR software. The “graphic” image from the printed page then becomes electronic text.

Pointing and Typing Aids:

A pointing or typing aid is typically a wand or stick used to strike keys on the keyboard. They are most commonly worn on the head, held in the mouth, strapped to the chin, or held in the hand.

Example: For Kwame, a young man with severe spinal cord injury and no mobility from his head down, pointing and typing aids allow him to interface with his computer. His aid allows him to navigate around his computer. When he moves his head, this device substitutes as a mouse and allows him to perform standard activities, such as playing games or taking tests, and even more advanced activities like drawing.

Additional Resources:

Alliance for Technology Access at [http://www.ataccess.org/resources/atabook/s02/s02-03i.html](http://www.ataccess.org/resources/atabook/s02/s02-03i.html)

1 Onscreen Keyboards (picture and alphabet) Photo courtesy of Zygo, USA
2 Pointing Aid - Photo courtesy of Madentec
Infrared Sender/Receiver:
An Infrared Sender/Receiver is a device commonly found in an environmental control unit (ECU). An infrared signal is sent to the control unit, which in turn sends an infrared signal to the appliance. These are usually small and portable and vary in size and shape. They can be used in different areas of the same room, but the remote must be aimed directly at the control box, with nothing in its path, for the signal to be received.

Joysticks:
A joystick may be used as an alternate input device. Joysticks that can be plugged into the computer’s mouse port can control the cursor on the screen. Other joysticks plug into game ports and depend on software that is designed to accept joystick control.

See also: Alternative Access/Input Device

Keyboard Additions:
A variety of accessories have been designed to make keyboards more accessible. Keyguards are hard plastic covers with holes for each key. Someone with an unsteady finger or using a pointing device can avoid striking unwanted keys by using a keyguard. Moisture guards are thin sheets of plastic that protect keyboards from spills and saliva. Alternative labels add visual clarity or tactile information to the keys.

Example: When John, a young man with muscular dystrophy, doesn’t use the keyguard, he often clicks letters that he doesn’t want. The clearly defined spaces between keys, provided by the keyguards, helps him select the keys he wants.

Keyboard Emulator:
A keyboard emulator is a device that is connected to or resides in a computer and imitates the computer’s keyboard in function and performance.

LRE
The abbreviation LRE stands for “least restrictive environment.” This means that to the maximum extent appropriate, children with disabilities are educated with children who are not disabled. Removal from the regular educational environment occurs only when a student cannot be successfully educated in that setting even with supplementary aids and services.

Mediation
In the context of AT, mediation is a process to resolve disagreements between parents and school personnel. It is provided at no cost to you or the school district. Both parties must agree to mediation. A neutral trained mediator will facilitate the meeting to help both parties resolve their disagreements. Mediation is more structured than conciliation but less formal than a due process hearing.

1 Joystick - Photo courtesy of Aroga
2 Keyguard and keyboard overlays - Photo courtesy of Intellitools
Environmental Control Unit (ECU):
Environmental control units (ECUs) are systems that enable individuals to control various electronic devices in their environment through a variety of alternative access methods, such as switch or voice access. ECUs can control lights, televisions, telephones, music players, door openers, security systems, and kitchen appliances. These systems can also be referred to as Electronic Aids to Daily Living (EADL).

Eye Gaze Board:
An Eye Gaze Board is a clear Plexiglas board that is used as a simple communication device. Pictures are mounted at strategic areas on the board and the user is asked to look at the picture they want to choose.

FAPE
This abbreviation stands for “free and appropriate education”. It is the term used in the IDEA law, which states that school systems must provide children with disabilities with special education services and accommodations (including AT) at no cost to the parents. The law does not say what is considered an “appropriate” education, but other references within the law imply that children should be taught in the most typical classroom setting possible.

Individuals with Disabilities Education Act (Amendments of 1997):
The Individuals with Disabilities Education Act (IDEA) was initially passed in 1975 as P.L. 94-142. That Law, known as the Education for All Handicapped children Act, or the EHA, guaranteed that eligible children and youth with disabilities would have a free and appropriate public education (FAPE) available to them, designed to meet their unique educational needs. P.L. 94-142 has been amended many times since passing in 1975, most recently in 2004.

For more information about IDEA, you can visit the following website:
http://www.ed.gov/offices/OSERS/Policy/IDEA/index.html

Individualized Education Program (IEP):
Each public school child who receives special education and related services must have an Individualized Education Program (IEP). Each IEP must be designed for one student and must be a truly individualized document. The IEP includes such information as present levels of functioning, future goals, and services to be provided. The IEP creates an opportunity for teachers, parents, school administrators, related services personnel, and students (when appropriate) to work together to improve educational results for children with disabilities.

Information Technology:
Information technology includes any product used to acquire, store, manipulate, or transmit information, such as computers, multimedia, telecommunications, copy machines, and the Internet.

1 Environmental Control Unit - Photo courtesy of Zygo, USA
2 Eye Gaze Communication System - Photo courtesy of Eye Gaze
Braille Embossers and Translators:
A Braille embosser transfers computer-generated text into embossed Braille output. Translation programs convert text, scanned in or generated via standard word processing programs, into Braille that can be printed on the embosser.

C
Captioning:
A text transcript of the audio portion of multimedia products, such as video and television, that is synchronized to the visual events taking place on screen.

Example: For a child with a severe hearing impairment, captioning of television, video, and multimedia makes an enormous difference. When captioned, a CD-Rom that uses audio narration to tell a story, will allow a child to enjoy and understand the material the same way a child without a hearing impairment would.

D
Digitized Speech:
Digitized Speech is speech that has been digitally recorded for later play-back. As it is a recording, the quality is good and easy to understand. Digitized speech may be used in CD-Roms for talking stories, in encyclopedias, and in software packages where teachers and students are able to record sounds, words and sentences themselves. Digitized Speech has a finite, predetermined vocabulary and so does not offer full access to mainstream software.

Due Process Hearing:
You may request a due process hearing at any time if you are unable to resolve your differences with the school. A due process hearing is more formal than mediation, and the parties generally are represented by attorneys. An impartial hearing officer hears both sides of the dispute and issues a written decision within 45 calendar days of the hearing request. If either the parents or the school disagrees with the decision of the hearing officer, the decision may be appealed through the court system.

E
Electronic Pointing Devices:
Electronic pointing devices allow the user to control the cursor on the screen using ultrasound, an infrared beam, eye movements, nerve signals, or brain waves. When used with an on-screen keyboard, electronic pointing devices also allow the user to enter text and data.

Example: Electronic pointing devices might look a bit like something from the space age, but the technology is life changing for people with little or no mobility. Take the case of Vanya, a teenager with a traumatic brain injury. Vanya’s ocular movement was tracked and registered. She is now able to use a device that lets her interact with her computer, and thereby control her environment, solely with eye movement.
Assistive Technology Service:
An assistive technology service is one that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device. Examples include evaluating, selecting, buying, designing, fitting, customizing, maintaining, repairing, replacing, coordinating, and training of students, teachers and family members.

Augmentative Communication System:
An augmentative communication system is any system that increases or improves communication of individuals with receptive or expressive communication impairments. The system can include speech, gestures, sign language, symbols, synthesized speech, dedicated communication devices, microcomputers, and other communication systems.

Auxiliary Aids and Services
Under the Americans With Disabilities Act (see definition above), professionals and organizations must communicate as effectively with people with disabilities as they do with others. Auxiliary aids and services assist in this effort. Auxiliary aids may include taped texts, interpreters or other effective methods of making materials usually delivered orally available to students with hearing impairments; readers in libraries for students with visual impairments; classroom equipment adapted for use by students with manual impairments; and other similar services and actions.

Battery Interrupter:
A battery interrupter allows the user to modify battery-operated devices for switch input. Simply place the battery interrupter between the battery and its connection point in the battery compartment. Make a notch in the compartment lid allowing the cord to pass through when it is closed and then secure the lid. Place the battery-operated device in its ON position. Plug your switch into the input jack of the battery interrupter and you're set.

Braille:
A system of writing and printing for blind or visually impaired people, in which varied arrangements of raised dots representing letters and numerals are identified by touch. Each raised dot configuration represents a letter or word combination.

Braille Display:
A Braille display is a tactile device consisting of a row of special 'soft' cells. A soft cell has 6 or 8 pins made of metal or nylon; the pins are controlled electronically to move up and down to display characters as they appear on the display of the source system - usually a computer or Braille note taker...They can also be used for advanced math work and for computer coding. A number of cells are placed next to each other to form a soft or refreshable Braille line. As the little pins of each cell pop up and down, they form a line of Braille text that can be read by touch.

1 Intellikeys Alternative Keyboard - Photo courtesy of Intellitools
2 Braille
3 Braille Lite M20 - Photo courtesy of Freedom Scientific
**Alternative Keyboard:**
Alternative keyboards may be different from standard keyboards in size, shape, layout, or function. They offer individuals with special needs greater efficiency, control, and comfort.

Example: Alejandro is a child with cognitive disabilities. The traditional QWERTY keyboard is confusing, so his mom replaces it with a keyboard that lists letters A-Z in big, bold letters and doesn’t contain a lot of “extra” keys. This makes focusing on spelling and typing words a lot easier for him.

**Ambulation Aids:**
Devices that help people walk upright, including canes, crutches, and walkers.

**Americans with Disabilities Act:**
The American with Disabilities Act of 1990 (PL101-336) prohibits employers from discriminating against people with disabilities and makes such discrimination a civil rights violation. Providers of public services, schools, public buildings and public transportation services also must provide accessibility to people with disabilities.

**Architectural Adaptations:**
Architectural adaptations are structural fabrications or remodeling in the home, work site, or other area. Examples that remove or reduce physical barriers for an individual with a disability include ramps, lifts, lighting, altering counter top heights and widening door frames.

**Articulated Forearm Support:**
An articulated forearm support follows the user’s movements and drastically reduces the muscle work involved in sustained keying or mouse use.

**Assistive Technology Device:**
An assistive technology (AT) device includes any item, piece of equipment, or product system that is used to increase, maintain, or improve the functioning of individuals with disabilities. It may be purchased commercially off the shelf, modified, or customized. The term does not include a medical device that is surgically implanted, or the replacement of such a device.

Example: Almost every example in this glossary is an example of an AT device. From low tech, such as a pen or pencil grip; to high tech, such as a computer that responds to touch and allows a child to communicate more effectively, the tools fall within the category of AT devices.

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1  Intellikeys Alternative Keyboard - Photo courtesy of Intellitools
2  Articulated Forearm Support - Photo courtesy of Promedics
3  Pencil Grip - Photo courtesy of My School Shop
4  Alternative Keyboard - Photo courtesy of Intellitools
**Activities of Daily Living:**
Activities of Daily Living (ADL): Frequently used in national surveys as a way to measure self-care abilities in daily life, ADLs include basic tasks such as eating, bathing, dressing, toileting, getting in and out of a chair or bed, and getting around while at home. National surveys also measure another level of self-care functioning, Instrumental Activities of Daily Living (IADLs), which include activities such as doing everyday household chores, preparing meals, conducting necessary business, using the telephone, shopping, and getting around outside the home.

**Adaptive Technologies:**
Adaptive technologies are a type of assistive technology that include customized systems that help individual students move, communicate, and control their environments. Adaptive technologies are designed specifically for persons with disabilities; these devices would seldom be used by non-disabled persons. Examples include augmentative communication devices, powered wheelchairs and environmental control systems. These assistive technologies are not used exclusively for education purposes, and can be used in all of the child’s environments.

**Aids for Daily Living:**
Another category of assistive technology, these self-help aids help people with disabilities eat, bath, cook and dress.

Example: A wide range of devices fall under the phrase Aids for Daily Living (ADLs). A “low tech” example would be a finger nail brush with two suction cups attached to the bottom that could stick onto a flat surface in the bathroom. Such an ADL would allow a child with limited mobility to clean her nails without having to grip the brush. There are also “higher tech” ADLs. For more information on these devices, see Environmental Control Units (ECUs).

**Alternative Access/Input Device:**
An alternative access/input device allows individuals to control their computers using tools other than a standard keyboard or pointing device. Examples include alternative keyboards, electronic pointing devices, sip-and-puff systems, wands and sticks, joysticks, and trackballs.

Example: A “modified mouse” such as a joystick or trackball can make a world of difference to a child with limited mobility. While using an ordinary mouse would be difficult for someone with limited refined motor skills, the design of a joystick would allow him to have more complete control of his Web surfing experience.
It is important for parents to understand the “language” of assistive technology so they can be informed advocates for their child’s technology needs. The following glossary of terms can help parents learn about the kinds of assistive technologies that are currently available and how they can be used.

**A**

**Access Utility:**
An access utility is a software program that modifies a standard keyboard to simplify operation of the keyboard, replace the mouse, substitute visual cues for sound signals, or add sound cues to keystrokes.

Example: In the case of a young person with a mobility impairment, an access utility is important because it can alter the way keys on the keyboard respond to touch. For example, Jimmy, a young boy with muscular dystrophy, has difficulty pressing the keys quickly; he lingers a bit longer on each key than necessary, or inadvertently presses multiple keys instead of the intended key. Altering the relay time on these keys can enable Jimmy to process information more effectively when using his keyboard.

Many basic modifications can be made through software that already exists on your computer. Altering font size, color contrast, and adding or modifying audio alerts can all be done without purchasing additional software. “Sticky keys” are another very useful modification tool that can be made using pre-existing software. Sticky keys allow the individual to type one key at a time, sequentially, and experience the same results as holding down multiple keys simultaneously. For example, instead of holding down CTRL-ALT-DELETE at the same time, the individual can select each key, one at a time.

Additional Resources:
http://www.ataccess.org/resources/atabook/s02/s02-03b.html

**Accommodation:**
In the context of education, an accommodation is a change in the format or presentation of educational materials so that a student with a disability can complete the same assignment as other students. Accommodations can also include changes in setting, timing, scheduling, and/or response mechanisms of tests. Accommodations include: audiotapes of textbooks, tape recorders for capturing classroom lessons, calculators, allowing a student to submit an illustration of key concepts rather than a written report, providing reproduced copies of textbook pages that can be marked up and highlighted, and assignment of a “study buddy” or notetaker. There are dozens of accommodations that can change a student’s experience from frustration to success if teachers, aides, and parents are creative. A long list of possible accommodations is provided by The Families and Advocates Partnership for Education (FAPE) and can be viewed on their website at http://www.fape.org/pubs/FAPE-27%20School%20Accommodations%20and%20Modifications.pdf.

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1 Type n' Speak Keyboard - Photo courtesy of Quantum Technology
The Hearing Aid Compatibility Act of 1988
Public Law 100-394 [47 USC 610 (b)]
This law requires that all telephone equipment manufactured or imported for use in the United States after August 1989 be compatible with hearing aids.
http://www4.law.cornell.edu/uscode/unframed/47/610.html

The Television Decoder Circuitry Act of 1990, Section 3
Public Law 101-431 [47 USC 303 (u)].
The deaf and hearing impaired should have access to information and entertainment via television medium to the fullest extent possible through technology. This law requires that new televisions with at least a 13-inch screen must have the built-in capacity to display closed-captioned TV transmissions.
http://www4.law.cornell.edu/uscode/unframed/47/303.html

Telecommunications Act of 1996
Title I - Public Law 104-104 [47 USC 255]
Requires that telecommunications equipment and services be accessible to and usable by persons with disabilities.
http://www4.law.cornell.edu/uscode/unframed/47/225.html
Title III - Public Law 104-104 [47 USC 613]
Discusses rules on closed captions and video descriptions of video programming.
http://www4.law.cornell.edu/uscode/unframed/47/613.html

Federal Government Procurement of Accessible Information Technology
Public Law 105-220 section 408 [29 USC 794 (d)]
Individuals with disabilities cannot be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance or under any program or activity conducted by any Executive agency or by the United States Postal Service.
http://www4.law.cornell.edu/uscode/unframed/29/794.html

Workforce Investment Act of 1998
Public Law 105-220 [29 USC 701]
In the vocational rehabilitation process, this law defines technology and its use in job planning, acquisition and retention of people with disabilities.
http://www4.law.cornell.edu/uscode/unframed/29/701.html
Section 508 of the Rehabilitation Act
29 U.S.C. § 794d

Section 508 of the Rehabilitation Act requires that all electronic and information technologies developed and used by any Federal government agency must be accessible to people with disabilities. This includes websites, video and audio tapes, electronic books, televised programs, and other such media. Individuals with disabilities may still have to use special hardware and/or software to access the resources. Section 508 does not apply to the private sector or to organizations that receive Federal funds.

More information about Section 508 can be found at:
http://www.section508.gov/index.cfm?FuseAction=Content&ID=12
http://www.itpolicy.gsa.gov/cita
http://www.ataporg.org/itqa.asp

Assistive Technology Act of 1998
Public Law 105-394 [29 USC 2201]

The Assistive Technology Act, also known as the “Tech Act” provides funds to states to support three types of programs:
- the establishment of assistive technology (AT) demonstration centers, information centers, equipment loan facilities, referral services, and other consumer-oriented programs;
- protection and advocacy services to help people with disabilities and their families, as they attempt to access the services for which they are eligible;
- Federal/state programs to provide low interest loans and other alternative financing options to help people with disabilities purchase needed assistive technology.

For a list of state projects funded under the Tech Act, visit http://www.ataporg.org/stateatprojects.asp

Carl D. Perkins Vocational and Technical Education Act Amendments of 1998
Public Law 105-332 Section 1 (b) [20 USC 2302]

Schools are required to integrate academic, vocational and technical training, increase the use of technology, provide professional development opportunities to staff, develop and implement evaluations of program quality, expand and modernize quality programs, and link secondary and post-secondary vocational education. Additionally, states must submit an annual report on how special populations, including persons living with disabilities, engaged in vocational education are faring relative to the states’ performance goals.
http://www.ed.gov/offices/OVAE/CTE/legis.html

Fair Housing Act Amendments of 1988
Public Law 100-430 [42 USC 3604]

This legislation addresses non-discrimination issues for potential tenants with disabilities. It is unlawful to deny housing to a renter/buyer because of a disability that the person may have. Owners must also make reasonable exceptions to their policies to accommodate people with disabilities (i.e. - seeing eye dogs). Tenants are also allowed to make reasonable access-related modifications to the property if necessary.
http://www4.law.cornell.edu/uscode/unframed/42/3604.html
Understanding the Law & Assistive Technology

There is a wide range of assistive technology (AT) services and devices to which a child may be entitled. It is important for families to understand how Federal laws affect their child's right to AT. Provided below are brief summaries of laws that impact the provision of assistive technology and special education services.

Federal laws are amended regularly. Therefore, it is important to keep up to date on these changes. Website addresses have been identified below for government offices and other organizations that provide current, in-depth information on laws that affect a child's access to AT.

Americans with Disabilities Act (ADA)
Public Law 101-336 [42 USC 12101]

The ADA prohibits discrimination on the basis of disability in employment, state and local government, public accommodations, commercial facilities, transportation, and telecommunications. The law has four sections, or “Titles”. Title I addresses employment, saying that any employer who has 15 or more employees must offer “equal opportunity” to employment-related activities. Title II applies to state and local governments, and insists that people with disabilities be given equal access to public education, employment, transportation, recreation, health care, and other areas under their control. Title III addresses public accommodations that may be provided by private companies, including private schools, restaurants, stores, hotels, doctors' offices, etc. Title IV addresses assistive technology specifically, as it requires that telephone companies provide the necessary services to allow people who are deaf or hearing impaired to use telecommunications devices.

For more information about the Americans with Disabilities Act, you can go to the following websites:
http://www.usdoj.gov/crt/ada/cguide.htm#anchor62335
http://www.ada.gov

Individuals with Disabilities Act (IDEA)
The Individuals with Disabilities Education Act (IDEA) was initially passed in 1975 as P.L. 94-142. That law, known as the Education for All Handicapped Children Act, or the EHA, guaranteed that eligible children and youth with disabilities would have a free and appropriate public education (FAPE) available to them, designed to meet their unique educational needs. P.L. 94-142 has been amended many times since passing in 1975, most recently in 2004.

For more information about IDEA, you can visit the following website:
http://www.ed.gov/offices/OSERS/Policy/IDEA/index.html
Type of Material: Website
Audience: AT Professionals, Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Ordering Information: http://www.ztmouse.com/index.asp
Cost (As of Date Entered): $79.95
Website: http://www.ztmouse.com/index.asp

752. Zigawhat!

Author(s): National Dissemination Center for Children with Disabilities (NICHY)
Publisher: National Dissemination Center for Children with Disabilities (NICHY)
Publication Date: January 2004
Review: This is a website that supports students with ADD/ADHD and other mild learning handicaps. It is for students who are struggling in school. This website offers tips and strategies for doing better in school and offers an opportunity for these students to connect with other students with the same problems. There are many activities and links to other websites designed to build confidence, concentration, and academic skills. This website is designed to challenge, encourage, and support students with similar disabilities to succeed in school. Truly a kid-friendly website to support and encourage.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Learning Disabilities, ADHD/ADD
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): No charge
Website: http://www.nichcy.org/kids/index.htm
Review: This article is divided into three areas depending upon who will use the assistive technology: children, adults, older adults. Each section begins with, "Did you know that whether you receive assistive technology is not a matter of charity, it is a matter of rights?" The sections all contain information on private insurance, Medicaid, ADA, Section 504 and how to appeal. The section for children includes information about IDEA. The adult and older adult section contains information about Medicare. "Your Legal Rights to Assistive Technology" is a good resource because it provides the reader with information about funding sources, why a request might be turned down, where to go for help and how to appeal a denial.

Type of Material: Article
Audience: People with Disabilities
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Ordering Information: Iowa Program for Assistive Technology (IPAT)

Center for Disabilities and Development
100 Hawkins Drive, Room S295
Iowa City, Iowa  52242-1011
800-331-3027 (voice toll-free)
877-686-0032 (TTY toll-free)
319-356-0550 (voice)

To request information, please complete the IPAT/InfoTech Feedback Form or email us at infotech@uiowa.edu.

Cost (As of Date Entered): No charge
Website: http://www.uiowa.edu/infotech/Legal.htm

Z

751. Zero Tension Mouse

Author(s): Active Release Techniques
Publisher: Active Release Techniques
Publication Date: January 2006
Review: This website describes a new vertical mouse, the Zero Tension Mouse. It was designed to relieve carpal tunnel syndrome and comes in a variety of sizes. According to the website, the Zero Tension mouse is a better orthopedic design because the wrist is in a more neutral position. Users grasp the mouse handle as if it were a joystick with the thumb on top. Several movies may be viewed on the site which shows the hand position as well as commercial promotion.

Readers are advised to try it before they buy. The mouse may be used and returned within 30 days if customers are not satisfied. This may be a useful alternative access method if more traditional options such as mouse or trackball are not successful.
Author(s): Down Syndrome NSW  
Publisher: Down Syndrome NSW  
Publication Date: January 2003  
Review: Deciding on computer hardware and software programs is a difficult task. It becomes more difficult when you are buying for a child with Down Syndrome or other developmental disabilities. This article presents good ideas for software as well as parental tips in working with your child. These suggestions are for children who could access the computer with a mouse and keyboard. This article does not give information for alternative access. The software programs suggested are universal even though this article was written in Australia. The parental tips in this article make it worth a quick read.  
Type of Material: Article  
Audience: Parents / Family  
Target Disability: Developmental Disabilities  
Alternate Formats: Electronic, Electronic  
Ordering Information: Down Syndrome NSW  
P.O. Box 2356  
North Parramatta NSW 1750  
Australia  
Tel: (02)9683-4333  
Fax: (02)9683-4020  
e-mail: admin@dsansw.org.au  
Cost (As of Date Entered): no charge  
Website: http://www.dsansw.org.au/info/Computers.html

749. Young Children with AAC Needs  
Author(s): Mintz, B.  
Publisher: University of Maine Center for Community Inclusion  
Publication Date: January 1998  
Review: This article supports the use of Augmentative and Alternative Communication (AAC) devices with preschoolers. It provides reasons to use AAC devices with preschoolers and explains how AAC supports opportunities for social interaction, communication development, and learning. Although brief, it also mentions the importance of a multi-modality approach when working with young children.  
Type of Material: Article  
Audience: Service Providers  
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired  
Cost (As of Date Entered): No Cost  
Website: http://www.ccids.umaine.edu/FACTSFC/articles/childaac.html

750. Your Legal Rights to Assistive Technology  
Author(s): Iowa Program for Assistive Technology-Infotech  
Publisher: Iowa Program for Assistive Technology-Infotech  
Publication Date: January 2002
operative. For menu items that are active, directions are clear, and the site should be easy to navigate when it is in final form. One will need an email address, and thus an ISP to take advantage of this messaging service.

YackPack’s potential ability to provide free voice messaging through the internet holds exciting possibilities for people with and without disabilities.

**Type of Material:** Website

**Target Disability:** General / Non-disability Specific

**Ordering Information:** Email: support@yackpack.com
Phone: (800) 687-2149

**Cost (As of Date Entered):** No charge

**Website:** [http://www.yackpack.com](http://www.yackpack.com)

### 747. Year 2003 Tax Benefits for Parents of Children with Learning Disabilities

**Author(s):** Michael A. O'Connor

**Publisher:** AT Journal

**Publication Date:** January 2004

**Review:** If you have a child with a severe learning disability, you may qualify for valuable tax benefits. If your child has AD/HD, or other physical, mental or emotional impairment, you may also qualify for tax benefits. Because tax laws are complex, and many tax preparers often do not have occasion to use these unique tax benefits, families are at risk of losing refunds worth many thousands of dollars. It’s likely that 15-30 percent of families with a disabled child have one or more unclaimed tax benefits.

This guide provides a brief summary of the most significant tax benefits and should not be considered legal advice. Tax decisions should not be made simply on the basis of the information provided here. You are advised to print out this guide and give a copy to your tax advisor.

**Type of Material:** Article

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** General / Non-disability Specific

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** Download from web site or
Schwab Learning
1650 S. Amphlett Blvd., Suite 300
San Mateo, CA 94402
Phone: 650-655-2410
Fax: 650-655-2411

**Hours**
Monday - Friday (excluding holidays)
9am - 5pm

**Cost (As of Date Entered):** No charge

**Website:** [http://www.schwablearning.org/articles.asp?g=2&r=684](http://www.schwablearning.org/articles.asp?g=2&r=684)

### 748. Yes, Of Course People With Down Syndrome Use Computers!
includes some "opinion pieces" as well as links to other resources for those with deafness. There is access to lots of good information in one location.

This reviewer did, however, read on another website that when a person subscribes to this newsletter, it is often difficult, if not impossible, to un-subscribe at a later time.

**Type of Material:** Website  
**Audience:** People with Disabilities  
**Target Disability:** Hearing Impairments / Deaf  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.deafdigest.org](http://www.deafdigest.org)

**745. www.disabilityworld.org**

**Publication Date:** January 2003  
**Review:** Disability World is a webzine dedicated to advancing an exchange of information and research about the international independent living movement of people with disabilities. A section of the webzine is devoted to Children & Youth and has articles related to international issues for children and youth with disabilities. Another section of the webzine focuses on Access and Technology which describes international technological developments. There are sections in the links portal of the website that focus on families and children (11) and technology (14). Other links of interest are those related to accessible travel (6).

A text version of the page is available and past issues of the webzine are archived and available at the site. Other organizations can link to this page.

**Type of Material:** Website  
**Audience:** Service Providers  
**Target Disability:** Multiple Disabilities  
**Cost (As of Date Entered):** free  
**Website:** [http://www.disabilityworld.org/](http://www.disabilityworld.org/)

**Y**

**746. YackPack**

**Publisher:** YackPack  
**Publication Date:** January 2006  
**Review:** The YackPack is a web site that provides a way to connect with friends and family by exchanging voice messages. One can also join in an Audio Forum with other members. It is described as ‘email with a voice’. The site is free but each window is headed by an active advertising banner.

Users sign in, receive an instant email confirmation, and are able to begin sending messages to others. A headset or speakers are required to hear messages and a microphone will be needed to send messages.

This website and software is in Beta testing phase, and as such, the menus are not completely
Review: Writing Tools Assessment and Recording Guide is a helpful evaluation tool (it is available as a PDF file only) to be used mainly by professionals. It begins with suggestions for various writing concerns (for example, if a writer cannot copy words reliably, one should consider using a word processor or spell checker). The writing assessment then directs the reviewer to look at samples of work which have already been completed by the student (handwritten, typed and dictated) and to "score" them based upon legibility, length, spelling, vocabulary and ideas. After this is done, the evaluator requests a written sample of work, a typed sample of work and a copied sample of work. Next, the evaluator considers various accommodations such as word predictors, word banks, speech input, spellcheckers and other tool to improve writing.

Type of Material: Article
Audience: Service Providers
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Learning Disabilities, Mobility Impaired, Spina Bifida, Orthopedically Impaired
Alternate Formats: Electronic, Electronic
Ordering Information: The CALL Centre

University of Edinburgh
Paterson’s Land
Holyrood Road
Edinburgh
EH8 8AQ
Scotland
Tel: 0131 651 6235/6236
(International: 44 131 651 6235/6236)
Fax: 0131 651 6234
(International: 44 131 651 6234)
Email: call.centre@ed.ac.uk or Email a CALL staff member
Cost (As of Date Entered): Free

744. www.deafdigest.org

Author(s): Barry Strassler
Publisher: Deaf Digest
Publication Date: January 2005
Review: This site is home of a free, weekly, online newsletter with information relevant to people who are deaf or hard-of-hearing. Visitors will find two versions of the newsletter, both with interesting facts and current items of news in the deaf world. These two versions contain exactly the same news, but as the publication is supported by advertising, the ads are split between the two issues. The editor
741. Writing by Touch

**Publisher:** Blind and Visually Impaired Technology Access Center - Lions World Services for the Blind  
**Publication Date:** April 2004  
**Review:** This is a brief but informative brochure concerning how to teach handwriting to individuals who are blind. The method described is based on the dot patterns of the Braille cell. Included in the information is materials needed and the process of getting started (for example, formations of letters, capital letters, and script alphabet).  
**Type of Material:** Brochure  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Visual Impairment / Blind  
**Ordering Information:** Blind and Visually Impaired Technology Access Center  
Lions World Services for the Blind  
2811 Fair Park Blvd  
P.O. Box 4055  
Little Rock, AR 72214  
Increasing Capabilities Access Network (ICAN)  
201 Brookwood Dr., Ste. 117  
Little Rock, AR 72202  
800-828-2699

742. Writing Issues and Assistive Technology Solutions

**Publisher:** Tools for Life  
**Review:** This article addresses writing skills from two viewpoints—investigating first the physical aspects and then the cognitive aspects. Using two separate case studies to illustrate these distinct issues, the article moves step by step through problem areas, solutions (either suggested or substituted), essential skills for AT use, and the need for community partners. This subject could easily be bogged down in jargon and lengthy explanations. However, the format is broken into frames and diagrams, creating an article about reading that is easy to digest. The result is a guide that AT professionals and educators will consider valuable for its content, accessibility, and clarity.  
**Type of Material:** Article  
**Audience:** Educators  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** no charge  

743. Writing Tools Quick Assessment Guide

**Author(s):** The Call Centre  
**Publisher:** University of Edinburgh  
**Publication Date:** January 2003
739. Writeboard

**Author(s):** 37 Signals  
**Publisher:** 37 Signals  
**Publication Date:** January 2006  
**Review:** The concept of Writeboard can be useful to all technology users, not only those with disabilities. Writeboards are shareable, web-based text documents. The concept was developed for people who work together, but not necessarily in the same location. Users create a board to write their ideas, and send on to others for review, changes or additions. Multiple users can log on and the software tracks all changes that have been made and allows users to compare what has been written. It has the advantage of saving all entries, without losing information that is brought up earlier, and perhaps discarded, only to find it is wanted again in the end.

The site enables one to take a tour and try out the ‘Writeboard’. After titling a file, the initial user then writes some text, and invites others to participate by giving them the link and the password, while telling them who has sent them this message.

Writeboard is free but does require Internet Explorer 6.x, Safari or Firebox. It does not work with Internet Explorer 5.x.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No Charge  
**Website:** [http://www.writeboard.com/](http://www.writeboard.com/)

740. Writing By Hand and Keyboard

**Author(s):** Miriam Struck, MS, OTR, ATP  
**Publisher:** Advance for Careers  
**Publication Date:** January 2001  
**Review:** The article explores the issue of handwriting versus keyboarding for children who have learning disabilities and find it difficult to master the mechanics of handwriting. The author explores the issues of why writing is difficult, how keyboarding can be integrated, why keyboarding should not replace handwriting, and how to avoid injuries in children exposed to keyboarding at an early age.

This is a comprehensive look at a complex issue with good, clear information. Links to various typing training products are also included.

**Type of Material:** Article  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Learning Disabilities, Orthopedically Impaired  
**Alternate Formats:** Electronic, Electronic
737. Worksite Accommodations for People with Multiple Sclerosis

Author(s): Batiste, L. C.
Publisher: Job Accommodations Network (JAN): A Service of the President's Committee on Employment of People wi
Publication Date: January 1997
Review: This document can assist employers in hiring and retaining individuals with Multiple Sclerosis (MS). It provides basic information about common limitations/symptoms, useful questions to consider, and accommodation possibilities for people who have MS.
Type of Material: Article
Audience: AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Health Impairments, Mobility Impaired, Multiple Disabilities
Ordering Information: Job Accommodation Network (JAN)
800-526-7234
Website: http://www.jan.wvu.edu/media/MS.html

738. Worksite Accommodations for Persons with Back Impairments

Author(s): Job Accommodations Network (JAN)
Publisher: Job Accommodations Network (JAN)
Publication Date: January 1999
Review: This easy-to-read article is a good overview of why job accommodations need to be made and the value of assisting an individual to return to work rather than remaining on disability. It includes lists of questions to consider when evaluating the need for accommodations as well as listing several types of solutions that could be made. There are ideas for modifications in several different work settings, and specific examples of accommodations that have been implemented successfully. At the end, there is a good list of references that might be helpful to individuals with a disability or their employers.
Type of Material: Article
Audience: AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Cerebral Palsy, Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired
Alternate Formats: Audio Tape, Braille, Large Print, Foreign Language - Spanish, Foreign Language - Other, Audio Tape, Braille, Large Print, Foreign Language - Spanish, Foreign Language - Other
Ordering Information: JAN
918 Chestnut Ridge Road, Ste 1
West Virginia University
P.O. Box 6080
735. Worksite Accommodation Ideas for Persons with LD and/or ADD

Author(s): LaRosse, M.
Publisher: Job Accommodations Network (JAN)
Publication Date: January 1998

Review: This article describes the legal requirements for employers in regards to employees with disabilities. It is written in easy to understand language, and quotes relevant portions of IDEA (Individuals with Disabilities Education Act), ADA (Americans with Disabilities Act), and the Rehabilitation Act of 1973. It also gives a very good definition of specific learning disabilities, along with suggested accommodations for different activities. Included is a list of resources for individuals with learning disabilities and attention deficit disorders, as well as some questions to consider when determining accommodation solutions.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Health Impairments, Learning Disabilities
Alternate Formats: Audio Tape, Braille, Large Print
Ordering Information: JAN
918 Chestnut Ridge Road, Ste 1
West Virginia University
P.O. Box 6080
Morgantown, WV 26506-6080
800-526-7234
http://jan.web.icdi.wvu.edu

736. Worksite Accommodations for Individuals Who are Deaf or Hard of Hearing

Publisher: Job Accommodations Network (JAN)
Publication Date: January 1999

Review: This article contains information on the value of providing accommodations for individuals with disabilities as well as specific information on accommodations for persons who are deaf or hard of hearing. It includes a section on questions that might be addressed during the assessment process as well as frequently asked questions about types of accommodations. There are several pages of specific job situations, solutions, and success stories, as well as the cost to the employer. It concludes with a page of references that would be appropriate for more specific questions and possible solutions.

Type of Material: Article
Audience: AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals
Target Disability: Hearing Impairments / Deaf
Alternate Formats: Audio Tape, Braille, Large Print, Foreign Language - Spanish, Foreign Language - Other
Ordering Information: JAN
918 Chestnut Ridge Road, Ste 1
West Virginia University
Review: This article contains information on the value of providing accommodations for individuals with disabilities as well as specific information on accommodations for persons who have arthritis or other degenerative or connective tissue disease. It discusses the benefits to the employer as well as the mandates to provide appropriate accommodations for persons with any type of a disability, and specific questions to address when evaluating for a situation unique to a person with arthritis. Detailed lists of possible suggestions are included for work settings, such as in an office or industrial setting. A list of specific modifications that have been utilized as well as the cost were noted at the end of the article.

Type of Material: Article

Audience: AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

Target Disability: Brain Injury and Stroke, Cerebral Palsy, Health Impairments, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Orthopedically Impaired

Alternate Formats: Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print

Ordering Information: JAN
918 Chestnut Ridge Road, Ste 1
West Virginia University
P.O. Box 6080
Morgantown, WV 26506-6080
800-526-7234
http://janweb.icdi.wvu.edu

Cost (As of Date Entered): No Cost

Website: http://www.jan.wvu.edu/media/Arthritis.html

734. Worksite Accommodation Ideas for Persons with Fibromyalgia

Author(s): Duckworth, K. and Loy, B.

Publisher: Job Accommodations Network (JAN)

Publication Date: April 2004

Review: This article addresses accommodations that employers can utilize in order to successfully retain and increase of employees who are afflicted with the diverse manifestations of fibromyalgia. This article suggests that these employees are protected under ADA (Americans with Disabilities Act), and that employers must find ways to make their jobs manageable within the constraints of their symptoms. Ideas ranging from management of fatigue and lighting to allowances for additional break time and flexible schedules. It cites examples of actual fibromyalgia sufferers and how their employers worked with them to allow them to remain productive. It also includes a listing of appropriate organizations and resources related to fibromyalgia.

Type of Material: Article

Audience: AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

Target Disability: Health Impairments

Alternate Formats: Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print

Ordering Information: JAN
918 Chestnut Ridge Road Ste 1
West Virginia University
P.O. Box 6080
Morgantown, WV 26506
800-526-7234
http://jan.web.icdi.wvu.edu

Cost (As of Date Entered): No Cost
732. Working Toward Integration

Author(s): Miriam Struck, OTR/L, ATP  
Publisher: Advance for Occupational Therapists  
Publication Date: January 2003  
Review: Miriam Struck, the author, discusses the importance of integrating technology into the lives of the clients with whom she works. To successfully integrate technology into everyday life, Ms. Struck says a professional must take chances, learn about technology, teach others about technology, listen to clients' and families' needs, work closely with clients and share expertise.

The article provides the reader with background information about the Technology Act of 1990 and how it allocated money to states to set up programs which made consumers aware that there was assistive technology out there that can help them work, perform activities of daily living, drive, learn, and play. The article also discusses IDEA’s AT provisions.

The author says that assistive technology awareness has increased due to the Tech Act and IDEA; however, there are three challenges in the provision of assistive technology services. They are: technology doesn’t always do what it is supposed to do; the environment in which the client is in is not always compatible with technology requirements and "human factors." These "human factors" include timely service delivery, the right combination of training, technology and services, and integrating technology into the client's day.

Type of Material: Article  
Audience: Rehabilitation Professionals  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Ordering Information: Advace for Occupational Therapy Practitiners

Merion Publications, Inc.

2900 Horizon Drive

King of Prussia, PA 19406

800 355-5627  
Cost (As of Date Entered): No charge  
Website: http://occupational-therapy.advanceweb.com/common/editorial/editorial.aspx?cc=13861

733. Worksite Accommodation Ideas for Persons with Arthritis

Publisher: Job Accommodations Network (JAN)  
Publication Date: January 1999
730. Working Together: People with Disabilities and Computer Technology

Author(s): Sheryl Burgstahler  
Publisher: Do-It, University of Washington  
Publication Date: January 1998  
Review: This article provides a basic introduction to adapting computers to make them accessible to people with disabilities. It describes ways to access both computer input and output, including positioning techniques, particular software and hardware options, and ways to successfully read materials on the computer.  
Type of Material: Training Material  
Audience: Service Providers  
Target Disability: General / Non-disability Specific  
Ordering Information: Do-It; University of Washington  

Box 354842  
Seattle, WA 98195-4842  
Phone/TTY: 206 221-4171  
Fax: 206 685-DOIT  
Website: http://www.washington.edu/doit/Brochures/Technology/wtcomp.html

731. Working Together: Science Teachers and Students with Disabilities

Author(s): DO-IT  
Publisher: DO-IT at the University of Washington  
Publication Date: January 2000  
Review: This article is written to provide suggestions for ways teachers can make accommodations in the classroom for working with students with different types of disabilities. It also gives some good alternatives for ways of testing students which is often a concern. The information is a good beginning resource for a teacher or a parent in preparation for an IEP (Individualized Education Program) meeting for their student.  
Type of Material: Article  
Audience: AT Professionals, Educators, Parents / Family, Service Providers  
Target Disability: General / Non-disability Specific  
Alternate Formats: Braille, Braille  
Ordering Information: DO-IT University of Washington  
Box 354842
Review: This article provides information on helping people with learning disabilities succeed in education, personal and professional life areas through use of the computer and the many programs available to address the effects of learning disabilities on the written word. It provides a brief description of different learning disabilities and the impact each has on the person’s ability to learn and work. It also gives examples of computer equipment and software that can be used to address certain learning disabilities.

Type of Material: Article

Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

Target Disability: Developmental Disabilities, Learning Disabilities

Ordering Information: Do-It University of Washington, box 355670 Seattle, WA 98195-5670 206-685-3648 888-972-3648 (TTY, in state only)

Cost (As of Date Entered): free

Website: http://www.washington.edu/doit/Brochures/Technology/atpwld.html

728. Working Together: Computers and People with Mobility Impairments

Author(s): unknown

Publisher: University of Washington

Publication Date: January 2000

Review: The article provides information on making computers accessible to people with mobility impairments. It addresses different kinds of disabilities that result in limited mobility. It then describes the many things that must be considered in making the computer accessible, such as physical access to the building/office, seating and positioning, alternative access to the computer, software for writing and reading text. It then offers suggestions for tools to meet individual needs.

Type of Material: Article

Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

Target Disability: Mobility Impaired

Cost (As of Date Entered): free

Website: http://www.washington.edu/doit/Brochures/Technology/wtmob.html

729. Working Together: Faculty and Students with Disabilities

Author(s): DO-IT

Publisher: DO-IT at the University of Washington

Publication Date: January 2000

Review: This article is written to provide suggestions for ways teachers can make accommodations in the classroom for working with students with different types of disabilities. There is an initial overview of the laws providing for inclusion and why it is important the faculty and students work together toward the success of that student. A variety of disabilities are identified and accommodations are listed for each. Some additional teaching suggestions are at the end that will be helpful for teachers.

Type of Material: Article

Audience: AT Professionals, Educators, Parents / Family, Service Providers

Target Disability: Learning Disabilities
There is no Macintosh version available.
Users can download the application and manual in pdf format for a 30-day trial period; at the end of the trial period payment may be made online and the user is given an ‘unlock’ code so that WordQ will continue to function.

Type of Material: Article
Audience: AT Professionals, Educators
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Ordering Information: May download from web site for 30 day free trial
Cost (As of Date Entered): $185.00
Website: http://www.wordq.com

726. Word Web

Author(s): Antony Lewis
Publisher: Word Web
Publication Date: January 2005
Review: Word Web is a next generation international English dictionary and thesaurus (developed by the creator of Crossword Compiler, Antony Lewis) and is based on the Princeton WordNet project. Built for Windows platforms, Word Web can be used on or offline and can help users lookup words from within most Windows programs. Word Web specializes in filtering words and word traits to help users find precise word definitions, uses, and traits. Word Web is not a spell checker.

Word Web is spyware, adware and virus free. Features of the free version include:
Definitions and synonyms
Proper nouns
Related words
Pronunciations for 140,000 root words
115,000 synonym sets
Look up words in almost any program

The free version of this program is available for personal non-commercial use. For those who want search, anagram, and customization options, Word Web Pro 4.0 is also available online for $19.00 dollars and can be further extended for $59.00 dollars (single user). Word Web Pro 4.0 is also available for multiple users and school networks--see the website for pricing details.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: CD-ROM, CD-ROM
Cost (As of Date Entered): Free online. Full $19.00-$56.00 dollars
Website: http://wordweb.info/free/

727. Working Together: Computers and People with Learning Disabilities

Author(s): University of Washington
Publisher: University of Washington
Publication Date: January 2000

Website: http://www.fctd.info
include: WATI Assessment Forms, Spanish Assistive Technology Checklist, Spanish Assistive Technology Considerations Guide, Catalog of Lending Library items, Products available from WATI, Loan Agreement, Used Equipment Marketplace, and Links to other assistive technology web sites.

**Type of Material:** Website

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired

**Alternate Formats:** Foreign Language - Spanish, Foreign Language - Spanish

**Website:** [http://www.wati.org](http://www.wati.org)

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**724. Without Sight and Full of Vision**

**Author(s):** Jacqueline L. Salmon

**Publisher:** Washington Post

**Publication Date:** January 2004

**Review:** This article describes a young person's transition to maturity and independence after he became blind as a result of surgery. Through the use of high and low tech assistive technology, this individual progressed from an angry 'troublemaker' to an honor role student, a computer expert and camp counselor.

The article is an example of what successful teamwork and supports can do for an individual with a disability. Assistive technology has been an important tool, enabling this young man to become successful, independent and a strong self-advocate.

**Type of Material:** Article

**Audience:** Parents / Family, People with Disabilities, Rehabilitation Professionals

**Target Disability:** Visual Impairment / Blind

**Cost (As of Date Entered):** No charge


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**725. WordQ Writing Aid Software**

**Publisher:** Bloorview MacMillan Children's Centre

**Publication Date:** January 2004

**Review:** Word prediction, or the ability to choose a word after entering only a few letters, is of immense help to those needing assistance with keyboarding, for people with word retrieval difficulty, or while learning spelling and grammar with English as a second language. Spoken text-to-speech feedback is also provided so the word may be predicted, heard, chosen, reviewed, corrected, and written.

WordQ works with almost any word processor or spreadsheet and appears as a small toolbar and prediction window that rides on the application. It can be moved anywhere on the screen for visibility of text in the document. This is a very functional word prediction program; the simplicity of the program and ease of use is very appealing to users in middle school grades and beyond.

This program was released in 2001 as an aid to writing. WordQ works with Windows 95 through XP.
722. Winter Sports and Recreation Equipment

Author(s): Landers, Alynne
Publisher: ABLEDATA
Publication Date: January 1993
Review: This lengthy fact sheet on adapted sports and recreation equipment highlights devices for winter activities. Sports organizations and winter resorts with facilities and programs for sports enthusiasts with physical and sensory disabilities are also identified.

Areas covered, generally with a great deal of detail, include standing skiing, sit-skiing, sled skiing, sledge skiing, mono-skiing, ice-skating, hockey and racing, and information on skiing for individuals with vision impairments. Each of the sections includes information about equipment, how the equipment is constructed and used, as well as information about the mobility and use of such equipment on lifts. There is also information on clothing for cold weather, adaptations to wheelchairs to make them more usable in snowy conditions, and competitive sports. The publication provides a listing of manufacturers of adaptive equipment for winter sports and recreation and a listing of ski instruction providers and winter sports and recreation associations in the United States and Canada, as well as information about sports publications for athletes with disabilities, resources, and recommended additional reading.

Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Cerebral Palsy, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired
Alternate Formats: Electronic, Electronic
Ordering Information: available online, and in printed form by contacting ABLEDATA
8630 Fenton Street, Suite 930
Silver Spring, MD 20910
ABLEDATA’s phone numbers are 800/227-0216; in Maryland 301/608-8998; or 301/608-8912 (TTY)
Our fax number is 301/608-8958.
Cost (As of Date Entered): No charge to print from website
Website: http://www.abledata.com/text2/winter.htm

723. Wisconsin Assistive Technology Initiative (WATI) Web Site

Publisher: Wisconsin Assistive Technology Initiative (WATI)
Publication Date: April 2004
Review: This is the Web site of the Wisconsin Assistive Technology Initiative. The menu items
to improve a child's ability to function independently, communicate, socialize etc.

This article is for those people who are brand new to the field of assistive technology.

**Type of Material:** Article  
**Audience:** Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** The article is available via the website identified below.  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.linc.org/atwhypc.html](http://www.linc.org/atwhypc.html)

### 720. Why Megan is Learning Braille

**Author(s):** Marla Palmer  
**Publisher:** The National Federation of the Blind Magazine for Parents and Teachers of Blind Children  
**Publication Date:** January 2005  
**Review:** This article should be of considerable interest to parents and professionals working with children with low vision and blindness. It details the story of one child and her family, who, upon learning their daughter was born with 'low vision' were counseled their child would not need Braille. But they began training in Braille for their daughter at the age of 18 months after being encouraged by an older family member who said, 'it’s so much easier when you’re younger’. The use of Braille as an aid is stressed, with the idea that the individual will read print whenever that is possible. The girl described here is now reading at age level in both Braille and print.

The mother of the child describes how she learned to advocate for the amount of time necessary for learning, and how she needed to supplement at home what was being taught in school. By following this regime, even when it was uncertain it would be needed, the child was able to learn at the age when these skills are more easily acquired, and now has a backup system should it be needed later. This is worth reading by those working with young children with low vision and blindness.

**Type of Material:** Article  
**Audience:** Parents / Family  
**Target Disability:** Visual Impairment / Blind  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.nfb.org/Images/nfb/Publications/fr/fr11/fr03fa06.htm](http://www.nfb.org/Images/nfb/Publications/fr/fr11/fr03fa06.htm)

### 721. Windows XP Step by Step Tutorials

**Author(s):** Microsoft  
**Publisher:** Microsoft  
**Publication Date:** January 2004  
**Review:** Microsoft states that the company is committed to producing technology for everyone that will enable people and businesses throughout the world to realize their full potential. The Windows XP Step by Step Tutorial provides guided instructions to turn on accessibility features which make it easier for people with cognitive, physical, visual or hearing disabilities to use the computer. This tutorial provides descriptions of the Accessibility Features and includes both the mouse actions and the keyboard actions for adjusting the display, using the on-screen keyboard, using the narrator (text to speech), using the magnifier and other options such as Sticky Keys (pressing one key at a time for keystroke combinations such as capitalization). There is also a link on the website to subscribe to a free monthly newsletter on computer accessibility.
life cycle" which underpins commercial product development. In discussing each of the phases of the cycle, Mr. Creagan makes clear that it is a complex process, which is why it takes so long for a product to be marketed. Life cycle points include the market research phase, the design phase and usability tester phase. In each phase there are opportunities for people with disabilities to have input into commercial product development.

Included in this proceeding is a list of websites where people with disabilities can find information on product testing trials and demonstrations. Additionally there are websites where people with disabilities can exercise their legal rights when they encounter inaccessible products.

**Type of Material:** Conference Handout  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.csun.edu/cod/conf/2005/proceedings/2343.htm](http://www.csun.edu/cod/conf/2005/proceedings/2343.htm)

718. Whizz Kidz

**Author(s):** Whizz Kidz Board  
**Publisher:** Whizz Kidz  
**Publication Date:** January 2003  
**Review:** This website, though based in the United Kingdom, is rich in information on mobility impairments and offers a great peer support area in the Kids Zone link.

For children with mobility impairments it is sometimes difficult to relate to and discuss mobility issues with ambulatory peers. Whizz-Kidz is a registered charity in the UK and provides customized wheelchairs, tricycles and other specialized mobility equipment, wheelchair training, information and advice to change the lives of disabled children across the UK.

The Whizz-Kidz site provides practical advice and techniques to solve mobility issues in a way that is understood by children. There is advice on taking control and a message board that has stories from all over the world about how other children are facing mobility challenges. For those youth looking for peer support, this is a good website.

**Type of Material:** Website  
**Audience:** Parents / Family, People with Disabilities  
**Target Disability:** Mobility Impaired, Orthopedically Impaired  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.whizz-kidz.org.uk/Page.asp](http://www.whizz-kidz.org.uk/Page.asp)

719. Why Does Your Child Need a Computer?

**Author(s):** Learning Independence Through Computers, Inc. (LINC)  
**Publisher:** Learning Independence Through Computers, Inc. (LINC)  
**Publication Date:** January 1996  
**Review:** This easy to read and understand article is intended to assist parents of children with disabilities who are not yet aware of the benefits of assistive technology. It was written in response to the questions that LINC receives from parents who do not understand why a computer is a necessity for children with disabilities and/or see it only as a plaything or luxury.

The article provides numerous examples of how computers and/or assistive technology can be used
716. When It's Your Own Child: A Report on Special Education from the Families Who Use It

**Author(s):** Jean Johnson and Anne Duffett with Steve Farkas and Leslie Wilson  
**Publisher:** Public Agenda Online  
**Publication Date:** January 2002  
**Review:** Public Agenda undertook an extensive random survey of parents in America to locate and interview parents of children with special needs, the first survey of its kind. The results of the survey are presented in this report. Organized by category, with graphs to better illustrate responses, the report presents a surprisingly upbeat outlook on the state of special education in the U.S. The most significant finding in this reviewer's reading is that the majority of parents believe they, and other parents, don't have enough information readily available to make the right choices for their children's education.

This resource is a summary of the survey. The full report is available for free to registered users through the website or can be purchased in print for $10.00 plus $2.00 shipping. The summary presents a clear picture of the major issues in special education and parental opinions of those issues in their own experiences. Good reading for anyone involved in special education: parent, teacher, therapist, or policy-maker.  
**Type of Material:** Report  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Public Agenda  
6 East 39th St.  
New York, NY 10016  
212-686-6610 phone  
212-889-3461 fax  
**Cost (As of Date Entered):** $10.00 plus $2 S&H, free to registered users  
**Website:** [http://www.publicagenda.org/specials/specialed/specialed_study.htm](http://www.publicagenda.org/specials/specialed/specialed_study.htm)

717. Where Do Accessible Products Come From-And Why Does It Take So Long?,

**Author(s):** Timothy Creagan  
**Publisher:** California State University at Northridge Center on Disability  
**Publication Date:** January 2005  
**Review:** In this C-SUN conference proceeding, Timothy Creagan, Director of Consumer Training for Information Technology Technical Assistance and Training Center (ITTATC), describes the “product
714. What We Know and Need to Know About Alternative Assessment

Author(s): Diane M. Browder, et.al.
Publisher: Council For Exceptional Children
Publication Date: January 2003
Review: This research article, originally published in Fall 2003, evaluated the impacts of alternative assessment on education policy reform; asking questions about the degree of influence, expectations, access, and instruction. The article also dissected potential pitfalls; determining eligibility, varied testing methods, scoring the lowest proficiency level, and expectations for student performance, while warning that poor assessment systems have long-term, far-reaching consequences.

Browder et.al. offer guidelines to improve outcomes and direct research: validate performance indicators with content area experts and stakeholders to reflect state standards, set high expectations for disabled students, and offer a range of options for those students with "significant disabilities"; master grade level performance standards by tying the assessment process to "ongoing classroom instruction and data collection" not one-time checklists; connect alternate assessment to the IEP to define expectations; train educators to include alternate assessment in classroom practice; use "best measurement" to score and report on the technical quality of the assessment program; and use outcomes to evaluate the program and improve access to supports and services.

Type of Material: Article
Audience: Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge
Website: http://journals.sped.org/EC/Archive_Articles/VOLUME70NUMBER1Fall2003_EC_Browder70-1.pdf

715. Wheelchairs for Children

Publisher: ABLEDATA
Publication Date: January 1994
Review: This article provides a comprehensive discussion of the special needs of children who require wheelchairs and the fairly recent manufacture of suitable chairs to meet those needs. It provides considerations for proper selection and then discusses the different types of chairs and the components of each. It also mentions alternatives to wheelchairs. It concludes with a mention of funding sources and then a comprehensive listing of companies that manufacture wheelchairs for children, complete with addresses and telephone numbers.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Health Impairments, Mobility Impaired,
711. What's for Dinner?

**Publisher:** WYNOT (Wyoming New Options in Technology Project)
**Publication Date:** April 2004
**Review:** Everyone needs to eat daily. If food preparation is difficult for someone, then they are not able to be independent in that area. This article provides some helpful information on aids and adaptations to use in the kitchen and when dining to encourage independence.

**Type of Material:** Article
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Health Impairments, Mobility Impaired, Orthopedically Impaired
**Alternate Formats:** Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print
**Ordering Information:** WYNOT Main Office
1465 N. 4th Street, Ste 111
Laramie, WY 82072
307-766-2084
800-861-4312 (Wyoming residents only)

712. What Teens Think About Assistive Technology: An Innovative High School Curriculum

**Author(s):** Edith C. Thayer, MA-SLP
**Publisher:** California State University-Northridge
**Publication Date:** January 2005
**Review:** "What Teens Think About Assistive Technology: An Innovative High School Curriculum" is a very brief synopsis of a recent presentation at the 2005 Technology and Persons with Disabilities Conference. Presenter Edith C. Thayer outlines a successful disability awareness curriculum titled "Assistive Technology: Careers in Human Services."

While lauding the success of the elective course, and noting the positive press that the curriculum received, Thayer also lists the objectives of the curriculum and gives readers just enough information to send educators scrambling for this unique and far-reaching program.

**Type of Material:** Conference Handout
**Audience:** People with Disabilities
**Target Disability:** General / Non-disability Specific
**Cost (As of Date Entered):** No charge

713. What We Are Learning About Early Learners and Augmentative Communication and Assistive Technology

**Author(s):** Burhart, L. J.
**Publication Date:** January 1993
**Review:** The article is a brief overview of what is being learned about augmentative communication and early learners. A general philosophy of augmentative communication is given with ten important building blocks that underlie this general philosophy. Also included are other titles to access concerning communication for early learners.

**Type of Material:** Article
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation
709. What is Word Prediction?

**Publisher:** National Center to Improve Practice in Special Education Through Technology, Media and Materials  
**Publication Date:** January 1998  
**Review:** This material is a brief definition of word prediction technology. It defines and describes the programs in general, and provides possible uses for the technology. It is not an in-depth report on word prediction, but gives the reader a starting point for more research.  
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Health Impairments, Learning Disabilities, Mental Health Impairments, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
**Alternate Formats:** Foreign Language - Spanish, Foreign Language - Spanish  
**Ordering Information:** NCIP  
[www2.edc.org/NCIP/library/wp/What_is.htm](http://www2.edc.org/NCIP/library/wp/What_is.htm)  
**Cost (As of Date Entered):** No Cost  
**Website:** [http://www2.edc.org/NCIP/library/wp/What_is.htm](http://www2.edc.org/NCIP/library/wp/What_is.htm)

710. What Makes A Good Evaluation/Assessment for Assistive Technology

**Author(s):** Decker, B.  
**Publisher:** Increasing Capabilities Access Network (ICAN)  
**Publication Date:** April 2004  
**Review:** This brochure provides an excellent overview of what should be expected from an assistive technology evaluation. The steps involved in the process of the evaluation all the way through follow-up and training. It is good for families beginning the assessment process as well as professionals who provide assessments as a guide to what should be included in a comprehensive evaluation.  
**Type of Material:** Brochure  
**Audience:** Service Providers  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired  
**Ordering Information:** ICAN  
2201 Brookwood Dr.Suite 117  
Little Rock, AR 72202  
800-828-2799  
**Website:** [http://www.arsinfo.net/ican/fs_adept.html](http://www.arsinfo.net/ican/fs_adept.html)
707. What is Assistive Technology?

Author(s): Mary Ellen Buning, PhD, OTR, ATP  
Publisher: Access-by-Design  
Publication Date: January 2001  
Review: Dr. Burning’s article is very informative as an overview of assistive technology and how it helps people "compensate" for any deficits caused by a disability or injury. Dr. Burning is careful in describing assistive technology as aiding "purposeful activities" of everyday life. She strongly suggests that it is vital for an occupational therapist to use assistive technology with their patients to help them in their "human occupations".

The article talks about how assistive technology can be used for various deficits, where to find other sources regarding assistive technology. This article is well written and understandable to anyone looking for more information on the combination of assistive technology and occupational therapy.

Type of Material: Article  
Audience: People with Disabilities  
Target Disability: General / Non-disability Specific  
Ordering Information: access through the website  

http://www.pitt.edu/~mbuning/whatisat.html  
Cost (As of Date Entered): free  
Website: http://www.access-by-design.com/journal/assist.htm

708. What is Low Vision?

Author(s): American Foundation for the Blind Aging Program  
Publisher: American Foundation for the Blind  
Publication Date: January 1998  
Review: This article provides an introduction to the term and condition of low vision. It explains what low vision is and what can cause it in a healthy aging eye. It differentiates between eye conditions that are correctable by prescription lenses or medical treatment and those that are not. The latter make up the category of "low vision". It presents some of the typical symptoms and remedies and encourages contact with an eye professional who specializes in low vision.

Type of Material: Article  
Audience: AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Visual Impairment / Blind  
Alternate Formats: Audio Tape, Braille, Large Print  
Ordering Information: American Foundation for the Blind  
800-232-3044  
www.afb.org  
Cost (As of Date Entered): No Cost
Review: This article provides suggestions to parents and teachers who are faced with assistive technology that doesn’t seem to be working. The author describes a set of possible problems and common concerns with respect to the use of assistive technology in the classroom. He also offers four steps to better integrate AT into a child’s learning process. The author also discusses a number of general practices that can help educators and paraprofessionals teach a child with learning disabilities.

Type of Material: Article
Audience: Educators, Parents / Family
Target Disability: Learning Disabilities
Ordering Information: Access via the website.
Website: http://www.ldonline.org/ld_indepth/technology/assistive_technology_when_it_doesnt_work.html

705. What Happens When Assistive Technology Doesn't Work? The Need for an Integrated Approach

Author(s): Leonard V. Pisano, Ph.D
Publisher: Assistive Technology and Education Connection
Publication Date: January 2002
Review: Leonard Pisano, Ph.D, evaluated the common problems associated with AT match/assessment failure and created a list of crucial questions to consider when faced with an AT student match that doesn’t work.

The article is divided into a series of sections addressing typical complaints first, then offering more detail by delving into development, implementation, monitoring, and integration questions formatted to guide the problem-solving sessions. Pisano’s article also includes four instructional strategies to help students (remediate, accommodate, circumvent, compensate) and examples of strategies and adaptations that are often successful.

Type of Material: Article
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge
Website: http://www.ldonline.org/article/6235

706. What is Assistive Technology?

Author(s): National Assistive Technology Research Institute
Publisher: National Assistive Technology Research Institute
Publication Date: January 2002
Review: This is a well written and easy to understand article that introduces the reader to the basics of assistive technology (AT). The article provides excellent definitions of AT devices and services and gives clear examples of each. The article also introduces the notion of an assistive technology continuum that ranges from no-tech to high-tech and discusses how that continuum should affect decisions made about acquiring or using AT.

This article is part of a series on this web site that defines AT and examines legal issues surrounding it. The article also discusses the implementation of AT in different environments and how to measure the quality of AT use and services.

Type of Material: Article
702. We See TV

Publisher: PZAZ Pages
Publication Date: January 2005
Review: We See TV has received quite a bit of press lately, thanks, in part, to the premiere of ABC’s primetime show "Blind Justice" and the company’s policy of having every aspect of their descriptive media reviewed by visually impaired personnel.

We See services include customized pricing, fast production turnover and a wide range of description, enhanced description, and closed captioning options. In addition to news and new products, the We See TV website includes information for companies interested in sponsoring described television. An "Introduction to the Industry" introduces people to the field of video description, providing some history and identifying some of the current issues in the field (i.e., the "Video Description Restoration Act").

Type of Material: Website
Audience: Educators, Parents / Family, People with Disabilities
Target Disability: Visual Impairment / Blind
Cost (As of Date Entered): no charge
Website: http://www.weseetv.com/

703. What are Assistive Listening Devices or ALDs?

Author(s): American Speech-Hearing-Language Association
Publisher: American Speech-Hearing-Language Association
Publication Date: January 1997
Review: This article introduces the reader to Assistive Listening Devices which can help someone with a hearing loss to communicate with the world. ALDs include personal FM systems, infrared systems, telephone amplifiers, and a variety of alerting devices. Special mention of ALD use for children in the educational environment is provided. A description of how FM systems work is given as well as legislation that addresses the provision of ALDs to children in school and adults in work or public environments.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Hearing Impairments / Deaf
Alternate Formats: Electronic, Electronic
Ordering Information: Download from web site
Cost (As of Date Entered): Free
Website: http://www.asha.org/public/hearing/treatment/assist_tech.htm

704. What Happens When Assistive Technology Doesn't Work: The Need for an Integrated Approach

Author(s): Leonard V. Pisano, Ph.D
Publisher: The Assistive Technology and Education Connection
Publication Date: January 2002
700. Webmath.com

**Author(s):** n/a  
**Publisher:** webmath.com  
**Publication Date:** January 2004  
**Review:** In the field of assistive technology, math programs are not as widespread as reading and writing tools. Webmath is a free site that students, teachers, and others can use to work out math problems, ask a math expert, or create online tests and assignments for students.

The material ranges from general K-8 math (including money skills) to algebra, geometry, trigonometry, calculus, and physics. It is not designed specifically for individuals with disabilities, but can be accessed by those who use a computer and who may have more success using keyboard or mouse access than using a pencil and paper.

The site can be used to have a problem solved or to create extra practice. It is easy to manipulate and follow and it is free.  
**Type of Material:** Website  
**Audience:** Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.webmath.com/index.html](http://www.webmath.com/index.html)

701. Web Usability Standards: Guaranteeing Access to All Users

**Author(s):** Christina Schindler  
**Publisher:** The College of New Jersey  
**Publication Date:** January 2003  
**Review:** This short article identifies criteria for development of web sites that are accessible by all individuals. As more hardware and software relating to Internet use becomes available, the temptation is to develop a web page using as much as possible, ie, video, animation, multiple fonts, pictures and sound tracks. These sites make it increasingly difficult for many people with disabilities to extract the content important to them in a timely manner.

A ‘usable’ web site is defined in this article as one that “...increases its users’ satisfaction and improves their ability to learn and remember the content of the site.” This article suggests that all web sites should support (1) all users, (2) all computer systems and (3) all web browsers. Guidelines have been developed and there are links to nine web sites that will provide further information.

Some factors are discussed further such as speed of access, content intended for the internet, current links, and search features. The need for the site to be visually pleasing, so content can be easily scanned is also noted. Finally there are some suggestions for the coding involved in developing a site.

This article would be of interest to those using the internet as an information source, as well as those developing web sites.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge
698. WATI Tools for Students with Autism Spectrum Disorder

Author(s): Penny Reed  
Publisher: Wisconsin Assistive Technology Initiative  
Publication Date: January 2002  
Review: It is difficult to find the right tools to assess a student who has been diagnosed with PDD or autism. The disability is confusing and the symptoms get more complicated with each diagnosis. WATI has developed a tool to address these needs. This article describes the process and assessment tool that has been developed to assess assistive technology for individuals with Autism. By utilizing certain information, the tool helps school systems and other professionals through a decision making process that is beneficial and specific to the problems associated with Autism.  
Type of Material: Resource Guide  
Audience: Educators  
Target Disability: Autism  
Alternate Formats: Electronic, Electronic  
Ordering Information: Free via the WATI website.  
Cost (As of Date Entered): none  
Website: http://www.wati.org/products/products.html

699. Web-4-All

Publisher: Adaptive Technology Resource Center, University of Toronto  
Publication Date: January 2005  
Review: Generally speaking, AT professionals and people with disabilities recognize that web-accessibility software is limited and relatively immobile. Unless users have multiple copies of the software on any computer that they use regularly, most people discover that the access is not effective; and even with the best software, some applications are limited to a single form of accessibility (screen reading, text enlargement, browser adjustments, system preferences, assistive technology interfacing).

What if computer users could have it all, an individual key to web accessibility Nirvana? Highly personalized and highly mobile web access software is the goal of the Canadian project known as Web-4-All. The Web-4-All website introduces the ideas behind the project (mobile software on a smart card, with session to session interfacing for public access terminals), explains the software and offers a demo. These ideas, and the software that resulted, come from the conscientious efforts of Web-4-All, ATRC (Adaptive Technology Resource Centre) and IMS Global Learning Consortium. This is a pilot project; cost of the technology to users will be determined in the future.  
Type of Material: Website  
Audience: AT Professionals, Educators, People with Disabilities, Service Providers  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): To be determined  
Website: http://web4all.atrc.utoronto.ca/html/english/home_e.html
Review: "Voice Recognition allows a user to use his/her voice as an input device. Voice recognition may be used to dictate text into the computer or to give commands to the computer (such as opening application programs, pulling down menus, or saving work)."
This info sheet presents a concise introduction to the subject of voice recognition, explaining the difference between discrete and continuous speech patterns. It provides the reader with information about the process that computers use to "learn" the users voice and patterns, and explains (in very general terms) how computers predicts what the user is going to say. There is a short section on questions to consider about compatibility with one's computer system, and a list of available software for various operating systems (with links to the appropriate web pages.) The last section offers a wealth of links to other sites with information and discussion about voice recognition. This section would be extremely helpful to individuals looking for more information about using voice recognition.

Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Health Impairments, Learning Disabilities, Mobility Impaired, Multiple Sclerosis, Muscular Dystrophy, Orthopedically Impaired, ADHD/ADD
Alternate Formats: Electronic, Electronic
Ordering Information: http://www.utoronto.ca/atrc/reference/tech/voicerecog.html
Cost (As of Date Entered): free
Website: http://www.utoronto.ca/atrc/reference/tech/voicerecog.html
Review: This article is a review of the Voice Mate, a handheld personal organizer where all of the functions are paired with voice instructions so that a person with vision impairments can easily navigate the organizer. The phone book, memo pad, appointment calendar, clock, and calculator can be delivered to the user through a computer-generated voice. There is also a recording device for the user to record and play back personal messages. The buttons on the device are large and easy to manipulate, and the commands generated by the user are repeated back by the device to verify. The author goes on to describe his experience using the Voice Mate, and makes suggestions designed to make the device more user friendly. The article identifies the website at which one can order the Voice Mate.

Type of Material: Article
Audience: People with Disabilities
Target Disability: Visual Impairment / Blind
Cost (As of Date Entered): free to read online
Website: http://www.businessweek.com/bwdaily/dnflash/jul2001/nf20010718_336.htm

695. Voice Output Communication Aids

Author(s): SNOW
Publisher: SNOW
Publication Date: January 2002
Review: This article, published by Special Needs Opportunity Window (SNOW), is valuable for someone interested in learning more about augmentative communication. The article begins by defining VOCAs (voice output communication aids) and by providing considerations for selecting an augmentative communication device (selection method, display type, feedback, encoding, and etc). Next the article lists several major vendors of augmentative communication devices (PRC, Zygo, Words, Mayer Johnson, Ablenet, Crestwood and Abilitations), offering a description of their products, and providing a link to their websites. Finally, SNOW provides the reader with some excellent links to learn more about augmentative communication. Some of the links are to CAMA (AAC manufacturers' association) and Buekleman and Mirenda's (leaders in the AAC field) AAC glossary. Please note the link to Holly.com was not accurate.
Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Communication and Speech
Alternate Formats: Electronic, Electronic
Ordering Information: SNOW Curriculum Coordinator
Adaptive Technology Resource Centre
130 St. George Street, 1st Floor
Toronto, Ontario M5S 3H1
Phone: (416) 946-8301
Fax: (416) 978-7705
Cost (As of Date Entered): No charge to access information online
Website: http://snow.utoronto.ca/technology/products/voice-output.html

696. Voice Recognition
692. Vocal Hygiene for Voice Recognition Users

Author(s): North Dakota Office of Vocational Rehabilitation, Department of Human Services.
Publisher: IPAT, Interagency Program for Assistive Technology
Publication Date: January 1998
Review: This information sheet addresses a little considered part of voice recognition systems, that of the strain prolonged use might put on the vocal cords. The fact sheet discusses many ways to avoid straining the vocal cords, including tips on pitch, duration of dictation, posture, and the importance of keeping the vocal cords moist. It lists activities and environments that are detrimental to the vocal cords and offers suggestions on how to avoid harmful activities. This is a well written information sheet, offering tips that are important for users of voice recognition systems.
Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Learning Disabilities, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired
Ordering Information: Available online, or via email.
Cost (As of Date Entered): No Charge
Website: http://www.ndipat.org./products/fact/comp_impl/voicehyg.htm

693. Voice Input Computer Systems

Author(s): Assistive Technology Quick Reference Series
Publisher: Tech Connections/CATEA
Publication Date: January 2001
Review: This short article discusses the use of voice input systems to create text in word processing. Using a question and answer format, it covers frequently asked questions about voice recognition. It is concise and to the point, and also lists additional Web resources for additional information on using voice recognition to input text.
Type of Material: Article
Audience: Service Providers
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Health Impairments, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Spina Bifida, Orthopedically Impaired
Ordering Information: 490 Tenth St, NW
Atlanta, GA 30318
1-877 TEK SEEK
Cost (As of Date Entered): Free on website
Website: http://www.catea.org/quickrefguides/guides/VoiceInput.php

694. Voice Mate: The Handheld That Talks

Author(s): John M. Williams
Publisher: Business Week
Those interested can link to the Brigadoon blog, offered in the article where users can request to join the virtual world. Also worthwhile is taking time to check out the link to Braintalk, connecting users to in-depth information and discussion regarding neurological disorders.

**Type of Material:** Article  
**Audience:** Parents / Family, People with Disabilities  
**Target Disability:** Autism, Neurological Disorders  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.msnbc.msn.com/id/7012645/](http://www.msnbc.msn.com/id/7012645/)

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### 690. Vision and Dyslexia: What's It All About?

**Author(s):** iANSYST, Ltd.  
**Publisher:** iANSYST, Ltd.  
**Publication Date:** January 2003  
**Review:** "Vision and Dyslexia" is an article on the website dyslexic.com which discusses how using colored overlays, glasses or lamps can reduce glare and benefit reading. The article provides website addresses and answers to frequently asked questions on the subject. According to research cited in the article, some individuals (an estimated 20% of the population) may have difficulty reading because of Meares-Irlen Syndrome. Meares-Irlen Syndrome (difficulty reading because of glare on a printed page) can affect people with and without dyslexia. Colored overlays, special lamps, or glasses can reduce this glare.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Visual Impairment / Blind  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Available via the Website address below.  
**Cost (As of Date Entered):** No charge  

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### 691. Visiting an Assistive Technology Center

**Author(s):** Mitch Jeserich  
**Publisher:** AT Journal  
**Publication Date:** January 2003  
**Review:** The article describes the author’s visit to the Center for Assistive Technology in Berkeley, CA. His tour features the Center’s technology devices, especially those designed to make using a computer easier for individuals, including children, "with almost any type of disability." According to the Center’s director, "50% of accommodations cost nothing."

**Type of Material:** Article  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Available on the website.  
**Cost (As of Date Entered):** Free
Unfortunately, although the guide is available in print, the web-based catalogue and the Amazon-hosted ToysRUs site do not list the catalogue contact information for those shoppers who would prefer to shop offline. Those patient enough to handle this 50+ page toy guide online may want to enlarge the text in order to read it comfortably. That option is available at the left side of the screen as "Close-up View." Users must wait for the image to sharpen.

For those willing to hunt for the printed version of the toy guide, the ToysRUs guest services and corporate information is included.

**Type of Material:** Catalog  
**Audience:** Parents / Family  
**Target Disability:** General / Non-disability Specific  

**Ordering Information:** If you have questions pertaining to Toys"R"Us physical stores, policies, and promotional mailings, please contact the Toys"R"Us Guest Services by sending an e-mail(https://www2.toysrus.com/guest/contUs.cfm) or by calling 1-888-869-7932. Also try visiting the Toys"R"Us corporate Web site at http://www.toysrusinc.com.

**Cost (As of Date Entered):** No charge  
**Website:** [http://www.amazon.com/exec/obidos/tg/browse/-/642868/ref%3Dt%5Fi%5Fsto%5Fftr%5F3t/103-9312213-2750269](http://www.amazon.com/exec/obidos/tg/browse/-/642868/ref%3Dt%5Fi%5Fsto%5Fftr%5F3t/103-9312213-2750269)

### 689. Virtual World Teaches Real-World Skills

**Author(s):** Tom Loftus  
**Publisher:** MSNBC  
**Publication Date:** January 2005  
**Review:** This article describes how virtual technology has the potential to teach social skills to people with neurological disorders, including autism and Asperger’s disease.

The virtual world, an island called Brigadoon, is a 3D virtual environment created by gaming technology from Second Life. Users create their own avatars, build digital houses and seek out friends in this virtual community. They are free to create an interactive life through technology that they may otherwise have had difficulty with in 'real life.'

John Lester is an information systems director at Massachusetts General Hospital who founded Braintalk Communities which is a self-help support group for people with neurological conditions. Despite concerns that repetitively engaging in video gaming can isolate people with Asperger’s more by further limiting their engagement in social situations, initial research shows that these types of virtual realities may help them with socializing.
Author(s): John M. Williams  
Publisher: Internet TV for Assistive Technology  
Publication Date: January 2004  
Review: The information contained in this article, while relating to a specific product, is also useful to those with learning disabilities and those who assist them as they work to improve their abilities to communicate with others. The product is Texthelp’s Read & Write Gold program developed by Northern Ireland’s Texthelp Systems Ltd. (www.texthelp.com).

The program is described as flexible and versatile. The main feature is the ability to be used with mainstream programs, rather than as a stand alone application. Some of the features include highlighting words while they are spoken, and a phonetic spell checker with color-coding ability. Spelling suggestions and dictionary definitions are spoken, and context-based word predication is available.

Additional features include logs that record mistakes by date and type, a large 180,000 word dictionary and the ability to scan and save images in different formats. Web-highlighting is available with visual and audible feedback to aid concentration. A pronunciation tutor separates words into syllables for easy recognition and as an aid for those needing information about pronunciation of English.

The advantage of such a program for those with early identification of learning disabilities is stressed for the ongoing learning and stimulation that will assist them with the written and spoken word. With support, the many features of this program could allow those with learning disabilities to become proficient and more independent in their communications.

Type of Material: Article  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Learning Disabilities  
Alternate Formats: Electronic, Electronic  
Ordering Information: Texthelp Systems Ltd  

688. Virtual Toy Guide for Differently Abled Kids

Publisher: Geoffrey Inc.  
Publication Date: January 2004  
Review: Amazon.com and ToysRUs.com partnered with the National Lekotek Center and the United Parents’ Syndicate on Disabilities to create the Toy Guide for Differently Abled Kids. The Guide is a multipage print and virtual catalogue of toys suitable for children with a variety of special needs. The Guide is sorted into the following categories to help parents and family members discover appropriate toys for children with disabilities:
The comprehensive descriptions of how each student utilized the software and the effectiveness of its use are helpful to parents and educators looking for solutions in the classroom and provide insights to professionals in the disability field as well as software developers and accessibility specialists.

**Type of Material:** Report  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Mobility Impaired, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Orthopedically Impaired  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://jset.unlv.edu/19.3/tumlin/first.html](http://jset.unlv.edu/19.3/tumlin/first.html)

### 685. Valuing Life, Whether Disabled or Not

**Author(s):** Ben Mattlin  
**Publisher:** NPR.org  
**Publication Date:** January 2005  
**Review:** Writer Ben Mattlin presents his insights into the value of life as a disabled person and creates striking commentary on society's perception of death and the disabled. This audio excerpt (from a December 7, 2005, NPR Morning Edition Broadcast) is precisely 3 minutes and 4 seconds in length; but if you pay attention to it--whether as a person with a disability, or as a family member, or friend, or stranger--it will stay with you far longer than the whisper of airtime it was allotted.  
**Type of Material:** Video  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  

### 686. Vendors Specializing in Technology for the Blind Web Site

**Publication Date:** April 2004  
**Review:** This Web site provides a listing of 59 vendors who specialize in products for those who are blind or have low vision. Products include: communication devices, books, software, greeting cards, chocolate guide dogs, magnifiers, and readers. E-mail addresses of the sales departments of each company are provided to facilitate ordering.  
**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Visual Impairment / Blind  
**Cost (As of Date Entered):** No Cost  
**Website:** [http://www.nyise.org/vendors.htm](http://www.nyise.org/vendors.htm)

### 687. Versatile Read & Write Program Offers Opportunities for People with Learning Disabilities
Review: This article focuses on how computers and writing/word processing software can be used in the classroom or at home to enhance students' performance. The article includes sections on word processors, talking word processors, writing aids, word prediction, abbreviations, writing activities, speech recognition programs, skill development, printing, and resources.

Also contained are lists of the vendors of these products and other helpful resources.

The section on word processors explains features common to most word processors, such as the ability to customize toolbars, use auto correct and word expansion. There is also a pdf file with information on links to free and commercial online resources for handwriting type fonts.

The section on writing aids includes information on dictionaries, thesauruses, spell checkers, encyclopedias, grammar checkers, and organization/mapping software. Each suggested software title has a link to the web site of the company that publishes it.

The section on word prediction is short, but offers many titles with this feature. Each title has a link to its publisher's web site.

There is a section on abbreviation expansion programs. Abbreviation expansion programs, when paired with word prediction programs make typing more efficient and can also make computer commands less complex. The sidebar of this section includes a pdf file that lists the software, vendor, features and price of each item.

The section on developing skills discusses software that can be used to improve spelling skills, punctuation, grammar, and vocabulary. Each title listed has a link to the publisher's web site.

The section on speech or voice recognition is very good, though short. It has links to other sites with more in-depth information.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: View Online
Cost (As of Date Entered): No cost to review online
Website: http://www.atto.buffalo.edu/registered/ATBasics/Curriculum/Writing/index.php

684. Using Word Prediction Software to Increase Typing Fluency with Students with Physical Disabilities

Author(s): Jennifer Tumlin and Kathryn Wolff-Heller
Publisher: JSet ejournal
Publication Date: January 2002
Review: This report was undertaken to find effective alternatives to writing for students with physical disabilities. Keyboarding is often implemented to help students who can't easily write to successfully complete written assignments. The researchers also looked at options for accessing the computer other than through a standard keyboard. The objective was to determine whether students with physical disabilities who used a computer through whatever access was most effective could utilize word prediction software to reduce "keystrokes" and improve the quality of their written work.

Four students with differing abilities participated in the study and the results are shared in great detail.
682. Using the Computer for Reading

Author(s): Jennifer Murphy
Publisher: Assistive Technology Training Online Project
Publication Date: January 2002
Review: This article extensively covers using the computer and specific software to aid a person who has a reading disability. It describes talking word processors, their common features and how these features may be best used for an individual who struggles with reading.

Text and screen readers are covered but not enough information or product information is provided to give the reader a good idea of what these products are and how they are used.

Scan to speak (also known as text to speech) programs and their potential uses are discussed as well as a description of the steps needed to translate scanned items into digital format.

Screen magnification products are explained and this section also describes how it is possible to use the magnification feature that is contained within particular operating systems. E-books and e-readers are detailed along a list of where they can be obtained. There is also information about free eReaders.

This article provides resources for on-line books, reading curricula, literacy resources, and specific software to help with reading skills development.

This article does a good job explaining features and how they can be used for a specific skill deficit. And although the resource lists are not comprehensive, enough information is given so that a reader is able to continue their research.

Type of Material: Resource Guide
Audience: AT Professionals, Educators
Target Disability: Developmental Disabilities, Learning Disabilities
Ordering Information: Read on-line for free and it can be printed out as well.
Cost (As of Date Entered): none
Website: http://atto.buffalo.edu/registered/ATBasics/Curriculum/Reading/index.php

683. Using the Computer for Writing, AT Basics

Author(s): University at Buffalo
Publisher: Assistive Technology Training Online Project
Publication Date: January 2000
Review: Originally published in the November/December 2005 issue of Teaching Exceptional Children, Professor Spencer Salend’s article "Using Technology to Teach about Individual Differences Related to Disabilities," offers educators important insights into the increasing need to teach students about disabilities without falling into stereotypes or relying on common misconceptions.

Salend focuses on the variety of technological tools educators can use and emphasizes the importance of evaluating the materials for suitability according to what is being taught and how the materials will be used to support the awareness curriculum. In addition to discussing curriculum, materials, and methods to integrate technology into classroom and school-wide awareness events, Salend presents several ways that technology can help to teach disability awareness correctly and offers a flow chart (Figure 1, pg. 34) that helps educators evaluate web sites for credibility, content, design, accessibility, and attention to individual differences.

Type of Material: Article
Audience: Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://journals.sped.org/TEC/Articles/Salend.pdf

681. Using the Computer for Math, AT Basics

Author(s): University at Buffalo
Publisher: Assistive Technology Training Online Project
Publication Date: January 2000
Review: This well written article focuses on how computers and math software can be used in the classroom or at home to enhance students’ learning opportunities. It "identifies specific tools to help students apply math in real world settings and to solve problems through a variety of alternate means." It is broken down into several areas, including calculators, manipulatives, worksheets, money and coins, time, curricular software, and online resources. Each section gives information on different software packages currently available, with links to the appropriate websites, as well as information about other online resources. At the time of this review, all the links were accurate.

This is an excellent resource for the parent or education professional who is looking for information on software that enhances math education.

The Calculator section includes information on system calculators, as well as information about add on software available for purchase and free downloading, and calculators to use online.

The sections on manipulation, worksheets, money and coins, time, and curricular software give good examples of software available for those areas, and include links to the publishers of these software programs.

In several or the sections of this article, there are additional resources such as a pdf file of vendors of math software, with all or their contact information, and information about non computer-based math aids such as the number line and more typical calculator.

Overall, I feel that this article is a very good resource for the parent or education professional who is looking for information on software that enhances math education.
679. Using Technology to Enhance Cues for Children with Low Vision

Author(s): Harold C. Griffin, Sarah C. Williams, M.Lynne Davis and Melissa Engleman
Publisher: Council for Exceptional Children
Publication Date: January 2002
Review: This article comes from the Department of Curriculum and Instruction, Area of Special Education, East Carolina University, Greenville, NC, (2002) and provides a great deal of information through references, tables of equipment, and a discussion of a model for learning and function for individuals with low vision. This term is quite clearly defined, and encompasses about 90 percent of the population with visual impairments.

Further explanation is given about the three parts of the model: (1) Visual Abilities, (2) Stored and Available Individuality, and (3) Environmental Cues. Visual abilities are described as acuity, visual fields, mobility, brain functions and light and color reception. Stored and Available Individuality is described as cognition, sensory development integration, perception, psychological make-up and physical make-up. These areas are not further discussed in the article.

The majority of the article concerns technology and is devoted to the area of Environmental Cues, which are colors and contrasts, color, space and illumination. A table is presented with information about each of these environmental cues, listing the technology applications and vendor/author contact. Twenty-three different items are listed here with vendor and contact information. Over twenty-five references give the origins of the information presented.

The article would be of most value to teachers of children with low vision, as well as others, of any age, who experience the challenges presented by low vision.

Type of Material: Article
Audience: Service Providers
Target Disability: Autism, ADHD/ADD, Apraxia of Speech
Alternate Formats: Foreign Language - Other, Foreign Language - Other
Cost (As of Date Entered): No charge
Website: http://journals.sped.org/ec/archive_articles/VOL.35NO.2NOVDEC2002_TEC_Article%205.pdf

680. Using Technology to Teach about Individual Differences Related to Disabilities

Author(s): Spencer J. Salend
Publisher: Council For Exceptional Children
Publication Date: January 2005
Review: This article discusses the use of PDAs or personal data assistants such as the Palm Pilot for educational use for students with disabilities. Ms. Struck, the author, says that in the future classrooms may become paperless. The teacher will "beam" assignments to students via infrared technology and students will beam papers and classwork back to the teacher. She believes that this technology may be especially helpful for students with "mild" disabilities such as learning disabilities, behavioral disorders or mild mental retardation. She also considers that students of middle school and high school age are the appropriate age to use PDAs for their schoolwork.

The article continues by discussing software such as FreeWrite Version 2.2, a word processing program with a 109,000 word spell checker. Other possible applications for PDAs which can be helpful to students with disabilities are: HI-CE, a program designed for students to develop and share concept maps, Go’nTell, a program which can be used with a digital camera to assemble a virtual scrapbook for developing a web site and Bubble Blaster, a program which provides drill and practice opportunities for students.

Type of Material: Article
Audience: Service Providers
Target Disability: Learning Disabilities, Mental Retardation
Alternate Formats: Electronic, Electronic
Ordering Information: Download from web site
Cost (As of Date Entered): Free on web site
Website: http://occupational-therapy.advanceweb.com/common/editorial/editorial.aspx?cc=13862

678. Using Perl to Enable the Disabled

Author(s): Jouke Visser
Publisher: perl.com
Publication Date: January 2003
Review: Perl stands for "Practical Extraction and Report Language". The programming language of choice for writing Web server applications, Perl is used for creating interactive forms and a slew of other CGI programs. This free-licensed language comes in versions for Windows, Macintosh, Novell NetWare, and Unix. Perl scripts are available free of charge all over the Internet. This short article describes a father's development of a communication system for his daughter when other technology on the market did not 'fit' her unique needs. Using Perl, he wrote a program named pVoice. This made it possible for the girl to use the computer for communication; choosing words and symbols initially for general communication, and later, for writing words.
pVoice was posted on the internet in 2001 and with the assistance of other developers, pVoice 2, pStory, and pType are now available free of charge.
Links throughout the article give definitions of Perl, samples of each of the above programs and access to free downloads.
While there is a lot of technical information, best understood by computer programmers, it might also serve to inform others who are looking for an integrated program that will assist with speech and writing using the computer. The software is an open source project, and a free alternative to other programs and devices. It is currently available in Dutch and English.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Learning Disabilities, Mental Health Impairments, Mental Retardation,
Review: It takes a great deal of time to create new "setups" for on-screen keyboards which will be functional for classroom activities. The Call Centre wrote this chapter in the book Special Access Technologies to help educators use this technology for children with disabilities in their classrooms. This article can be difficult to read and is somewhat dated (it was written in 1998). However, it has the potential to be helpful to the right audience because it is so specialized. The authors discuss word banks, word prediction, writing with symbols, accessing math, drawing and worksheets, screen reading, and hot spots (transparent markers on the computer screen for scanning).

Type of Material: Article
Audience: Educators
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Learning Disabilities, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired
Alternate Formats: Electronic, Electronic
Ordering Information: The CALL Centre

University of Edinburgh
Paterson’s Land
Holyrood Road
Edinburgh
EH8 8AQ
Scotland
Tel: 0131 651 6235/6236
(International: 44 131 651 6235/6236)
Fax: 0131 651 6234
(International: 44 131 651 6234)
Email: call.centre@ed.ac.uk

Cost (As of Date Entered): No charge

677. Using PDAs for Assistance

Author(s): Miriam Struck, MA, OTR/L, ATP
Publisher: ADVANCE for Occupational Therapy Practitioners
Publication Date: January 2003
technology changes, the widening concerns about proper training and assessment, and possible implications for AT in the future.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.ciconline.org/NR/rdonlyres/exh2t67gmbtm4m7gih6u4whnkprjfrdvq2flvkjdpntntszedrkskvc7oeaurojvcjncpw3bexmkf6yungo2ulq2ph/T-Win05-IsATWorking.pdf](http://www.ciconline.org/NR/rdonlyres/exh2t67gmbtm4m7gih6u4whnkprjfrdvq2flvkjdpntntszedrkskvc7oeaurojvcjncpw3bexmkf6yungo2ulq2ph/T-Win05-IsATWorking.pdf)

### 674. Using Experts to Justify Your Technology Need

**Author(s):** Illinois Assistive Technology Project (IATP)  
**Publisher:** Illinois Assistive Technology Project (IATP)  
**Publication Date:** January 1998  
**Review:** This brochure primarily addresses what goes into an assistive technology evaluation. But more specifically, when there is a need for mediation over a request for a piece of technology, it discusses what experts are utilized, their qualifications, and how they determine the correct device needed.  
**Type of Material:** Brochure  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Website:** [http://www.iltech.org/pros_dover.asp](http://www.iltech.org/pros_dover.asp)

### 675. Using Flexible Technology to Meet the Needs of Diverse Learners: What Teachers Can Do

**Author(s):** Lisa Wahl and Julie Duffield  
**Publisher:** WestEd  
**Publication Date:** January 2005  
**Review:** Schools and teachers must assure that all children have access to the standard curriculum per No Child Left Behind (NCLB). However, students in classrooms are very diverse learners. Some perform lower than grade level and some perform higher than grade level; some have disabilities and some are learning English as they attend school. These factors challenge most teachers. Less than half the teachers who have special education students in their general education classrooms feel they have the skills to teach them.

This excellent article discusses ways teachers can use technology, including: the classroom computer, graphic organizers, Internet resources, and readily available software such as Microsoft Word, and Kid Pix, to assure that diverse learners succeed in the general education classroom. The authors also provide tips to help schools and districts support the use of technology in the classroom.  
**Type of Material:** Article  
**Audience:** Educators  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.wested.org/online_pubs/kn-05-01.pdf](http://www.wested.org/online_pubs/kn-05-01.pdf)

### 676. Using On-screen Keyboards to Access the Curriculum
672. Using Assistive Technology For a Student with Multiple Disabilities

Author(s): Holly Cooper
Publisher: Texas School for the Blind and Visually Impaired
Publication Date: January 2003
Review: There are few articles that portray the scope of difficulties that a family confronts when raising a child with multiple disabilities. Problems range from seating systems, access points, funding, support from school, knowledge, and many other issues. This article, although brief, describes how a family has conquered some of the obstacles through technology. This article was written by a technology consultant who has helped this family find support through technology for a daughter who is legally blind, cerebral palsy, communication difficulties, and uses switches to access her environment and learn. This article gives insight and may provide answers for others who have a client, family member, or student with similar difficulties.

673. Using AT: Is It Working?

Author(s): Margaret E. Bausch, ED.D., Ted S. Hasselbring, ED.D.
Publisher: Cable In the Classroom
Publication Date: January 2005
Review: Margaret E. Bausch, ED.D. and Ted S. Hasselbring, ED.D. evaluate the effectiveness of AT in the classroom and offer insight into and preliminary findings from their recent studies with the National Assistive Technology Research Institute (NATRI) in this article from the Cable in the Classroom publication "Threshold." The article provides evidence of the current uses of AT in the classroom, explores the educator's perceptions of AT and also notes the evolution of uses as

Author(s): Microsoft  
Publisher: Microsoft Press  
Publication Date: January 2005  
Review: This is a four-chapter publication from Microsoft that has abundant information and resources for educators, parents and others interested in accessible technology.

As with other Microsoft products related to accessible technology, the publication is well researched and presents different types of useful information including demographics, legislation, case studies, a great AT flow chart and links to free Microsoft accessibility product information. Features that are useful to promote access for people with a variety of disabilities are identified.

The most important emphasis that runs though all the chapters can be summarized with this quote from the book. "Through creativity and ingenuity, it is the responsibility of the people who design products, services, and facilities to make an individual's disability irrelevant." The profiles of real people included in the text illustrate this thinking.

Type of Material: Book  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: General / Non-disability Specific, Learning Disabilities, Multiple Disabilities  
Cost (As of Date Entered): no charge  

671. Using a PDA in Today’s Classroom

Author(s): Rucker, Chauncey  
Publisher: ConnSENSE  
Publication Date: January 2002  
Review: While the title of this article is Using a PDA in the Classroom, the author not only discusses PDAs, but also discusses the portable notetaker, Alphasmart, and the newer, more powerful version of the Alphasmart, the Dana.

In his discussion of PDAs the author lists a variety of software, freeware, and features that he believes make the PDA a very good piece of equipment for the classroom. He discusses how functional the Infrared-sending feature makes the PDA in sharing information and in communicating. It describes a utility called Filebox, that allows one to store files from non-compatible software on the PDA for transport or to send to other PDA users. He gives several examples of how the PDA could be used in the classroom or on field trips.

The discussion of the Alphasmart, a portable notetaker with an almost full-size keyboard, includes information on various ways that the Alphasmart can be used within the classroom, and adaptations available to make it more useful to students with disabilities, such as the Co:Writer applet.

The Dana looks very similar to the Alphasmart, with the addition of a larger screen. The discussion of the Dana gives information about the operating system, which is the same as the PDA’s, and the various ways that the keyboard can be used for additional classroom activities. The Dana has all the features of the PDA, with a larger keyboard and much larger screen, and can use all of the software available to PDAs.
669. Use Technology to Increase Communication with Homebound Students

Author(s): Missouri Technology Center for Special Education
Publisher: Missouri Department of Elementary and Secondary Education
Publication Date: January 1999
Review: When students have to receive school services in their homes, there are many difficulties that arise such as student isolation and inconsistencies between home and school instruction. The use of technology may help alleviate some of those problems. This article outlines many types of technology that might be used to allow a student to be included in the classroom through distance learning or other types of approaches. It follows a clear outline and provides ideas ranging from low tech to more sophisticated suggestions that could be utilized in most classroom settings. It also includes some good internet Web sites that are valuable reference points.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired
Ordering Information: Missouri Department of Elementary and Secondary Education
P.O. Box 480
Jefferson City, MO 65102
573-751-4212 Voice
573-751-8613 Fax
Cost (As of Date Entered): No Cost
667. Use of Computer Technology to Help Students with Special Needs

Author(s): Ted S. Hasselbring and Candyce H. Williams Glaser  
Publisher: Children and Computer Technology, Vol 10, No 2, Fall/Winter 2000  
Publication Date: January 2000  
Review: This is a lengthy article (21 pages) with a substantial (62) number of references that develops the background on the use of technology in education and relates this to students with specific types of disabilities and the percentage of these disabilities as they occur in the general population.

A case is made for the fact that students with disabilities may benefit more than others from the technology that takes their special and individual needs into account. Technology is defined and described for a wide range of students, from those with mild learning disabilities to those with severe physical disabilities.

The authors also acknowledge the obstacles to use of this technology such as the lack of teacher training and cost of the materials. Strategies for these problems are described and the essential role of the individual teacher is noted through the observation that improved learning outcomes are due to improvement in teaching rather than use of technology.

This article covers much basic information, but it also gives details not usually found in a review article. It would be useful for those developing a program accommodating students with a wide range of disabilities, and helpful for prioritizing the types of technology that might be required, depending on the occurrence of that disability in the general population. While the obstacles to use of this technology are often present, it is possible to work towards the desired outcome of improving learning through technology for students with disabilities.

Type of Material: Article  
Audience: Service Providers  
Target Disability: General / Non-disability Specific  
Ordering Information: Access via the website or print copies may be ordered through: circulation@futureofchildren.org

Sign up for email newsletter and order journal through website, www.futureofchildren.org  
Cost (As of Date Entered): Free on the website  
Website: http://www.futureofchildren.org/usr_doc/vol10no2Art5.pdf

668. Use Technology to Improve One-Handed Keyboarding Skills
665. Update on Continuous Speech

Publisher: Speak to Write
Publication Date: January 1999
Review: This is an article from the Speak to Write Web site, a site devoted to providing up-to-date information about the ever-changing field of speech recognition. The article provides a brief history of speech recognition software as well as updated information on continuous speech voice recognition technology. The article outlines the pitfalls that this type of technology poses for children and people with disabilities.
Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Health Impairments, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired
Alternate Formats: Large Print, Large Print
Cost (As of Date Entered): No Cost
Website: http://www.edc.org/spk2wrt/contsp.html

666. Use of Computers for Augmentative Alternative Communication

Author(s): Ability Hub
Publisher: Ability Hub
Publication Date: January 2003
Review: The title "Use of Computers for Augmentative Alternative Communication", is somewhat misleading because much of the article is dedicated to stand alone AAC devices as well as software for AAC. The reader should follow all the links to the pages on electronic communication device and AAC software. The authors provide minimal background information on AAC. However, the links on the first page to web sites such as YAACK, AAC Institute, Speechville Express and Communication Connects are some of the best resources on the web for finding out more about augmentative communication.

This article does provide detailed descriptions and color photographs of high end AAC devices such as the Dynavox, Dynamite, Springboard, Pathfinder and Lightwrighter and links to vendor websites. It also provides detailed information about software from Gus!, Words Plus and Speaking Dynamically that can be used with a laptop or desktop computer to make it serve as a communication device.
Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Communication and Speech
Alternate Formats: Electronic, Electronic
Ordering Information: Download from web site or AbilityHub
663. Universal Design and IT: Ensuring That Information Technology is Accessible to People with Disabilities

Author(s): William Miller and Kathy Gips
Publisher: New England ADA & Accessible IT Center, Adaptive Environments
Publication Date: January 2005
Review: This PowerPoint presentation discusses and demonstrates assistive technology that people with various disabilities use to access Web content. The authors review Web accessibility guidelines, propose design solutions, and discuss evaluating your Web site for accessibility. Paired with the presentation is a list of relevant resources.

Type of Material: Resource Guide
Audience: AT Professionals, Parents / Family, Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://atto.buffalo.edu/registered/ATBasics/Populations/UDesign/index.php

664. Universal Design with Technology

Author(s): Paul Horwitz and Robert Tinker
Publisher: Concord Consortium
Publication Date: January 2005
Review: The concept of Universal Design is to make it possible to teach to individuals with many different requirements by using varying degrees of technology. The idea of developing technology to meet a broad variety of individual needs is called Universal Design and while progress has been made in the teaching of reading, this has not been true in the area of mathematics. The Concord Consortium is presently working on the area of algebra with graphs that will generate text and verbal descriptions.

This will be accomplished by using varying screen display options which can be controlled by the teacher or by the student. Audio descriptions can be used with simple lines and animations, or with other effects to make the point.

There will be several different alternatives such as text, graphs, tables, algebraic expressions and animations, thus increasing the possibilities of the student finding some part that will facilitate his learning. In addition these different assisting options are planned to be used singly, or by adding one at a time, until the student is able to follow and concepts and be in control of her own learning. Feedback will be available to teachers to help them identify the methods that are most useful to one or more students.

Type of Material: Report
Audience: AT Professionals, Educators, Parents / Family, Rehabilitation Professionals
Parents are encouraged to ask their child’s teacher, therapist, or other health professional to help them obtain an evaluation through their local school district or local college or university program. This can be started as soon as a delay in acquiring and using speech becomes evident. A simplified reference to the 1997 funding of IDEA (Individuals with Disabilities Education Act) may be somewhat misleading to parents who read this as a guarantee that their child will be provided with AAC in the school setting; this is determined through the evaluation process with each individual considered carefully. While there are legal mandates for consideration of Assistive Technology in schools, readers will find these laws defined more clearly elsewhere.

Two short pop up links add real life examples to the article, and a description of an Assistive Technology Team is provided as well.

**Type of Material:** Article  
**Audience:** People with Disabilities  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Learning Disabilities, Mental Retardation, Neurological Disorders, ADHD/ADD, Apraxia of Speech  
**Cost (As of Date Entered):** None  
**Website:** [http://www.pbs.org/parents/inclusivecommunities/augmentative.html](http://www.pbs.org/parents/inclusivecommunities/augmentative.html)

### 662. Universal Design

**Author(s):** Assistive Technology Training Online Project  
**Publisher:** University of Buffalo Center for Assistive Technology  
**Publication Date:** January 2000  
**Review:** This excellent training module, available online, was developed by the University of Buffalo Center for Assistive Technology. The ATTO Universal Design module discusses the importance of teachers varying the ways they deliver homework, make assignments and test students' comprehension. Educational technologies which have universal designs for learning built in will "allow all students to succeed."

The training module provides the reader with Web resources for general information on Universal Design for Learning as well as provides statistics on the prevalence of use of technology in the classroom.

The training module is divided into sections which discuss ways to display information, amplify sound, and modify video (captioning and describing). It also provides information about electronic learning tools, reference materials, computers, concept mapping, personal digital assistants, and PDA notetakers.

**Type of Material:** Training Material  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Assistive Technology Training Online Project  
University at Buffalo  
Center for Assistive Technology  
515 Kimball Tower  
Buffalo, New York 14214
**Publication Date:** January 2001  
**Review:** This fact sheet, published by the American Occupational Therapy Association (AOTA), gives a brief summary of autism, highlighting topics such as what parents and family can do for their children, and how occupational therapy can provide assistance. The AOTA suggests ways of finding an occupational therapist and provides other resources for more information.  
**Type of Material:** Infosheet / Fact sheet  
**Audience:** Parents / Family  
**Target Disability:** Autism  
**Ordering Information:** Available through the website  
**Cost (As of Date Entered):** free  
**Website:** [http://www.aota.org/featured/area6/links/link02d.asp](http://www.aota.org/featured/area6/links/link02d.asp)

**660. Understanding the Use of Continuous Speech Recognition Software for Writing**

**Author(s):** Education Development Center, Inc.  
**Publisher:** Speaking to Write Project  
**Publication Date:** January 1999  
**Review:** This article does a good job of identifying what a continuous speech recognition system is and how it works. However, probably the most valuable information is the description of how to begin using one of these programs and how writing by voice differs from talking to the computer.  
What this article does not provide is enough information about the limitations of voice recognition for students. For example, it must be used in a very quiet environment and will have trouble recognizing a child's voice as s/he grows older and his/her voice changes.  
The article does caution that anyone considering using one of these systems do so on a trial basis before purchasing.  
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities  
**Target Disability:** General / Non-disability Specific, Health Impairments, Learning Disabilities, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
**Ordering Information:** Free on the web site below.  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.edc.org/spk2wrt/Resources/ucsr.html](http://www.edc.org/spk2wrt/Resources/ucsr.html)

**661. Unheard Voices and the Right to Communicate: Augmentative Communication**

**Author(s):** Patrick Brune  
**Publisher:** PBS  
**Publication Date:** January 2004  
**Review:** This short article, written by the Augmentative Communication Coordinator of the Parkside School in New York, is appropriate for families that are beginning the search for basic information to find ways to help the child who is not developing speech and language skills as expected. Even when early delays are identified, and speech therapy has been initiated, it may still be desirable to investigate the area of augmentative and alternative communication (AAC).

AAC is defined as any strategy that assists a child in making his wishes and desires known to his family, friends, and others around him. Simple devices such as communication boards, and more complex computer generated programs are briefly explained.
657. Types of Technology

**Author(s):** National Assistive Technology Research Institute  
**Publisher:** National Assistive Technology Research Institute  
**Publication Date:** January 2002  
**Review:** This article looks at the various types of technologies that are available for instructional settings and how each can be used by people with disabilities.

The article first gives a brief overview of the technology of teaching, that is, various instructional approaches for teaching students with disabilities. It goes on to define and differentiate between Assistive technology, Instructional technology, Medical technology, Information technology and Technology Productivity tools. At the end of the article is a "case study" in which an imaginary student uses all of the technologies listed. This helps clarify how they are different.

This article is part of a series on this web site that defines AT, examines legal issues surrounding AT, looks at the implementation of AT in different environments and discusses measuring the quality of AT use and services.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Download from the web site.  
**Cost (As of Date Entered):** Free on web site  
**Website:** [http://natri.uky.edu/resources/fundamentals/types.html](http://natri.uky.edu/resources/fundamentals/types.html)

658. Typing Software-The Big Picture

**Author(s):** Super Kids Software  
**Publisher:** Knowledge Share LLC  
**Publication Date:** January 2004  
**Review:** This is a great comparison on typing programs available to assist students in increasing their typing skills. AT often requires individuals to increase their skills in typing. This article names many of the software typing programs but also assigns a number according to the capacity and effectiveness of the program. For AT evaluators, parents, and professionals, this matrix of typing programs is a must read.  
**Type of Material:** Evaluation Tool  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** no charge  
**Website:** [http://superkids.com/aweb/pages/reviews/typing/](http://superkids.com/aweb/pages/reviews/typing/)

659. Understanding Autism

**Author(s):** American Occupational Therapy Association  
**Publisher:** American Occupational Therapy Association
655. Traumatic Brain Injury: Cognitive and Communication Disorders

Author(s): National Institute on Deafness and Other Communication Disorders (NIDCD)
Publisher: National Institutes of Health (NIH)
Publication Date: January 1998
Review: An excellent article with a brief description of Traumatic Brain Injury (TBI) and cognitive/communication disorders that stem from TBI. The article includes what TBI is, and the population and problems resulting from TBI. It also further describes how cognitive/communication problems are assessed, treated, and what research is being conducted concerning cognitive and communication abilities.
Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Brain Injury and Stroke, Communication and Speech, Health Impairments, Learning Disabilities, Mental Retardation, Multiple Disabilities, Neurological Disorders
Ordering Information: NIDCD at NIH
301-402-0252 TTY
301-496-7243 Voice
301-402-0018 Fax
Cost (As of Date Entered): No Cost
Website: http://www.nidcd.nih.gov/health/voice/tbrain.asp

656. Twelve Tips for Classroom Teachers

Author(s): Barbara Cheadle
Publisher: National Federation for the Blind
Publication Date: January 2005
Review: The Twelve Tips for Classroom Teachers was written by the mother of a son who is visually impaired. She wrote these tips for teachers based on her experiences with her son's education. The tips include advice on arranging and managing the classroom, especially not making the visually impaired student feel different from his classmates. Also included are tips on managing the IEP, sharing the curriculum verbally, using assistive technology in the classroom, maintaining equal expectations, and encouraging a positive attitude for and in that student within the classroom and throughout his educational career. These tips are excellent pointers for teachers who may or may not be trained to deal with visually impaired students. Written from a mother's perspective on the mistakes as well as the successes she witnessed in her own son's education makes this particularly informative and useful for all educators.
Type of Material:
Audience: Parents / Family
Target Disability: Visual Impairment / Blind
Cost (As of Date Entered): No charge
Website: http://www.nfb.org/Images/nfb/Publications/fr/fr19/fr05si10.htm
653. Transition Aged Learning-Disabled Students: How to Prepare Them for Work/Post-Secondary Education

Author(s): Joyanne V.M. Cobb  
Publisher: Career Trainer  
Publication Date: January 2001  
Review: This article examines the transition of youth with learning disabilities from high school to work or post-secondary education. It establishes that three areas are necessary to ensure a smooth and successful transition. These include the right learning environment, selecting the right field of choice, and having the right accommodations in the educational and transition plans, which should include technology. Transition planning needs to be student and team directed.

Three scenarios are described, illustrating how modification to each individual's programs were made based on the response to questions listed in the body of the article. The successful teaming of high school staff, the student, and the Vocational Rehabilitation organization led to successful placement of all three students. Programs that offer opportunities to youth with disabilities are listed in the article, such as the Marriott Foundation Bridges Program, as well as other resources.

Type of Material: Article  
Audience: People with Disabilities  
Target Disability: Learning Disabilities  
Alternate Formats: Electronic, Electronic  
Cost (As of Date Entered): no charge  

654. Transition Planning: A Team Effort

Author(s): deFur, S.  
Publisher: National Information Center for Children and Youth with Disabilities (NICHCY)  
Publication Date: January 1999  
Review: This publication "provides ideas and information on how students, families, school personnel, services providers, and others can work together to help students make a smooth transition from high school to the adult world." Tables and case histories are included to help the reader to better understand the transition process. This report contains many excellent ideas and suggestions for creative planning and implementing transition services and for the empowerment of youth with disabilities through the transition years. It also lists many resources and organizations to contact.

Type of Material: Report  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities,
651. Toward Positive Literacy Outcomes For Students With Significant Developmental Disabilities

Author(s): Karen Erickson, Sally Clendon, Linzy Abraham, Vicky Roy, Hillary Van de Carr
Publisher: Assistive Technology Industry Association and Special Education Assistive Technology (SEAT) Center
Publication Date: January 2005
Review: This article describes the literacy and communication skill outcomes of the 'Meville to Weville' program which was used with 23 students who have significant cognitive impairments. 'Meville to Weville' by Ablenet is a literacy instruction program designed to teach students about themselves and about their place in their family and larger community. There are nine sections of the program which promote learning literacy and communication skills. Three teachers and 23 students with documented cognitive disabilities from self contained special education classrooms participated in the study. The students’ ages ranged from 5 to 12 years old. The project was carried out over a twelve-week period and both qualitative and quantitative data was collected. Teachers agreed to use the program with their students at least 30 minutes daily. Although no statistically significant differences were noted between pre- and post-test areas that were assessed, practical differences between pre- and post-test data for a group of students were noted. After using the program, students began to initiate more communication and interactions with peers and teachers. Additionally, by the end of the project period, students were seeking out and using devices without prompting and were demonstrating increased levels of engagement. The program was also of benefit to teachers. Based on these results the authors recommend further study of the program. In addition to reading the article, make sure to bookmark this excellent free online journal.

Type of Material: Article
Audience: AT Professionals, Educators, Rehabilitation Professionals, Service Providers
Cost (As of Date Entered): No charge

652. Training and Technical Assistance Center (T/TAC) Web Site

Author(s): Snider, R.
Publisher: Virginia Tech College of Human Resources and Education
Publication Date: January 1999
Review: The Training and Technical Assistance Center (T/TAC) Web site from the Virginia Tech College of Human Resources and Education is a well-designed, comprehensive site. It contains a wealth of information about assistive technology and the services available to students in Virginia, as well as information that can be used by others around the country.

Type of Material: Website
Audience: Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities,
Readers of this article will gain a perspective outside of the usual IEP and AT process. UDL makes sense, and if implemented in the design of educational tools, could make fiscal sense as well.

Type of Material: Article
Audience: Parents / Family
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): No charge
Website: http://www.ciconline.org/NR/rdonlyres/elu6tgr43vlo2uccxycalh7lrgcteyjl4%20qjfdb6fwldixjeftbktzjd6tvw73rxdmdohzyoqwe4daabacyxe6ig/T-Win05-LeaveNoChild.pdf

649. Tools and Dyslexia: Issues and Ideas

Author(s): Richard Wanderman
Publisher: LDResources
Publication Date: January 2003
Review: Richard Wanderman, noted speaker and adult with dyslexia and dysgrahpia, offers a menu of issues surrounding assistive technology. Based on his personal experience and work with school age individuals, he illustrates reasons AT tools may succeed or fail, and why one size does NOT fit all. He outlines the stigma that calling tools 'Assistive Technology' may carry, the need for individuals to have support and have ample training, trial and error and practice time so that a tool may be just that. Wanderman has a preference for simplicity in selecting tools and includes his personal list of technology as an example of what works for him. He offers his own reasons for not having all of the top high-tech tools within his reach.

This is a common-sense article that those considering the use of AT tools may wish to use as part of the evaluation process.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Learning Disabilities
Cost (As of Date Entered): no charge
Website: http://www.ldresources.com/files/tools_and_dyslexia.pdf

650. Tools For Life - - Breaking the Funding Barriers: Sources and Tips for Funding Assistive Technology in Washington State

Publisher: North Dakota Interagency Program for Assistive Technology
Publication Date: January 1996
Review: This brochure describes the various sources of funding that exist for the purchase of assistive technology (AT). First it defines AT, then it raises the question of who should pay for it. Listed are the federal/state entities such as Medicaid and Medicare as well as private insurance, local service agencies, and need-specific agencies such as Vocational Rehab and Children's Disability programs. Only one source listed is unique to the State of Washington. Also included are tips on writing a letter to funders justifying the purchase of AT and an outline to follow when writing a letter.

Type of Material: Brochure
Audience: Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: Access via the website
647. Tips for Shifting from School Year to Summer Break

Author(s): Kristin Stanberry
Publisher: Charles and Helen Schwab Foundation
Publication Date: January 2004
Review: This short, one and a half page article includes 6 tips for parents whose children may have learning and/or attention problems, in preparation for the transition from school year to summer. The tips include ‘posting the family’s schedule’ and ‘be prepared to be spontaneous’, with a few words and phrases that offer different ideas. There are also tips for the children such as ‘revamp - but don’t eliminate- your daily routine’, and ‘have your child contribute to the family calendar’. These ideas are clearly presented, and offered as a means of preparing parents and children for the ‘bedlam and boredom’ that may occur during the summer holidays.
Type of Material: Article
Audience: Parents / Family
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://www.schwablearning.org/articles.asp?r=841&f=search

648. To Leave No Child Behind

Author(s): Lucinda O'Neill
Publisher: ciconline.org
Publication Date: January 2005
Review: This article defines universal design in learning as "a framework that guides curriculum developers and teachers in using the flexibility of digital media to support, challenge and engage every learner...." According to the article, universal design in learning (UDL) differs from assistive technology because UDL includes accommodations from the beginning to be accessible to most students and assistive technology first "requires a performance deficit" and then "...seeks to adjust individual students to an inflexible, print-based curriculum."

The article discusses the University of Oregon's accommodation station, a computer-based tool that helps determine which accessibility features are the most helpful; the Equalizer, a tool to help teachers create differentiated learning activities; CAST’s eTREKKER, a tool to help students with learning disabilities do online research and MathML, mathematical markup language that assures that math notations are transferred from one medium to another so it can be read or Brailled. Other examples of how such accommodations as closed captioning and described video have expanded into the mainstream reinforce the concept that if technology is incorporated into learning tools from the beginning, learners will be able to utilize the tools effectively and successfully, without a gap during which they struggle.

AT as a plug-in for students with disabilities is currently the norm. The article strives to point out that UDL reaches beyond the philosophy of adding on to meet the needs of few and illustrates how UDL can be used by everyone if it is built in.

Legislation can help to make UDL happen; increasingly publishers are feeling the demand for such materials as states design accessibility policies for K-12 populations. UDL is good instructional design.
considered a reasonable accommodation. It also provides a way to access follow-up assistance, if it is necessary.

**Type of Material:** Article

**Audience:** AT Professionals, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** General / Non-disability Specific

**Ordering Information:** National Multiple Sclerosis Society


**Cost (As of Date Entered):** No Cost

**Website:** [http://www.nationalmssociety.org/Brochures-Win%20Win.asp](http://www.nationalmssociety.org/Brochures-Win%20Win.asp)

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### 645. Thought Powers Computer

**Author(s):** Tom Paulson

**Publisher:** Seattle Post-Intelligencer Reporter

**Publication Date:** January 2004

**Review:** This short news article in the Seattle Post-Intelligencer Reporter describes a "brain computer interface" being studied by Dr. Jeff Ojemann and Kai Miller, a medical student, both at the University of Washington. They are investigating how people can learn to control a device by thinking.

This particular article highlights the researchers' work with a 19 year old man who has epilepsy and who volunteered to participate in the study. He is able to engage in computer Pong using a 72 electrode interface which rests on the surface of his brain. Research in this area is just beginning but it generates thinking about the future possibilities for this type of technology, especially when looking at the possibility of hands-free navigation without the necessity of single switch use, or voice.

**Type of Material:** Article

**Audience:** People with Disabilities

**Target Disability:** General / Non-disability Specific

**Alternate Formats:** Electronic, Electronic

**Cost (As of Date Entered):** no charge


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### 646. Through the Looking Glass Web Site

**Publisher:** Through the Looking Glass

**Publication Date:** April 2004

**Review:** This website provides information on living with disabilities, both as children and adults and from a parent's perspective. It also discusses early intervention, current research on disabilities, and adaptive equipment. Links to disability sites are alphabetized by category, which makes it easy to find needed information. This site seems to be very parent-friendly, but also contains information that professionals and educators could utilize.

**Type of Material:** Website

**Audience:** Service Providers

**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired

**Ordering Information:** [www.lookingglass.org/index.php](http://www.lookingglass.org/index.php)
used with students and in schools.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Health Impairments, Learning Disabilities, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Spina Bifida, Orthopedically Impaired  
**Alternate Formats:** Large Print, Large Print  
**Ordering Information:** Speak to Write  
[www.edc.org/spk2wrt/Resources/spintr.html](http://www.edc.org/spk2wrt/Resources/spintr.html)  
**Cost (As of Date Entered):** No Cost  
**Website:** [http://www.edc.org/spk2wrt/Resources/spintr.html](http://www.edc.org/spk2wrt/Resources/spintr.html)

### 643. The Variables of a Blind Person's Math Experience

**Author(s):** Cary Supalo  
**Publisher:** The Braille Monitor  
**Publication Date:** January 2005  
**Review:** This is the text of a keynote address given by Cary Supalo to a group of professionals in the field of math accessibility. Cary is a graduate student working on a PhD in chemistry education. In his speech, he shares his experiences as a blind student struggling to excel in math, describing the barriers he faced and the methods he used to overcome those barriers. He discusses attitudes about blind students and involvement in higher level math, the need for teachers to be trained to deliver math content in a tactile way and to expect that blind students can succeed. He shares his early college experiences and his demands upon learning what his rights to education really were. He describes some of the technology and other resources used to help him progress successfully through the math requirements. It is a very uplifting speech, one that parents and struggling vision-impaired students will find inspiring and helpful.

**Type of Material:**  
**Audience:** People with Disabilities  
**Target Disability:** Visual Impairment / Blind  
**Alternate Formats:** Audio Tape, Braille, Audio Tape, Braille  
**Ordering Information:** National Federation of the Blind  
1800 Johnson Street  
Baltimore, Maryland 21230

**Cost (As of Date Entered):** Free on the NFB website  
**Website:** [http://www.nfb.org/Images/nfb/Publications/bm/bm05/bm0507/bm050706.htm](http://www.nfb.org/Images/nfb/Publications/bm/bm05/bm0507/bm050706.htm)

### 644. The Win-Win Approach to Reasonable Accommodations: Enhancing Productivity on Your Job

**Author(s):** Rosessler, R. T and Rumrill, P.  
**Publisher:** National Multiple Sclerosis Society  
**Publication Date:** April 2004  
**Review:** The material offers a guideline to what are reasonable accommodations in the workplace within the scope of ADA. It gives ideas on how to approach and negotiate with employers and what is
641. The Student with a Brain Injury: Achieving Goals for Higher Education

**Author(s):** Janis Ruoff, PhD  
**Publisher:** Center for Computer Assistance for the Disabled  
**Publication Date:** January 2001  
**Review:** This article addresses the many complex issues regarding brain injuries. It begins by defining the difference between Traumatic Brain Injury (TBI) and Acquired Brain Injury (ABI). It continues with a discussion of how often brain injury is overlooked which results in people being mislabeled as mentally retarded or behavior disordered rather than accepting that brain-injured people respond differently to stimuli.

The article further explains that people with brain injuries are often discouraged from considering higher education and lists the benefits that can be achieved by these people continuing with their education. One of the benefits is the opportunity for recovery and growth within the challenges of meeting expectations for higher education. Structure is important for someone trying to regain cognitive functioning after a brain injury. Meeting the challenges of higher education promotes self-esteem and leads to greater independence.

The categories of brain injury are listed along with the impact to the process of learning and to independence. Tools that can be utilized along with specific strategies for success are illustrated through 2 unique case studies.

This article contains lots of good information in this article. However, it can be a difficult read simply because the article is arranged in full-page columns and maximizing the screen does not put all the information on the screen. As a result, lots of scrolling up and down is required of the reader. Since the article is 16 pages long, some people may tire of this quickly.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Brain Injury and Stroke  
**Ordering Information:** Download from web site  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.heath.gwu.edu/PDFs/Brain%20Injury.pdf](http://www.heath.gwu.edu/PDFs/Brain%20Injury.pdf)
**Review:** Therasimplicity is a web-based source of information for those who provide speech, occupational and cognitive therapy services. It has an annual subscription fee of $249, which allows use of the constantly updated online resource library to create customizable worksheets and slide shows to use with students and/or clients. Other resources include handouts for professionals and caregivers or parents. A product and service search database is available and includes discount coupons for some of the products in the database. Users can also sign up for an online newsletter from the site.

Interested users can take a virtual tour before deciding to subscribe. Access is limited to certain areas but allows for investigation of some of the tools on the site including the database and activities handouts. The resources are contributed by professionals and could be quite an asset for a busy service provider.

**Type of Material:** Website
**Audience:** AT Professionals, Rehabilitation Professionals, Service Providers
**Target Disability:** General / Non-disability Specific
**Cost (As of Date Entered):** $249.99/year
**Website:** [http://therasimplicity.com/Default.aspx](http://therasimplicity.com/Default.aspx)

### 640. The Rehabilitation Provider's Guide to Cultures of the Foreign-Born

**Author(s):** Center for International Rehabilitation Research Information and Exchange (CIRRIE)
**Publisher:** University at Buffalo
**Publication Date:** January 2002

**Review:** Discussions of culture in everyday circles are usually vague efforts that skirt essential cultural and societal traits, or overgeneralize entire populations. Add the concept of disability to that mix and the chance of confusion multiplies tenfold.

In 2002, the Center for International Rehabilitation Research Information and Exchange (CIRRIE) reached deep into the cultural understanding of disability and developed "an eleven-volume monograph series, The Rehabilitation Provider's Guide to Cultures of the Foreign-Born." The series focuses on the ten most common countries of origin for recent immigrants to the U.S. (Mexico, China, Philippines, India, Vietnam, Dominican Republic, Korea, El Salvador, Jamaica, Cuba) and also includes information on Haiti.

The monographs are unique and the information is focused, detailed and highly valuable. Each monograph is written by authors who describe their culture using a series of integrated steps that discuss:

- The history of immigration(s)
- The nature of the culture (and its most important influences on daily life and the perception of self, others, new experiences, disability, and discrimination)
- Rehabilitation methods that address the culture (often includes a discussion of language barriers, and the impact of discrimination on relationships with rehabilitation professionals)

**Type of Material:** Resource Guide
**Audience:** Rehabilitation Professionals
**Target Disability:** General / Non-disability Specific

**Ordering Information:** HTML and PDF versions available online. Print booklets are available through an HTML or PDF order form for $5.00/copy ($3.00 each for 25+ copies). Send payment to:
Thera Simplicity

Author(s): Roger M. Hager  
Publisher: Neighborhood Legal Services  
Publication Date: January 2003  
Review: Originally published to reach a primary audience of attorneys and advocates who assist persons with disabilities who need AT to succeed in their public school experience, the focus of this booklet is on the IDEA and Section 504 as funding sources. It is intended to provide the reader with a working knowledge of the laws, regulations and interpretations of them as they relate to a school's obligation to provide AT devices and services.

This is a lengthy document which will be overwhelming to some. Neophytes to the field may prefer to read more user-friendly summations of the pertinent laws elsewhere. If care is taken, however, one may glean valuable information, including examples of AT that have been funded, and citations of successful court cases. This is a valuable resource for any professional to have on hand in working to acquire AT for school-age students.

Type of Material: Resource Guide  
Audience: People with Disabilities  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Ordering Information: Hard copy: First one is free, $4 per copy thereafter

Contact Wilma Castro: wcastro@nls.org.  
Cost (As of Date Entered): $4 per copy  
Website: http://www.nls.org/specedat.htm

Therapy/Respite Camps for Kids

Author(s): Will Moore  
Publisher: Creative Commons License  
Publication Date: January 2005  
Review: Here is a resource that grew out of a need experienced by a father looking for a summer camp for his child with autism. His search led him to develop this web site with links to camps and therapy for children with special needs, and for respite care for families as well. The site is clearly laid out and features links to camps divided by regions and states within the US. It also includes camps in Canada, Central America and Greece.

The creator, Will Moore, a professor at Florida State University, also offers to put up a simple web site if you are a camp director and have no current web site. Some areas have more camps than others, but the whole US is well covered, regionally and by state.

This is an informative and easy to follow site, updated frequently, that should give families and caregivers, who are interested in camps some clear choices.

Type of Material: Website  
Audience: Educators, Parents / Family, People with Disabilities  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): no charge  
Website: http://wmoore.net/therapy.html

Therasimplicity
635. The Power of Digital Pictures to Cognitively Engage the Student

Author(s): Dale Gardner-Fox  
Publisher: ConnSENSE  
Publication Date: January 2002  
Review: Using a digital camera to enhance or elicit a specific response can be powerful in the educational setting. This article describes how to do this using different software programs and hardware products.

The article gives a short list of programs that allow a computer user to import digital pictures and describes how to use these photos to make a cause/effect program, do a science project or write a story. The ideas are good and thought provoking. However, the activities are most suited to someone who has good computer skills.

Type of Material: Article  
Audience: Parents / Family  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Ordering Information: Download from web site

Sign up for ConnSense free Email newsletter at: http://www.connsensebulletin.com/signup.html.  
Cost (As of Date Entered): Free  
Website: http://www.connsensebulletin.com/dale1.html

636. The Provision of Assistive Technology for Students with Disabilities

Author(s): John Copenhaven  
Publisher: Mountain Plains Regional Resource Center  
Publication Date: January 2002  
Review: This helpful article's purpose is to "inform parents and educators about the use of assistive technology devices and services in the special education evaluation process and programming." It is a valuable resource for participating in and planning IEPs because it defines assistive technology and discusses issues such as ownership of equipment, who is responsible for repair, the child's ability to bring AT home, integration of AT into the curriculum and independent evaluations.

Type of Material: Article  
Audience: Parents / Family  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Ordering Information: Mountain Plains Regional Resource Center

1780 North Research Parkway, Suite 112, Logan, Utah 84341

Phone (435) 752-0238 FAX or TDD (435) 753-9750  
Cost (As of Date Entered): No charge to access information online  
Website: http://www.usu.edu/mprrc/infoserv/pubs/ProvisionofAT.html

637. The Public School's Special Education System as an Assistive Technology Funding Source: The Cutting Edge
Author(s): Ben Satterfield, Pat Satterfield
Publisher: ConnSENSE Bulletin
Publication Date: January 2005
Review: This article is a review of the difficulty that IT managers may face when trying to implement and fully integrate assistive technology into the fold of instructional technology. The tone and language in this article may raise hackles for teachers and lay readers, especially parents, and some people may feel a distinctly dismissive tone from the authors’ choice of words. Keep in mind that the authors' intentions are probably good and the information is worth having, even if the presentation is slightly uncomfortable.

The authors offer IT managers several reasons (federal law, best practices, the need for differentiated instruction) that AT needs to be an integrated and "important element of the support their organizations provide." Several strategies and useful resources are explained to help combat a common range of IT/AT problems resulting from the difference between an educator’s responsibilities and an IT manager's obligations: i.e., stringent hardware and software policies that prevent teachers from upgrading or implementing beneficial programs or changing settings to ease viewing/sound/compatibility issues, and the need to maintain and secure the systems the IT managers administer.

Type of Material: Article
Audience: AT Professionals, Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://www.connsensebulletin.com/marriage.html

634. The Power of Assistive Technology

Author(s): Jendron, Janet
Publisher: ConnSENSE
Publication Date: January 2001
Review: This well written article is an overview of the many different types of assistive technology that can be used within a classroom setting. The author touches on several different areas of instruction, and on many areas of disability, but covers none in detail. She lists different assistive technologies that can be used either for accommodations or adaptations (and gives a very good definition of the difference between accommodations and adaptations).

This article is a very general overview of many different types of assistive technology, and it contains several very useful links for those looking for additional information on AT. This would not be a good article to read if one has a fairly good idea about what assistive technology is, and how it can be used.

Type of Material: Article
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Ordering Information: only available online http://www.connsensebulletin.com/jendron.html
Cost (As of Date Entered): free to print from website
Website: http://www.connsensebulletin.com/jendron.html
The Low Cost / No Cost Resource Guide (2005) was developed by the Northern Illinois Center for Adaptive Technology in cooperation with Alliance for Technology Access with support from CTCNet and ILCTC.

True to its name, it presents a variety of web-based links to low or no-cost technology options for people who might not otherwise be able to obtain the technology that many use to participate in daily occupations. The resource is a 20-page printout with links to hardware and software solutions for learning reading and accessing technology. It is fairly comprehensive, although as with any compilation of resources, it will need to be updated frequently.

The guide is easy to use, and best of all, it’s free. It is useful to both beginners in Assistive Technology as well as to those who are experienced in the field.

**Type of Material:** Catalog  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.ataccess.org/resources/lowcostnocost.html](http://www.ataccess.org/resources/lowcostnocost.html)

### 632. The Many Uses of Recordable Photo Albums

**Author(s):** Cormier, Carolann, MS, CCC-SLP, ATP  
**Publisher:** Connsense  
**Publication Date:** January 2002  
**Review:** This short article is a great starting point for parents, caregivers, and/or educators who need low-tech devices for simple communication or reading activities. The author discusses several different devices that are readily available from typical (as opposed to disability specific) stores. She gives an interesting variety of uses for recordable picture albums for several different sets of circumstances.

The author tells where the items can be purchased, lists the cost of each item, and in some cases lists the actual ordering numbers. She then discusses ways to use these recordable devices at home and in the classroom.

This type of article is bound to get others thinking about different ways to use ordinary items.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Autism, Brain Injury and Stroke, Communication and Speech, Developmental Disabilities, Mental Retardation, Multiple Disabilities, ADHD/ADD  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Download/print from website  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.connsensebulletin.com/books.html](http://www.connsensebulletin.com/books.html)

### 633. The Marriage of AT and IT
supportive family, early intervention and ongoing support, achieved personal and academic goals such as full inclusion throughout her school years, community college attendance, and an Associate’s Degree.

The Foundation has produced two videos highlighting strategies and interventions that have supported Karen in attaining personal and career goals. Karen herself is actively involved in speaking to groups and in training teams to facilitate social inclusion in school environments.

This site is useful as a model to those who are seeking full inclusion for children with disabilities.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Developmental Disabilities, Mental Retardation
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): No charge
Website: http://www.karengaffneyfoundation.com

630. The Key to Genius

Author(s): Steve Silberman
Publisher: Wired
Publication Date: January 2003
Review: This article discusses an accomplished twelve year old jazz composer, Matt Savage, a musical savant (savant is generally defined as one with extraordinary skills in an area such as math, music or art) who has pervasive developmental disorder. While it is estimated that there are only about 50 prodigious savants such as Matt alive today, brain research suggests that they, people with autism, Williams' Syndrome and frontotemporal demential (FTD) function very much like their "typical" peers. However, it is hypothesized that some of these individuals are "wired differently" and have a lessened signal from the left temporal lobe in the brain which allows the right hemisphere to flourish and express themselves creatively through music and art.
The article concludes by suggesting that the same gene responsible for savant syndrome, autism, and Tourette's may "contribute to genius". The article lists the names of several accomplished people (Thelonious Monk, Temple Grandin, Samuel Johnson and others) as examples.
While the tone of the article initially leans to the medical perception of deficit or damage in the structure of the brain as a cause of autism or related autism spectrum disorders, the overall message is that persons with brain differences are able to be highly successful, creative, independent individuals.
Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities
Target Disability: Autism
Alternate Formats: Electronic, Electronic
Ordering Information: http://www.wired.com/wired/archive/11.12/genius_pr.html
Cost (As of Date Entered): free
Website: http://www.wired.com/wired/archive/11.12/genius_pr.html


Author(s): Northern Illinois Center for Adaptive Technology
Publisher: Alliance for Technology Access
627. The Graphic Organizer

Author(s): Greg Freeman
Publisher: From Now On
Publication Date: January 2004
Review: This is a very self-explanatory and easy to navigate website. The site www.graphic.org is a resource for educators interested in mind mapping and concept mapping tools and techniques and serves as a good first stop for explanations, examples and further links. The site is updated often and the information remains accessible and current.
Type of Material: Website
Audience: Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge
Website: http://www.graphic.org

628. The Job Accommodation Process

Author(s): Tracie DeFreitas Saad, MS, and Mandy J. Gamble, MSm CRC
Publisher: JAN
Publication Date: January 2000
Review: The goal of job accommodation is to reduce or eliminate workplace barriers to enable a qualified individual with a disability to enjoy equal employment opportunity. JAN's Job Accommodation Process involves managing five steps to obtain a successful work-site accommodation outcome. This valuable article provides the reader with the five steps to bridge the distance between the ability of an individual and the essential functions of a job. They are:

1) define the situation 2) perform a needs assessment; 3) explore alternative placement options; 4) redefine the situation; and

5) monitor accommodations. The article also provides a visual flowchart of the job accommodation process. This article is especially helpful because it provides the reader with a mini-case study (situational) and solutions.
Type of Material: Article
Audience: Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Website: http://www.jan.wvu.edu/media/jobaccommodationprocess.html

629. The Karen Gaffney Foundation

Publisher: The Karen Gaffney Foundation
Publication Date: January 2005
Review: This foundation was established by Karen Gaffney and her family. Gaffney, a young woman with Down Syndrome, is president of the Foundation, "dedicated to championing the journey to full inclusion for people with Down Syndrome and other disabilities."

The website emphasizes that attitudes and stereotypes are what creates disabilities. Karen, with a
Family Center on Technology and Disability                   Resource Reviews  www.fctd.info

Author(s): Susan Hall
Publisher: Schwab Learning Center
Publication Date: January 2003
Review: Susan Hall is a recognized expert on reading difficulties. Ms. Hall is the co-author, with Louise C. Moats, Ed.D., of "Straight Talk About Reading" and "Parenting a Struggling Reader." She is a parent of a child with dyslexia, Ms. Hall writes, "A parent may be the first person in a child's life to recognize a reading problem." The author writes in clear prose, easily understandable to the layperson and parents, as well as professionals. She cites the following indicators of potential reading difficulties:
-- Difficulty maintaining sounds in words
-- Repeated ear infections or speech delays
-- Articulation problems
-- Late to talk

Ms. Hall recommends that children in whom these indicators are present receive speech and hearing screens during pre-school years and should be monitored for possible reading difficulty.

Type of Material: Infosheet / Fact sheet
Audience: Educators, Parents / Family, Rehabilitation Professionals
Target Disability: Communication and Speech, Developmental Disabilities, Learning Disabilities
Ordering Information: Available on the website
Cost (As of Date Entered): Free
Website: http://schwablearning.org/pdfs/expert_hall.pdf

626. The Future Is Now: Where Today’s Assistive Technologies Will Take Learners Tomorrow

Author(s): Pamela Wheaton Shorr
Publisher: Cable In the Classroom
Publication Date: January 2005
Review: This article examines the use of existing technology in innovative ways. The three areas of assistive technology used as examples in this article are: wearable technology; using brain waves to reprogram behavior; and virtual reality.

Each of these areas has been used creatively by teachers with their students to make possible more meaningful interaction with their environments. In the first example, a child with autism gains the ability to communicate by wearing a device designed to be worn by telephone-line technicians and other field workers. In the second example, a plan for reprogramming behavior grew out of a technique used by NASA to help pilots maintain their concentration during long flights. This grew into the development of "Play Attention" by Peter Freer, which is a modified bicycle helmet that tracks brain waves in children with attention disorders. The third area - virtual reality - has been able to provide those with limited mobility a feeling of freedom that had previously been denied to them.

This thoughtful article provides many online references to support the ideas discussed. It would be of interest to parents and care providers looking for solutions to problems, and to teachers who are looking for alternative technologies for students.

Type of Material: Article
Audience: Parents / Family
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://www.ciconline.org/NR/rdonlyres/efjxiydisiej3afcmemts6er3zd4fvdz7ef6l2ufrcjav5gbx6
623. The Compensatory Effectiveness of the Quicktionary Reading Pen II on the Reading Comprehension of Students with Learning Disabilities

Author(s): Eleanor Higgins and Marshall Raskind
Publisher: Journal of Special Education Technology
Publication Date: January 2005
Review: In response to the many identified student reading problems, the technology world has developed optical character recognition (OCR) software so that students can access their curricula independently. This research article focuses on a lower cost alternative, the Quicktionary Reading Pen II. The Reading pen is about 1/4 the cost of PC-based software. It has OCR capabilities but is only a little larger than a regular pen. This research project studied thirty participants with an identified learning or reading disability. The study was to see how using the Reading Pen affected reading comprehension. Two weeks of training occurred prior to the intervention. Training included learning how to use the Reading Pen and then how to use it with reading materials within the school environment.
The researchers concluded that using the Reading Pen greatly increased students’ comprehension of written text. There is one caveat, however - the population tested may not be typical of the majority of students with reading disabilities. The test population was comprised of middle and high school students in a California school who already are familiar with technology.
Type of Material: Research Paper
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities
Target Disability: General / Non-disability Specific
Alternate Formats: Large Print, Large Print
Cost (As of Date Entered): Free on the JSET website
Website: http://jset.unlv.edu/20/JSETv20n1.pdf

624. The Deaf Resource Library

Author(s): Karen Nakamura
Publisher: www.deaflibrary.org
Publication Date: January 2005
Review: This website was developed 10 years ago by a female college anthropology professor with an interest in issues related to deafness and sign language. The site has numerous categories, including communication, software, deaf publications, captioning and interpreting, with lots of links under each category.

This is a great resource for anyone looking for information about deafness and sign language and culture. Some of the links this reviewer tried did not work, but most were successfully connected.
Type of Material: Website
Audience: Educators, Parents / Family, People with Disabilities
Target Disability: Hearing Impairments / Deaf
Cost (As of Date Entered): no charge
Website: http://www.deaflibrary.org

625. The Expert Answers: What are the Warning Signs of a Reading Difficulty?
621. The Benefits of Recycling and Reusing Assistive Technology

**Author(s):** RESNA  
**Publisher:** RESNA  
**Publication Date:** January 2000  
**Review:** With reduced support from the federal government to Medicare and Medicaid, as well as the increase of co-payment amounts required for private insurance, fewer assistive technology devices can be purchased on behalf of the insured. This is not cost-effective in the long run because assistive technology can increase independence and reduce the need for costly institutional care.

RESNA researched this topic and found that approximately 20 to 40 percent of assistive technology goes unused for various reasons such as change of medical need, "growing out" of the equipment, or inappropriate selection of devices. RESNA found that recycling (or re-using) assistive technology devices benefits suppliers of assistive technology, students and consumers. Recycling helps consumers control costs. It allows students to have access to computers for schoolwork. Finally, recycling helps suppliers provide equipment to people who cannot afford to purchase new equipment or who only need to rent equipment for a short period of time.

**Type of Material:** Article  
**Audience:** Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Large Print  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.resna.org/taproject/library/pubs/recycling/RMchptr1.htm](http://www.resna.org/taproject/library/pubs/recycling/RMchptr1.htm)

622. The CCTV: A Personal Perspective

**Author(s):** Nathanial Wales  
**Publisher:** The National Federation of the Blind Magazine for Parents and Teachers of Blind Children  
**Publication Date:** January 2005  
**Review:** Nathaniel Wales, who has visual complications from congenital cataracts and glaucoma, wrote this article when he was a college student. The article describes the author's experience with developing strategies to read and write. He describes his experiences using a CCTV and his evolution toward learning Braille after attending a NFB technology exhibit and meeting other blind students. He states that "Braille and the NFB, not a CCTV, would end up having a major impact on my future."

The article shows that AT needs can evolve and change as a person's experiences change. It should also serve as a reminder that 'one size does not fit all' when looking at technology solutions.

**Type of Material:** Article  
**Audience:** People with Disabilities  
**Target Disability:** Visual Impairment / Blind  
**Cost (As of Date Entered):** No charge
The Assistive Dining Device (ADD) by Mealtime Partners is a “revolutionary new assistive technology which enables people with disabilities to feed themselves.” There are many self-feeders on the market, most of which are extremely expensive and have a high abandonment rate. This one may be different and the company has a trial policy that may help users determine if this would be a successful tool.

The ADD serves all types of food but food that needs cutting must be prepared by precutting it before it is placed into the feeder.

Interesting features of the device include; three bowl covers available to control the amount of food scooped up by the spoon; the spoon is wiped to minimize dripping; the bowls are transparent so food can be seen; the bowls can rotate to the desired food and dependent on user ability, can be programmed to operate automatically or switch controlled. The device is battery operated and the battery is supposed to last for three meals before needing recharging.

There is also a clinician workstation software package that can be purchased to assist in clinical evaluation of a user’s ability to use the ADD. Excellent information including videos of people using the device and manuals are available at the website. The device looks robotic but a lot of thought has gone into the design. As with any AT device it is important to ‘try before you buy’ and the company allows a thirty (30) day evaluation period. As with similar devices it is extremely costly: $7995.00 plus 75.00 for shipping and handling. For individuals looking for a feeding device, this one may be worth consideration.

Type of Material: Brochure
Audience: Rehabilitation Professionals
Target Disability: Developmental Disabilities, Neurological Disorders, Orthopedically Impaired
Ordering Information: www.mealtimepartners.com
Cost (As of Date Entered): $7995.00 plus 75.00 for shipping
Website: http://www.mealtimepartners.com

620. The Assistive Technology Assessment: An Instrument for Team Use

This is an easy to understand article that discusses important issues related to assistive technology assessment and particularly the team approach to the assessment process. The article also introduces the ACES Assistive Technology Services process and includes two sets of ACES forms that accompany the article, a pre-referral form and an AT services referral form.

There is some good information about how and why the forms were developed as well as some brief directions on how to use them. The forms themselves would be very useful for a school or district that has not developed their own formats for assessment or as a supplement to their existing format. Similarly, these forms can be very useful for parents. The forms can assist parents in formulating questions about an assessment or making sure that nothing important is overlooked.

Type of Material: Article
Audience: Parents / Family
can be printed, or can be ordered in paperback form under the title 'The ADHD Book: Living Right Now'.

Many aspects of ADHD are covered in this book. The information is clear and examples are given that everyone can relate to. The author presents facets of ADHD from medical, educational, social and familial perspectives. Effective ways of dealing with ADHD and the pitfalls and rewards therein are covered. Graphics illustrate stress levels of all members of the family in different scenarios. A quiz assists the reader in assimilating much of the information presented in the book. A simulation of what it might feel like to be ADHD is available on the website.

A separate chapter aimed at children with ADHD could be useful, but necessitates at least a 6th grade reading level.

Graphics are not accessible and the flow of the book from chapter to chapter is interrupted on the website. The user must manually load each chapter from the Table of Contents link.

For the many families and children affected by the diagnosis of ADHD the e-book offers plentiful information and a sense of affirmation of the realities in coping with this disability.

**Type of Material:** Book  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** ADHD/ADD  
**Ordering Information:** ADHD Book: Living Right Now  
Available at:  
www.amazon.com $14.95  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.pediatricneurology.com/adhd.htm](http://www.pediatricneurology.com/adhd.htm)

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### 618. The AlphaSmart Keyboard and Learning Disabilities

**Author(s):** Richard Wanderman  
**Publisher:** LD Resources  
**Publication Date:** January 1997  
**Review:** This article is written by a man who uses the AlphaSmart not only for himself but with students and adults with whom he works. Not only does the article describe the AlphaSmart and how it works, the author includes ways to use the AlphaSmart in a classroom so that it can involve all students. He illustrates how the AlphaSmart may be a better choice than a laptop computer due to its ease of operation and portability but emphasizes that the two are compatible and should be used together for written assignments. Written in a casual but informative style, this article would appeal to anyone looking for an alternative to the physical act of writing.

**Type of Material:** Article  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Learning Disabilities  
**Ordering Information:** The article is available via the website.  
**Website:** [http://www.ldresources.org/?p=53](http://www.ldresources.org/?p=53)

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### 619. The Assistive Dining Device (ADD)
616. Text to Speech

**Author(s):** Adaptive Technology Resource Center  
**Publisher:** Adaptive Technology Resource Center  
**Publication Date:** January 2002  
**Review:** When considering text to speech software, it can be very difficult to navigate through all the options and text conversion files. This info sheet gives basic description of text to speech, how one uses it, and what is necessary in a computer in order to use it. It helps you figure out the right questions to ask and aids in focusing on the specific outcome desired from the software.

Many different text to speech software packages are described, including those available for Macintosh and PC based operating systems, and those that are available free of charge. However, the infosheet neglects to mention some very popular programs such as Intellitalk II and Write Out Loud.

Most of the links on the page are current, and the info sheet is a good resource for beginning research on various text to speech solutions.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** People with Disabilities  
**Target Disability:** Deaf / Blind, Developmental Disabilities, Learning Disabilities  
**Alternate Formats:** Electronic, Large Print, Electronic, Large Print  
**Ordering Information:** Adaptive Technology Resource Center  
J.P. Roberts Library, First Floor  
University of Toronto  
130 St. George Street  
Toronto, Ontario, Canada  
fax (416)971-2696  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.utoronto.ca/atrc/reference/tech/textspeech.html#Description](http://www.utoronto.ca/atrc/reference/tech/textspeech.html#Description)

617. The ADHD e-BOOK

**Author(s):** Martin L. Kutscher, MD  
**Publisher:** Pediatric Neurology Associates (NY and NJ)  
**Publication Date:** January 2002  
**Review:** The ADHD e-Book contains information on ADHD. It is available for viewing on the website,
614. Telecommunications, TTY and Adaptive Telephones

Publisher: Infinitec.org
Publication Date: January 1999
Review: This article is a basic discussion of devices and services that a person who is deaf or hard of hearing can use to make the telephone system accessible. It discusses briefly several different types of devices and give examples with manufacturer's names of those types of devices. There is also a quick introduction to the telephone relay service.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals
Target Disability: Hearing Impairments / Deaf
Cost (As of Date Entered): free
Website: http://www.infinitec.org/live/telecom/adaptivephones.htm

615. Text to Speech

Author(s): Ability Hub
Publisher: Ability Hub
Publication Date: January 2003
Review: This article is located on the Ability Hub website and provides the reader with information about devices and software such as Write OutLoud and the Road Runner that will convert text to speech. There is no background information which explains to new users why it is important to convert text to speech (this can be helpful to individuals with learning disabilities and visual impairments). However, the detailed product description, pictures of items like the Franklin Speaking Language Master, system requirements and links to the vendors' websites make this article an excellent resource. The reader should follow all the links to each specific section (Text to Speech Software, Flatbed Scanners, Reading Devices and Handheld Spell Checkers) to get the most out of the article.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Learning Disabilities, Visual Impairment / Blind
Alternate Formats: Electronic, Electronic
Ordering Information: Download from web site or AbilityHub
Author(s): Texas Assistive Technology Network  
Publisher: TATN and Texas Education Agency  
Publication Date: January 2004  
Review: The Texas Assistive Technology Network (TATN) and the Texas Education Agency created "Technology Supports for Struggling Readers" as a part of the Assistive Technology in Texas Schools Series. The 35-page publication is billed as a "professional development module" but it would be wiser to say that the 35 pages are a charted resource list, rather than a lesson/exercise/response-based training module.

Using links and descriptions, the charts start with Phonological Awareness and progress through Phonics, Word Identification, Fluency, Vocabulary, and Comprehension resources. Using the same charting system, the module also addresses AT Assessment and a variety of AT tools that can help students. The descriptions are limited and readers may find the charting system cursory and confusing, despite the wealth of links.

Type of Material: Resource Guide  
Audience: Educators  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): no charge  
Website: http://www.texasat.net/docs/struggling.read.notetaking.pdf

612. Technology Talk: Writing by Hand and Keyboard

Author(s): Miriam Struck,MS,OTR,ATP  
Publisher: Advance for Occupational Therapist Practitioners  
Publication Date: January 2001  
Review: This article is a discussion of the pros and cons of handwriting versus the use of keyboarding for classroom learning. Often, students find the mechanics of handwriting can interfere with their learning. The author expresses the ease many students find in utilizing a keyboard to complete classroom assignments. She recommends a specific software for use in the classroom as well as programs to teach children keyboarding skills. Anyone interested in promoting a successful educational experience for all children will find this informative.

Type of Material: Article  
Audience: Rehabilitation Professionals  
Target Disability: General / Non-disability Specific  
Ordering Information: Download from the web site  
Cost (As of Date Entered): Free on web site  

613. TECH PACK-The Computer Accessibility Technology Packet

Author(s): Office of Special Education and Rehabilitation Services  
Publisher: US DOE  
Publication Date: January 2000  
Review: This resource pack includes answers to frequently asked questions about AT (assistive technology) in the public schools, lists AT organizations, and a list of parameters for assessing a computer system for use in the school.

Type of Material: Resource Guide
609. Technology Integration Web Site

Author(s): Burkhart, L.
Publisher: Burkhart, L.
Publication Date: April 2004
Review: Linda Burhart's site focuses on children with disabilities and how AAC (Augmentative and Alternative Communication) and AT (Assistive Technology) can make a positive impact on communication needs along with books, products, and vendor information. She also has user friendly and in-depth information on how schools can use the internet with instructional uses, guidelines, interactive projects, and student/teacher resources and reference. Ms. Burkhart includes a site to log onto for other World Wide Web links for AT and AAC.

Type of Material: Website
Audience: Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired
Ordering Information: www.Lburkhart.com
Website: http://www.Lburkhart.com

610. Technology: Some Common Questions Answered

Author(s): John Copenhaven
Publisher: LD Online
Publication Date: January 1998
Review: "Technology: Some Common Questions Answered" was written by John Copenhaver and published in Counterpoint, a publication by the National Association of State Directors of Special Education. LD Online reprinted it with permission. The article is an excellent resource for individuals who have children with disabilities in a public school system. "Technology..." will help them understand their child's right to assistive technology and the school system's responsibility to pay for equipment. It also discusses ownership of equipment, who is responsible for repair, the question of whether the child can bring AT equipment home, integration of AT into the curriculum and independent evaluations.

Type of Material: Article
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Ordering Information: This article was originally published in Counterpoint, the national newspaper for special education. It was used by permission and is available at no cost on LD Online's website.
Cost (As of Date Entered): No charge
Website: http://www.ldonline.org/article/6334

611. Technology Supports for Struggling Readers
607. Technology Helps Special Needs Kids Pass Key Test

Author(s): Corey Murray
Publisher: Eschoolnews
Publication Date: January 2005
Review: This article highlights the advantages of using technology to provide alternative testing solutions that can be used to assess the educational progress of students with disabilities. Traditional accommodations strategies such as more time, additional breaks between questions or having test questions read aloud have been shown to be inefficient, unavailable or underutilized by the students who could benefit from these accommodations.
Forward thinkers are using text-to-speech software and other software solutions to provide accommodations. One school in Massachusetts is using Kurzweil software. After letting students with disabilities use this software in the classroom they can achieve at the same or higher levels than kids in the mainstream.
It is important to make sure that only students who are used to using the software as a regular classroom accommodation use it for testing otherwise it can “do more harm than good.” This statement is so important and reminds us that training can never be left out of successful technology use. Controversy still remains about the validity of testing using these alternative accommodations when the tests were not designed to be used with them. But supporters argue that since kids learn in alternative ways they should be allowed to pursue alternative testing.

608. Technology Integration, Assessment, and No Child Left Behind

Author(s): Ellen Delisio
Publisher: Education World
Publication Date: January 2003
Review: This article is the transcript, in part, of the "Enhancing Education Through Technology" Education World Wire Side Chat teleconference interview with John Bailey (Director, Educational Technology, U.S. Dept. of Ed.). The question/answer format is a bit limited but is useful, according to the Education World website, for information on technology education grants.

Type of Material: Article
Audience: Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge

605. Technology for Transition-Age Students

Author(s): Janet Peters
Publisher: PACER
Publication Date: January 1997
Review: This article addresses technology for special education students as they prepare to transition out of high school. It begins by defining "assistive technology" from a legal perspective and explains that this definition includes not only adaptive equipment, but the services that evaluate need, provide equipment and training, and maintain equipment.

Software designed to assist with issues related to transition is also discussed in detail. This article provides the names of software programs that are appropriate to each section. More information is available upon request from the PACER Center.

A discussion of career planning, job accommodations under ADA, and funding for adaptive equipment/software offers general information related to the transition process. A section on self-advocacy for students lists the traits needed to be a strong self-advocate.

This is an informative article that provides a good listing of resources for students, parents, and educational staff.
Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Ordering Information: Access via the web site.
Cost (As of Date Entered): Free
Website: http://www.pacer.org/tatra/pod_fall97.htm#technology

606. Technology Helps Disabled Kids Find Their Voice

Author(s): Science Daily
Publisher: Science Daily
Publication Date: January 2006
Review: Research already tells us that children learn best with motivation, and when things are ‘fun’ they are often repeated. This article describes a five year grant providing support to redesign assistive technology so it is appealing and functional for the very young child. This includes providing touch sensitive screens, and programming spoken words and sounds that will encourage responses from an infant or toddler.

Computers and technology now are designed mainly for adults, and are often difficult for children to operate. The redesigned computer would look and act more like an appealing toy, and yet give the young child the needed experiences, repeated in a great variety of ways that improve learning. This all needs to be done with the aid of pictures and drawings since the young child is not yet a reader, and the programming will need to take this into account. The use of children as testers for the new ideas has already brought many useful insights, and ‘early trials with 15 and 25 month old children show an improvement of about 20 to 50 times in communication skills as well as a significant increase in vocabulary’..

This article would be of interest to those working to stimulate language acquisition with very young children and others who will be looking for such devices to continue language development with older
attended by their boys, the plea is for everyone to work with others interested in special education to be sure that the interests of all are heard for quality education.

**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.thejournal.com/magazine/vault/A4805.cfm](http://www.thejournal.com/magazine/vault/A4805.cfm)

603. Technology for the Blind Web Site

**Author(s):** National Federation for the Blind (NFB)  
**Publication Date:** April 2004  
**Review:** This is a very useful Web site which provides information on assistive technology and blindness and low vision, as well as providing information on products available.  
**Type of Material:** Website  
**Audience:** Service Providers  
**Target Disability:** Visual Impairment / Blind  
**Ordering Information:** [www.nfb.org/tech.htm](http://www.nfb.org/tech.htm)  

604. Technology for the Visually Impaired

**Publisher:** Inclusive Technology Ltd 1998 - 2004  
**Publication Date:** January 2000  
**Review:** This short and very basic article includes information about how technology might assist those with visual impairments in their daily lives and endeavors.

A definition of visual impairment is given as: "a wide range of conditions which affect clarity of vision and visual field." The information centers on the use of the computer, and the fact that many come equipped with features that will assist those with visual impairments. The features include the ability to change the size of the print, the type of font, and even the color of the screen, in word processing programs. The use of speech to access text is described, and specialized equipment such as Braille computers and Braille input and output devices are presented.

The issues of choosing the proper equipment, considering the environment, and setting up the computer are all briefly introduced. The article would be appropriate for those who might be setting up community centers, and others with no previous knowledge of the technology available for those with visual impairments.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Visual Impairment / Blind  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.inclusive.co.uk/infosite/viinfo2.shtml](http://www.inclusive.co.uk/infosite/viinfo2.shtml)
601. Technology: Everywhere, Everyone, Everyday

Author(s): Judith Geppert  
Publisher: e-bility.com  
Publication Date: January 2004  
Review: This article is authored by a woman with athetoid quadriplegia who has used assistive technology since she was four years old. Examples are given of how low and high technology allow her to achieve daily activities at home, work and in the community. Anecdotes illustrate frustrations and successes with emphasis on creativity and need to think 'outside the box' when matching technology and people.

Written in a no-nonsense style with a touch of humor, this article is valuable in that it illustrates how one individual has succeeded in life using technology tools. She advocates the use of technology by all and advises readers to aspire to great heights.  
Type of Material: Article  
Audience: Service Providers  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Cost (As of Date Entered): no charge  
Website: http://e-bility.com/articles/technology.shtml

602. Technology for All Students

Author(s): Dr. Geoffry Fletcher  
Publisher: ETC Group LLC  
Publication Date: January 2004  
Review: The subject of technology for all students is addressed in this editorial by Dr. Geoffry Fletcher for the May 2004 issue of THE (Technological Horizons in Education) Journal Online. All students benefit by accommodations for those with special needs, and many innovative changes begun for special needs are found to benefit all, such as the IEP (Individualized Education Plan) required through IDEA (Individuals with Disabilities Education Act. This Act is due to come up for reauthorization this fall, and the editorial urges all who have interests in this legislation to do whatever they can to help ensure the continued funding of the legislation.

Descriptions of technology for all students are given, such as web sites that advocate for creation of electronic content, and those that analyze other sites for accessibility. Reference is made to interactive whiteboards and computerized adaptive testing where special adaptations are made accessible for all students. Increased funds have been requested for the Act, but parents and educators agree the sum specified is not adequate.

While the example is given of Pegi and Neil Young and their fundraising efforts for the Bridge School,
The journal features practices and products that are beneficial to persons with disabilities, regardless of the disability. Most of the articles are focused on innovative practices and products used in the New Jersey area. However, the information is beneficial and could be practiced anywhere. This is a great resource and reference.

**Type of Material:** Journal / Magazine  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Large Print, Electronic, Large Print  
**Ordering Information:** [http://www.tcnj.edu/~technj](http://www.tcnj.edu/~technj)  
**Cost (As of Date Entered):** free  
**Website:** [http://www.tcnj.edu/~technj/](http://www.tcnj.edu/~technj/)

### 599. Technologies for Independent Travel

**Author(s):** William F. Crandall Jr. PhD  
**Publisher:** The Smith-Kettlewell Eye Research Institute  
**Publication Date:** January 1999  
**Review:** This article addresses the issue of independent travel for people with visual impairments. The author describes techniques/technology for both mobility and orientation. He describes technology that is currently available as well as that which is in the design/testing phase. Included are links to sites that describe particular technologies in greater detail with information on how to access those that are available. Good information for someone interested in the field of visual impairment and advocating for independence for people with visual impairments.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Visual Impairment / Blind  
**Ordering Information:** Available via the Website.  
**Website:** [http://www.ski.org/Rehab/WCrandall/techno.html](http://www.ski.org/Rehab/WCrandall/techno.html)

### 600. Technology at Home

**Author(s):** Sally Cain  
**Publisher:** Royal National Institute of the Blind  
**Publication Date:** January 2003  
**Review:** This site, which is hosted by the Royal National Institute of the Blind in the UK, presents an article with the emphasis of the importance of enabling school-age children to have assistive technology available at home as well as school. Benefits of this scenario are listed. Funding sources are given.

A link leads to brief case studies describing how children are using technology at home. There are also a number of useful links regarding information related to technology solutions for individuals who have visual impairments or who are blind.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** Visual Impairment / Blind  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Available via the Website.
need for advocacy from therapists so that their clients can access the necessary technology.

**Type of Material:** Article

**Audience:** Rehabilitation Professionals

**Target Disability:** General / Non-disability Specific

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** Advance for Occupational Therapy Practitioners

Merion Publications, Inc.

2900 Horizon Drive

King of Prussia, PA 19406

800 355-5627

**Cost (As of Date Entered):** No charge


597. Technical Assistance Alliance for Parents Centers

**Publisher:** Technical Assistance Alliance for Parent Centers

**Publication Date:** January 2004

**Review:** While this Web site is set up as a way for Parent Training Centers nationwide to share information and resources, it contains a large amount of information that parents and educators need. It is set up in a mostly text format that makes it easy to navigate, and contains links to information about legislation, specific disabilities, cultural diversity, accessible Web design, and special education law.

**Type of Material:** Website

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired

**Website:** [http://www.taalliance.org](http://www.taalliance.org)

598. Tech NJ-Journal

**Author(s):** Multiple

**Publisher:** School of Education, Department of Special Education at The College of New Jersey.

**Publication Date:** January 2003

**Review:** The Tech-NJ is a journal and information site that is written by students and faculty of The College of New Jersey. It is published online two to four times a year.

Each issue contains features, user profiles, resources, a review of books and videos, new products and Editor’s Desk, which is a forum for readers to ask questions and respond to previous articles.
595. Teaching Math to Visually Impaired Students

Author(s): Susan A. Osterhaus  
Publisher: Texas School for the Blind and Visually Impaired  
Publication Date: January 2003  
Review: Math is a difficult subject to teach and it is especially challenging when teaching to students who are blind or have visual impairments. This website is an incredible resource. Questions and dilemmas are presented about teaching math to students with visual impairments and solutions are carefully and fully explained. Examples are given, special technology addressed, and other tools and resources are stated to assist both teacher and student. Students and teachers are given enough information to succeed in math courses through high school. Support and techniques are explained so that the learner can become successful and independent.

596. Tech Advocacy Crucial for OT Clients

Author(s): Miriam Struck, OTR/L, ATP  
Publisher: Advance for Occupational Therapy Practitioners  
Publication Date: January 2003  
Review: This article discusses the necessity of advocacy by occupational therapists on behalf of their clients so they may have computer access. Ms. Struck, the author, discusses the prevalence of the use of computers in education. Distance learning, web-based courses, digital libraries, electronic publishing and e-books are common tools for teaching and learning. The author says that occupational therapists must consider whether their clients have basic access to a computer and how technology will affect their clients in the areas of learning, employment, and social participation. The article discusses some basic adaptations of computers such as using voice recognition software for clients with physical impairments or using screen reading software for people with visual impairments or learning disabilities. However, according to statistics cited from Disability Statistics Abstract, people with disabilities are less likely to own a computer than their non-disabled peers which creates the
593. Tasks Galore For The Real World

Author(s): Laurie Eckenrode, Pat Fennell, Katy Hearsey
Publisher: Tasks Galore
Publication Date: January 2004
Review: "Tasks Galore" is a teaching manual written by three teachers with extensive experience in teaching students with special needs who are visual learners. The manual makes use of excellent pictures as examples of the activities presented. It is the second book in a series for visual learners.

The authors' work has been primarily with students with autism, and they make use of their experience to illustrate how a wide variety of subjects may be taught in a functional manner. The functional approach is described in the introduction, which also addresses the importance of structure, schedules, choosing what to teach, designing the task, and bringing it all together.

The functional tasks covered include activities in the areas of domestic skills, independent functioning, vocational skills, and on-site job skills. This book could be of immense assistance not only to teachers and other professionals working with those who need special help in learning, mainly through visual learning, but also to parents and caregivers. The method of breaking down tasks, and supporting the learner is very clear and many creative ideas are expressed in this work. The book would wear well, and is designed to be used as a working reference manual.

Type of Material: Book

Audience: Educators, Parents / Family, Service Providers
Target Disability: Autism, Cerebral Palsy, Communication and Speech, Learning Disabilities, Mental Retardation, Multiple Sclerosis, ADHD/ADD
Ordering Information: Tasks Galore
4909 Old Elizabeth Road
Raleigh, North Carolina 27616-5414

Cost (As of Date Entered): $42.95
Website: http://www.tasksgalore.com

594. Tasks Galore: Making Groups Meaningful

Author(s): Eckenrode, Laurie; Fennell, Pat; Hearsay, Kathy
Publisher: Tasks Galore
Publication Date: January 2005
Review: This is a handbook for special educators to reference when planning ways to create meaningful group learning experiences. It covers circle time, language activities, art, physical education, motor activities, and any other group interaction that occurs during a normal school day. There are ideas on setting up the physical setting, using rhymes and songs, making stories "come alive", planning classroom parties, involving everyone in art, music, language, movement, and academics. This is a good comprehensive reference tool for special educators to use in their classrooms as well as for teachers who need to create cohesive groups in their diverse classrooms. Lots of pictures make this a fun, easy-to-read resource in a colorful, sturdily bound flip book.
behavior modification techniques. The design is very different and unique. The product is very user-friendly and easy to use. The device can be tested on a limited basis on the website.

Users familiar with AAC devices will find that this tool allows users to interact in a much more 'normal' fashion, with options for general conversational phraseology such as 'uh huh', 'sure', 'and then what' that we all use. AAC with this device is about more than functional needs. The creators have tried to incorporate design, images, voices and features that make communication fun, easy and interesting for the user.

The price may seem prohibitive at first, but given the features that the device will have on board, it begins to be more reasonable. The Tango! will be available in August-September of 2006.

**Type of Material:** Brochure  
**Target Disability:** Communication and Speech  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** www.ablenetinc.com  
**Cost (As of Date Entered):** website emulator: No charge, Tango: $7000  
**Website:** [http://www.blink-twice.com](http://www.blink-twice.com)

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### 592. Tasks Galore

**Author(s):** Laurie Eckenrode, Pat Fennell and Kathy Hearsey  
**Publisher:** Tasks Galore  
**Publication Date:** January 2003  
**Review:** The goal of this book series is to help teachers, therapists and caregivers design meaningful individualized educational tasks for students with learning differences. The book presents a wide variety of activities (tasks) in clear illustrative photos. The tasks represented are those that would appear in any developmental checklist, including such goals and objectives as categorization by attribute(s), counting, ordinals, and many, many more. Tasks are multimodal and concrete, with an emphasis on the visual mode. The importance of setting up the learning tasks by teaching to the child’s strengths, level of understanding and interests is highlighted.

The visual structuring strategy is based on three elements which include 1) visual instruction 2) visual organization and 3) visual clarity. This approach is reminiscent of the Montessori method in structure, although materials depicted are commonly found in any classroom.

There are several books in the series. They would be ideal for teachers, parents, and service providers who are looking for ideas to expand or build upon the repertoire of those they work or live with.

This is one of a series of three books. They are well done, but are quite costly at $42.95 each.

**Type of Material:** Book  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Autism, Developmental Disabilities, Mental Retardation, Multiple Disabilities  
**Ordering Information:** Purchase Orders are gladly accepted by mail or fax: 919-544-3599

Postal Mail: Send a cashier's check or a money order to:

Tasks Galore  
4909 Old Elizabeth Road
590. Ta-da List

**Author(s):** Basecamp  
**Publisher:** 37signals, LLC.  
**Publication Date:** January 2003  
**Review:** This is a program that helps you to make checklists of things that you want to remember. This basic free service is a scaled-down portion of Basecamp which is a web-based project management tool. It’s very easy to set up and use and there are textual instructions as well as a video, which you can watch to see how to use it. There are also examples of other lists to view, and you can share the lists with others both privately and publicly.

This software has the potential to help users organize themselves. Older elementary students through adults could find this a useful tool for many aspects of life, from homework to gift lists, to chores that need to be done.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities  
**Target Disability:** General / Non-disability Specific, ADHD/ADD  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.tadalist.com/](http://www.tadalist.com/)

591. Tango

**Author(s):** blinktwice  
**Publisher:** blinktwice  
**Publication Date:** January 2006  
**Review:** The Tango! is a new generation of augmentative and alternative communication devices. This new device was developed by blinktwice in conjunction with well-known vendor Ablenet. This is a departure from Ablenet's usual stable of products as it is a high-tech, high end device, but reflects their commitment to high quality.

The device includes voice morphing, compact flash expansion slots for cell phones, scanning, and a camera. The Tango! features an easy-to-use format that includes talk topics, story formats, photo albums, and there is a list feature that can hold thousands of pictures or symbols for schedules or
588. Switch Users

**Author(s):** Center for Assistive Technology  
**Publisher:** University of Buffalo  
**Publication Date:** January 2000  
**Review:** According to Assistive Technology Training Online, "Switches offer access to anything electronic for persons with disabilities and are a great way to begin experiencing independent control". This module, developed by the Center for Assistive Technology at the University of Buffalo, provides an excellent overview of the different types of switches and interfaces that can be used by students with disabilities.

It begins by identifying the ways that switches can be used, including environmental control; play and exploration; movement; computer access and communication. Additionally, the module includes information on various characteristics of switches, such as the amount of pressure required to activate it and switch interfaces (the connection between a switch and an electronic device such as a battery adapted toy). There are illustrations and photos of the various switches and the different ways that they are mounted and used.

The module also provides examples and photos of mounting systems and includes links to some of the most popular vendors such as AbleNet, Adaptivation and Tash.

There is also a section that contains practical suggestions and resources for classroom switch activities. There are also photos of some devices that can be activated by a switch and used in art and crafts activities, games, photography and video games.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** Cerebral Palsy, Communication and Speech, Developmental Disabilities, Mobility Impaired, Multiple Disabilities, Spina Bifida, Orthopedically Impaired  
**Ordering Information:** Assistive Technology Training Online Project  
University at Buffalo  
Center for Assistive Technology  
515 Kimball Tower  
Buffalo, New York 14214  
Telephone:(716) 829-3141  
Fax: (716) 829-3217  
Email: atto-webmaster@buffalo.edu  
Website: http://atto.buffalo.edu  
**Cost (As of Date Entered):** No charge  
**Website:** [http://atto.buffalo.edu/registered/ATBasics/Populations/Switch/index.php](http://atto.buffalo.edu/registered/ATBasics/Populations/Switch/index.php)

589. Synthetic Speech Systems

**Author(s):** American Foundation for the Blind  
**Publisher:** American Foundation for the Blind  
**Publication Date:** January 2000  
**Review:** This fact sheet provides a brief overview of synthetic speech systems, active accessibility, how to evaluate and purchase a screen reader, vendor contact information, and a product list.
587. Switches (Chapter 9)

Author(s): Call Centre
Publisher: Call Centre
Publication Date: January 1998
Review: This chapter, from the book Special Access Technology, is an excellent resource for training and reference. It is also helpful to anyone who would like a general overview of the different types of switches (contact, non-contact, joysticks, etc) and manufacturers (Able Net, Enabling Devices and Toby Churchill). It does not provide a great deal of detail about why someone would need to use a switch and switch mounting systems. The reader should be aware that the article is a PDF file which is available online and was written in Scotland in 1998. Therefore, many of the vendors are European and the prices are in pounds and are not current. However, there are still valuable North American resources and the article provides excellent guidance to the reader about what to consider when choosing a switch and switch site (positioning, purposeful movements, head control, etc) as well as how and where to mount a switch.

Type of Material: Book
Audience: Service Providers
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired
Alternate Formats: Electronic, Electronic
Ordering Information: The CALL Centre

University of Edinburgh
Paterson’s Land
Holyrood Road
Edinburgh
EH8 8AQ
Scotland

Tel: 0131 651 6235/6236
(International: 44 131 651 6235/6236)
Fax: 0131 651 6234
(International: 44 131 651 6234)
Email: call.centre@ed.ac.uk

Cost (As of Date Entered): No charge
Author(s): Assistive Technology Training Online Project  
Publisher: Assistive Technology Training Online Project  
Publication Date: January 2002

Review: This article gives an in-depth explanation of switches and scanning systems. It describes the options available for students with physical impairments to operate a computer through the use of a single switch or computer-switch interfaces for more than one switch.

Scanning systems are explained as well as how and when to customize these systems was detailed.

This article also provides examples of software that works with switches.

This article provided good basic information on switches and scanning. It includes a PDF file that contains a very helpful chart that shows many of the available switches, describes their features, cost and includes a photo of the product.

There is a listing of several companies that sell switches and allows the reader to click on the name and go quickly to the vendor’s site.

Type of Material: Resource Guide  
Audience: AT Professionals, Educators, Parents / Family  
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
Ordering Information: View on web site  
Cost (As of Date Entered): Free  
Website: http://atto.buffalo.edu/registered/ATBasics/AdaptingComputers/SwitchInterface/index.php

586. Switches

Author(s): Inclusive Technology  
Publisher: Inclusive Technology  
Publication Date: January 2005

Review: ‘Switches’ is the part of the Inclusive Technology website devoted to switches and switch access to technology. This British AT company, with sister U.S. company Inclusive TLC (http://www.inclusivetlc.com), sells a lot of AT-related products. Although this could be a gratuitous marketing platform, the information included is extremely valuable. While other vendors simply sell switches, this company, in addition to its products, lists a range of articles from the very basics of switch use to providing downloads of switch accessible games and activities. This reviewer particularly liked the Inclusive CD Player which is a switch accessible on-screen CD player.

The articles emphasize that the outcome to be accomplished with the switch is the most important consideration in the process of matching a person to an AT solution, not the switch itself. This approach is critical because it takes the emphasis off the device and fits it into a systematic approach to AT problem solving. This is one of the best sources for information on switches, selection, activities and development of skills under one ‘roof’. Visitors to this section are advised to take advantage of the wealth of information available.

Type of Material: Infosheet / Fact sheet  
Audience: AT Professionals, Educators  
Target Disability: Multiple Disabilities  
Cost (As of Date Entered): No charge
Switch Access Using Scanning and Encoding, Chapter 8 of the book, Special Access Technology, stresses the importance of considering seating and positioning as well as the type of switch and switch location first. It also provides suggestions for increasing scanning speed and accuracy and gives basic information on encoding (i.e. Morse Code).
participate in musical events by oneself, or with others. The directions are clear and easy to follow. Information is available for teachers on how to make use of the Square Dance Calls, for instance, as well as how to help the non-verbal child to ‘sing’.

The website’s resources and information would be of interest to anyone wishing to bring some musical experience to children or adults.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities  
**Target Disability:** General / Non-disability Specific, Autism, Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Mental Retardation, Multiple Disabilities, Neurological Disorders, Orthopedically Impaired, Apraxia of Speech  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Switch In Time  
172 harvard Rd  
Littleton, MA 01460  
adams@switchintime.com  
Phone: 978-486-9433  
Fax: 978-952-6687  
**Cost (As of Date Entered):** $175.00 (+$5.00 Shipping)  
**Website:** [http://www.switchintime.com](http://www.switchintime.com)

583. Supporting Successful Transition for Individual Who Use AAC

**Author(s):** David McNaughton  
**Publisher:** Rehabilitation Engineering Research Centers  
**Publication Date:** January 2005  
**Review:** Supporting transition from school to work for AAC users is confusing and difficult at best. This training session is a web cast with video commentary using PowerPoint slides as well as a PDF file format. Transcripts are also available. The information provides a list of major barriers and supports needed for AAC users to successfully transition from the school to work place. Included is an outcome study to measure the impact of AAC intervention in multi-domains. Skills are described that are needed to become successfully employed as well as a list of supports necessary to maintain successful employment.

This could be a valuable resource for individuals who use AAC and are preparing to enter the work force, their families and service providers. It should be used well ahead of the student’s leaving of school as the preparation and groundwork for successful transition is critical.

**Type of Material:** Training Material  
**Audience:** Parents / Family, People with Disabilities, Rehabilitation Professionals  
**Target Disability:** Communication and Speech  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** No charge  

584. Switch Access Using Scanning and Encoding

**Author(s):** Call Centre  
**Publisher:** University of Edinburgh
581. Super Surfin' for Special Educators

**Publication Date:** January 2003

**Review:** Super Surfin' for Special Educators is a question based website. Super Surfin' answers several questions for educators, including, "Why should I use the Internet in my classroom?" and "How do I integrate the Internet into my curriculum?" plus the inevitable "Where do I go to get started?"

The guidelines offered are general, basic, and applicable in a variety of classrooms. Super Surfin' for Special Educators offers lists of assistive technology resources and dozens of popular classroom-appropriate websites sorted by academic subject.

Although the site's design (including a decorative blue left border) makes it difficult to see on the screen, Super Surfin' for Special Educators answers common questions and provides specific examples of online and offline resources to encourage Internet-integrated curriculums.

**Type of Material:** Website

**Audience:** Educators

**Target Disability:** General / Non-disability Specific

**Cost (As of Date Entered):** Free

**Website:** [http://fritschi.home.mindspring.com](http://fritschi.home.mindspring.com)

582. Super Switch Ensemble

**Author(s):** Jon Adams

**Publisher:** Switch In Time Accessible Software

**Publication Date:** January 2005

**Review:** This website, Switch In Time, includes information on Super Switch Ensemble (music participation) and free software developed over the years to meet the needs of many different students and classes. The program and free software all require a Macintosh computer running OS X.

The website describes the program briefly, and it was easily downloaded where the demo made it possible to play preprogrammed music in different styles such as chords, jam, tone bells, and song.

The ‘Song Disc’ button brings up the main menu, a graphic showing the above mentioned areas. When an area is selected, the preprogrammed music is downloaded and a very brief message appears, indicating where to find further instructions. This is important; the user may have to access the same button multiple times to read the complete message.

Many types of alternative access devices may be used to play music using this program. Alternative keyboards such as Intellikeys, and single switches make the program accessible to all. Instructions are included for all access modes. This program enables the user to both play and create music using an onscreen piano keyboard.

The program makes use of the Macintosh computers’ built-in music synthesizer to create and
makes the classroom universally accessible to all children. Technology is the teaching and learning tool rather than being an 'add-on' for individual children with disabilities.

A resource packet on the topic of software selection or integrating technology with project-based learning is available upon request.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: For resource material on the topic of software selection or integrating technology with project-based learning, request one of the corresponding Considerations Packets advertised on the T/TAC William and Mary website (www.wm.edu/ttac).

Cost (As of Date Entered): no charge
Website: http://web.wm.edu/ttac/text/articles/assistivetech/nclbdigital.html

579. Success with Assistive Technology: Positioning, Placement and Asking the Right Questions

Author(s): Meegan VanStraaten, MSPH, PT
Publisher: Exceptional Parent
Publication Date: January 2003
Review: In setting up assistive technology, the position of the child and the placement of the assistive technology is just as important as the selection of the features of the AT s/he will be using.

In this article, many questions regarding positioning and placement are presented. Parents could ask these questions during an Assistive Technology assessment and during setup of work/play stations for optimal use by the child. Parents are encouraged to provide input when selecting assistive technology for their child as part of the whole team approach. By considering physical abilities with the parents, occupational and physical therapists can make the difference between a good solution and a great one that enables the child to focus and access the technology with the least physical fatigue and effort.

Type of Material: Article
Audience: Parents / Family
Target Disability: Mobility Impaired, Orthopedically Impaired
Cost (As of Date Entered): No charge
Website: http://www.eparent.com/technology/tech03_12.htm

580. Summary of Major Provisions of the Individuals with Disabilities Education Act

Author(s): House Education Workforce Committee
Publisher: ARC Minnesota
Publication Date: January 2004
Review: In the last several weeks this reviewer has read dozens of summaries about, and seen several side-by-side comparisons of, IDEA 97 and the re-authorization known as IDEA 2004. First year teachers, freshmen legislators, and the newest wave of civil liberty and disability rights advocates will enjoy the simple format of this summary outlining IDEA 2004. Discussing the complexity of IDEA requires both an entrenched comprehension and absolute clarity. This new information is critical for many of us. This summary addresses the IDEA behemoth and does it well.
576. Stuttering Foundation of America Web Site

Author(s): Burkhart, L.
Publisher: Stuttering Foundation of America
Publication Date: April 2004
Review: The Stuttering Foundation of America, the first nonprofit organization for stuttering, provides online information for prevention and improved treatment of stuttering. Numerous publications on stuttering are readily available to the public and professionals and for those who stutter and their families.
Type of Material: Website
Audience: Service Providers
Target Disability: Communication and Speech
Ordering Information: www.stuttersfa.org
Website: http://www.stuttersfa.org/

577. Success for All Students

Author(s): Glass, B.
Publisher: IBM Corporate Community Relations
Publication Date: January 1999
Review: This paper is a discussion of the issues and suggestions covered in a national meeting of educators, assistive technology providers and assistive technology specialists. The meeting was intended to promote awareness on the part of the regular education community of the expanded learning potential and increased academic performance attainable by students with special needs, through the use of technology and sound education practices in the regular education classroom.
Type of Material: Research Paper
Audience: AT Professionals, Educators, Parents / Family, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired

578. Success for All Students: Leaving No Child Behind in the Digital Age

Author(s): Cindy L. Richardson
Publisher: T/TAC Training and Technical Assistance Center at the College of William & Mary
Publication Date: January 2002
Review: This short article discusses the importance of technology in delivering education to the varied group of children who are in 21st century classrooms. The No Child Left Behind (NCLB) Legislation emphasizes the central role that technology plays in improving student achievement due to the flexibility of digital information.

The article expands the use of technology beyond the goal of including children with disabilities in educational environments. Suggestions for using technology in the classroom and to meet the needs of all students are presented. Quick tips for educators that might be helpful in integrating technology into their classrooms are presented in terms of large group instruction, small group instruction and for individual learning and practice. Readers of this article are challenged to use technology in a way that
The reviewer, a college professor, found this article paralleled her own experiences as an instructor. Rarely are note taking or study strategies reviewed with students. It is assumed that they have these skills. The implications for practice that are reported at the end of the article that inform the reader that students often rely on limited and possibly inefficient study strategies is one that could benefit all teachers and students. There is a lot of good information in this article regarding note taking for HOH and deaf students and implications for all students and teachers regarding this study strategy.

Type of Material: Article
Audience: Educators, Parents / Family
Target Disability: Hearing Impairments / Deaf
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge
Website: http://journals.sped.org/EC/Archive_Articles/VOLUME69NUMBER1FALL2002_EC_Article_2.pdf

575. Students with Learning Disabilities

Author(s): Assistive Technology Training Online Project
Publisher: University of Buffalo
Publication Date: January 2002
Review: This review article was produced by the Assistive Technology Training Online Project of the University of Buffalo, to assist in the education of students with learning disabilities. Five subjects are covered in outline fashion: Reading, Writing, Computer Navigation, References and Social Skills Training. Main ideas are highlighted and brief descriptions of methods used are given.

In the case of Reading and Writing, strategies are described using software and hardware to facilitate learning and reference is made to the Reading and Writing modules, located elsewhere on the web site for more detail.

Computer Navigation briefly describes the Voyager Suite from AbleLink, an integrated group of applications including a web browser, email program and mouse training program.

The References section includes portable reference devices, and software and online references, all to be utilized to help students become more independent.

Social Skills Training describes Social Stories and Story Grammar Markers for social practice and problem solving.

This outline covers a great deal of information, and would be of use to those looking for a variety of ideas to assist the student with learning disabilities. Links from this website will take one to more information on all the subjects listed, which makes the site a fine reference for the subject described, Students with Learning Disabilities.

Type of Material: Article
Audience: Service Providers
Target Disability: Learning Disabilities
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge
Website: http://atto.buffalo.edu/registered/ATBasics/Populations/LD/printmodule.php
573. Student Characteristics to Evaluate when Considering Use of Speech Recognition

**Author(s):** Collaboration between EDC and Boston Children's Hospital  
**Publisher:** Education Development Center  
**Publication Date:** January 1999  
**Review:** This article is addressed to teachers and speech/language professionals in the educational environment. However, the information is also very valuable to people with disabilities and their families who may be considering the use of speech recognition technology.

This information could be useful to parents if they feel their child should be considered for use of this technology and have not won support from their child’s educational team.

The article offers suggestions for choosing students for whom speech recognition technology would be successful for completing written assignments. The article addresses the minimum abilities needed to use speech recognition technology including cognitive, speech, reading, spelling, and language processing. It also suggests that the student’s ability to monitor his/her own activities and the student’s interest level and commitment to the writing process be considered as well. All of these factors are indicators of a student’s chances to be successful in using speech recognition technology.

**Type of Material:** Article  
**Audience:** Parents / Family  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Learning Disabilities, Mental Health Impairments, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders  
**Ordering Information:** View on web site  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.edc.org/spk2wrt/Resources/char.html](http://www.edc.org/spk2wrt/Resources/char.html)

574. Student Study Habits Using Notes from a Speech-to-Text Support Service

**Author(s):** Lisa Elliot, Susan Foster and Michael Stinson  
**Publisher:** Exceptional Children  
**Publication Date:** January 2002  
**Review:** The article describes a research study that focuses on how deaf and hard of hearing (HOH) high school and college students use class notes that are created by a text-to-speech support service. The technology used for note taking, C-Print, is described and compared to other systems of note taking.

Using an interview format, the researchers investigated how students and teachers use text-to-speech classroom notes. Participant attributes and the services they received are presented along with the method and interview questions used for the study. Interviews were coded and summarized according to themes or specific points. From both the student and instructor perspectives, little instruction on how to take notes occurs. Even though teachers are for the most part unaware of how students use notes, they believed that note taking services had a positive influence on HOH and deaf students understanding and class participation.
Author(s): American Foundation for the Blind (AFB) Employment Team  
Publisher: American Foundation for the Blind  
Publication Date: January 2004  
Review: This article describes the federally funded vocational rehabilitation services that all states are required to offer to residents with disabilities. The description includes who is eligible for services, what kind of services are offered, and what the impact of these services has been for the people who use them and for the people who offer them.  
Type of Material: Article  
Audience: Service Providers  
Target Disability: Deaf / Blind, Visual Impairment / Blind  
Alternate Formats: Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print  
Website: http://www.afb.org/info_document_view.asp?documentid=910

571. Stitches from the Heart Web Site

Publication Date: April 2004  
Review: This Web site is very easy to use. It is useful to families of children who need adapted clothing due to physical disabilities.  
Type of Material: Website  
Audience: Service Providers  
Target Disability: Cerebral Palsy, Developmental Disabilities, Health Impairments, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Spina Bifida, Orthopedically Impaired  
Ordering Information: www.stitchesfromtheheart.com  
Website: http://www.stitchesfromtheheart.org/

572. Storybooks on Computers: An Overview

Author(s): National Center to Improve Practice (NCIP)  
Publisher: NCIP Library  
Publication Date: January 1997  
Review: This well written article, while somewhat dated in the equipment cited, gives an excellent overview of how a computer and software can enhance the reading experiences of young children, both with and without disabilities.  
The article gives good information on the types of books on disk that are available, with descriptions of the types of interactivity and accessibility features that one should look for in the various software. It cautions the reader to be choosy about the content and age level of the books, as well as the literary value of the stories.  
While no specific software titles are mentioned, the article is a good starting point on how to use books on the computer to enhance the reading experiences of children with disabilities.  
Type of Material: Article  
Audience: Service Providers  
Target Disability: General / Non-disability Specific, Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind,
people with mobility impairments to take advantage of all the benefits of the ability to stand. It discusses the various types of standing aids, their benefits, and provides a list of manufacturers.  

**Type of Material:** Infosheet / Fact sheet  
**Audience:** Service Providers  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Health Impairments, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
**Alternate Formats:** Audio Tape, Braille, Large Print  
**Ordering Information:** ABLEDATA  
8630 Fenton St., Ste. 930  
Silver Spring, MD 20910  
301-608-8912 TTY  
301-608-8958 Fax  
800-227-0216  
[www.abledata.com](http://www.abledata.com)  

**Website:** [http://www.abledata.com/abledata_docs/standaid.htm](http://www.abledata.com/abledata_docs/standaid.htm)

### 569. Starfall

**Author(s):** Dr. Stephen Schutz et al.  
**Publisher:** Starfall Publishers  
**Publication Date:** January 2004  
**Review:** This resource may be very useful for those will work with students learning, or struggling to learn, how to read.

Dr. Stephen Schutz, a physicist and publisher, had difficulty learning to read as a child. Dr. Schutz developed this free online resource so anyone who was learning to read would have access to reading instruction. The Starfall Method is based on research about how children learn to read from the National Institute of Child Health and Human Development. Starfall teaches phonemic awareness, sound-spelling relationships in words, pronunciation, vocabulary and language comprehension, word recognition and reading comprehension strategies.

A progression of stories and activities are presented, including sound/symbol recognition practice, beginning reading 'books' developed around specific phonemes, practice and mastery experiences.

Parents and teachers can download materials that accompany the stories on the website. The parent section stresses the importance of parental support and encouragement when a child is learning to read. The educator section provides additional information about the methodology of Starfall. Many elementary school computer labs and classrooms use starfall.com for additional reading practice for students.  

**Type of Material:** Website  
**Audience:** Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.starfall.com](http://www.starfall.com)

### 570. State Vocational Rehabilitation Services Program
days and then will be deleted. It is necessary to sign up and create a password to access the software and features. This software may make emails more accessible for people who have a reading/writing disability.

**Type of Material:** Software  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** download from website  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.springdoo.com/default.aspx](http://www.springdoo.com/default.aspx)

### 567. Stages Curriculum Software

**Author(s):** Madalaine Pugliese  
**Publisher:** AssistiveTechnology, Inc.  
**Publication Date:** January 2004  
**Review:** Stages is a seven-level developmental framework that describes a learner's cognitive and language abilities. Stages includes an assessment process that may help teachers develop IEP goals. It may also be helpful in developing activities that meet alternative assessment criteria. The sequence of seven Stages is based on the work of Madalaine Pugliese, nationally recognized in the fields of assistive and instructional technologies.

The Seven Stages include (1) Cause & Effect, (2) Language Readiness, (3) Emerging Language, (4) Early Concepts, (5) Advanced Concepts, (6) Functional Learning and (7) Written Expression. Stages has developed a list of software that is appropriate for each of the stages from many of the premiere educational software companies. The difficulty is sometimes selecting the appropriate title, as there are so many. The Curriculum Software Search makes this chore a bit less time consuming.

Using this software search tool, teachers or parents may select the stage of development they are seeking to work on, such as Early Concepts. By clicking on this stage, the user will be presented with a checklist of items preferred in the software, including platform, access mode, type of feedback, whether or not it has to record results, and more. Clicking ‘Find Software’ takes the user to a list of software that fits the selected items. A further click will result in a description of each title.

This is a well-developed program with extensive material provided on the Internet.  
**Type of Material:** Website  
**Audience:** Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** no charge  
**Website:** [http://64.65.232.102:591/chartsonline.htm](http://64.65.232.102:591/chartsonline.htm)

### 568. Standing Aids (Fact Sheet #28)

**Author(s):** Daigle, A.  
**Publisher:** ABLEDATA  
**Publication Date:** January 1999  
**Review:** This fact sheet is an introduction to the various kinds of standing aids available to enable
When this reviewer visited the site, the voices were definitely robotic in nature and there were numerous pronunciation errors in the queries that were read. None of these errors made the information unusable, however, so this could be an option for people who need verbal support to supplement their vision, or to supplement their reading skills while doing a search. One benefit cited is that the technology used to create Speegle is compatible with dial-up connections instead of needing broadband service. The article states that a larger market has been found in countries such as China and Japan where people are using it to assist them in learning English.

Although Speegle is not sophisticated or accurate enough to truly replace screen reading programs for people with low-to-no-vision, it has possibilities as a support for people who need speech to supplement their reading skills.

**Type of Material:** Article  
**Audience:** AT Professionals, Parents / Family, People with Disabilities  
**Target Disability:** Learning Disabilities, Visual Impairment / Blind, Dyslexia  
**English Language Learners:**  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://news.bbc.co.uk/1/hi/technology/4079005.stm](http://news.bbc.co.uk/1/hi/technology/4079005.stm)

### 565. Sporting Wheelchairs: AT Keeps Athletes Active

**Author(s):** Mitch Jeserich  
**Publisher:** AT Network and California Assistive Technology Systems  
**Publication Date:** January 2003  
**Review:** When you are looking for sporting equipment, it is best to have the advice of people who have used specific equipment. When looking for wheelchairs to help you compete with top-notch athletes, it is best to understand what goes into the design of these specially made chairs. This article explains the needs of basketball athletes and gives the names and cost of a few vendors who help make these chairs. The article is short but it is a good starting point for further research.

**Type of Material:** Article  
**Audience:** People with Disabilities  
**Target Disability:** Mobility Impaired  
**Alternate Formats:** Electronic, Large Print, Electronic, Large Print  
**Ordering Information:** 660 J Street, Suite 270 Sacramento, CA 95814-2495  
916.325.1690 (v) 916.325.1695 (tty) 916.325.1699 (fax)  
**Cost (As of Date Entered):** free  

### 566. Springdoo

**Author(s):** TeleMessenger Solutions Ltd.  
**Publisher:** Springdoo Limited  
**Publication Date:** January 2005  
**Review:** Have you ever wanted to add your voice to an e-mail? Springdoo has designed a way to attach voice files to an e-mail that does not take a huge amount of memory, time, or files to download. The service is free to download for e-mails and websites, and for a fee, can also be used through the phone. Log-ins are necessary and limited access is available free. Sound files can be saved for 30
Multiple Sclerosis, Spina Bifida, Orthopedically Impaired

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** Access via the website or contact:

AbilityHub
c/o The Gilman Group, L.L.C.
P.O. Box 6356
Rutland, VT 05702-6356
Telephone: (802) 775 1993
Fax: (802) 773 1604
Email: info@abilityhub.com

**Website:** [http://www.abilityhub.com/speech/index.htm](http://www.abilityhub.com/speech/index.htm)

**563. Speech Recognition: Options to Consider**

**Author(s):** Beth Loy, Ph. D and Linda Carter Batiste, MS

**Publisher:** JAN

**Publication Date:** January 2000

**Review:** This well written article by the Job Accommodation Network describes speech recognition options that provide computer access to individuals with physical, cognitive, sensory and learning impairments who are unable to access the computer and a standard point and click mouse or QWERTY keyboard. The article provides information and options for the Windows platform as well as Macintosh. It also has options for individuals interested in computer programming and using a cell phone.

**Type of Material:** Article

**Audience:** Rehabilitation Professionals

**Target Disability:** Orthopedically Impaired

**Ordering Information:** 1 800 526-7234 (V/TTY)

1 304 293-7186 (V/TTY) world wide

**Website:** [http://www.jan.wvu.edu/media/speechrec.html](http://www.jan.wvu.edu/media/speechrec.html)

**564. Speech Takes On Search Engines**

**Publisher:** BBC News

**Publication Date:** January 2004

**Review:** This article from BBC News describes a talking search engine created by a Scottish computer firm. Their search engine is called Speegle, found on the web at www.speegle.com and features a robotic voice that reads the results found during a search. There are three different voices to choose from. Advocates for the visually impaired population are critical of this search engine as it is less sophisticated than screen reader products that are available commercially.

Author(s): Terry Lankutis  
Publisher: tech-Learning  
Publication Date: January 2004  
Review: This article is written from the perspective of a team that is responsible for designing and implementing a plan for a child's successful academic career. It describes an IEP team and how that team should work together to devise an IEP and find the technology that will enable the educators and the children to work together to find appropriate solutions.

The educational process and accountability is stressed throughout the article. The author shares techniques for implementing an IEP evaluation, maintaining information, and designing an AT program that will be successful for both the child and the school. The difference between high-tech and low-tech solutions is explained. Goals for the IEP are discussed and examples of correct terminology are presented. Emphasis is placed on including all members of the IEP team in the decision-making process, especially the student and parents.

The article includes a list of resources for purchasing assistive technology as well as a list of local resources. It also provides information on how to try a device before you actually purchase it. This is a good description of practices that work for children with disabilities.

Type of Material: Article  
Audience: AT Professionals, Educators  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): No charge  
Website: [http://www.techlearning.com/story/showArticle.jhtml?articleID=47204593](http://www.techlearning.com/story/showArticle.jhtml?articleID=47204593)

562. Speech Recognition

Author(s): Ability Hub  
Publisher: Ability Hub  
Publication Date: January 2003  
Review: This excellent article which is located on the Ability Hub website, provides the reader with information about using speech recognition so people with physical and learning disabilities can use a computer. The reader should follow the links to all pages (What is Speech Recognition?, Software, Microphones, Environmental Control etc.) to get the most out of the article.

The portions of the article which are especially helpful are the links to actual products such as Dragon Naturally Speaking, IBM Via Voice (which is compatible with Macintosh), various microphone manufacturers as well as sample text for "training" the computer program to recognize the user's voice. The sample text even provides information about how to talk when dictating information (it is different than having a conversation).

Additionally, the authors provide information about important considerations such as where to locate the microphone for someone with a physical disability and ways to train the computer (parroting) for someone with a learning disability who may be unable to read the text necessary for training.

Type of Material: Article  
Audience: Service Providers  
Target Disability: Cerebral Palsy, Learning Disabilities, Mobility Impaired, Multiple Disabilities,
**Publication Date:** January 2004  
**Review:** This website highlights the Capable Commander which is a remote control unit that was developed through a collaboration between the National Lekotek Center (www.lekotek.org), The Rokenbok Toy Company and Crane Industries. The remote control unit allows children who have fine motor disabilities to play with their non-disabled peers when they operate Rokenbok collectable toy systems. The $99 remote control unit can be used with any of the Rokenbok fleet of toys. The website has a video which describes the Rokenbok systems and positive testimonials.

The Rokenbok Start Set, with the typical remote, costs $79.99. It's too bad that the remote control could not have been universally designed so that the Capable Commander remote would not be such a costly add-on. The additional cost of the adapted remote may make it prohibitively expensive for some. If Universal Design were to be implemented, a 'one size (and cost) fits all model could be made available as the standard model.

**Type of Material:** Website  
**Audience:** Parents / Family  
**Target Disability:** Multiple Disabilities  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** rokenbok estore (www.rokenbok.com) and better quality children’s toy stores  
**Cost (As of Date Entered):** starter set $79.00, Capable Commander $99.00  

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**560. Special Needs Tech News**

**Author(s):** Janet Hopkins, ATP  
**Publisher:** Assistive Tech Educational Consulting  
**Publication Date:** January 2004  
**Review:** This helpful electronic newsletter is published quarterly by assistive technology consultant, Janet Hopkins and is available for no charge. Ms. Hopkins’ website contains several years worth of back issues in both PDF and text versions. Screenreaders will be able to read the text versions of the newsletters.

Ms. Hopkins provides the reader with a lot of good (and varied) information about new assistive technology products, AT grants and freebies, online resources such as accessible calculators, video cameras for people who use wheelchairs, accessible web browsers, adapted sports equipment and curriculum ideas.

This newsletter is created in Canada, but is relevant for a U.S. audience as disability issues are universal. Differences will be noted in the mandates in legislation and educational issues.

**Type of Material:** Newsletter  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Send email to Assistive Tech Educational Consulting at:  
at_consulting@canada.com  
or  
at_consulting@yahoo.ca  
**Cost (As of Date Entered):** no charge  
**Website:** [http://ca.geocities.com/janethopkinsbc/newsletters.html](http://ca.geocities.com/janethopkinsbc/newsletters.html)
outlines and explains the often confusing mediation process. This publication benefits from clear language and format that allows readers to address common questions and potential concerns without becoming mired in legal terms and clauses. The guide covers the basics: asking for mediation, preparation, common mediation concerns, and mediation resources.

**Type of Material:** Parent Guide
**Audience:** Educators, Parents / Family
**Target Disability:** General / Non-disability Specific
**Cost (As of Date Entered):** no charge
**Website:** [http://www.directionservice.org/cadre/ParentBooklet.cfm](http://www.directionservice.org/cadre/ParentBooklet.cfm)

### 558. Specialized Input Systems

**Author(s):** Assistive Technology Training Online Project
**Publisher:** Assistive Technology Training Online Project
**Publication Date:** January 2002
**Review:** There are many students who require customized equipment for better computer control. This article discusses the alternatives to keyboard and mouse usage. Alternative choices include keyboard and overlay systems, onscreen keyboards, and head pointing systems.

In the programmable keyboard section only the Discover Board and the Intellikeys are discussed. It is mentioned that the keyboards can be customized and redesigned but there is little detail in describing how to do this. There are some photos that show different overlays, but more detail could have been given to the considerations needed in designing and making overlays. There are several web site sources listed where one could pre-made overlays.

On screen keyboards and product listings are more complete and detailed. An explanation of how the keyboards work and a description of their features is thorough and easy to understand. The examples and pictures used help clarify the points made by the authors.

The information on the head pointing systems is current and accurate. The authors are not too technical in their description, so that it is easily understood by a person who is not familiar with these products.

There are links to the companies' web sites of all products listed. In addition to the contact information, there is also updated price lists and product information.

Overall, this is a good informative article with accurate information.

**Type of Material:** Resource Guide
**Audience:** AT Professionals, Educators
**Target Disability:** Cerebral Palsy, Developmental Disabilities, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Orthopedically Impaired
**Ordering Information:** web access only but can download PDF files
**Cost (As of Date Entered):** Free
**Website:** [http://atto.buffalo.edu/registered/ATBasics/AdaptingComputers/Special/index.php](http://atto.buffalo.edu/registered/ATBasics/AdaptingComputers/Special/index.php)

### 559. Specially Designed Rokenbok Controller for Children with Disabilities

**Author(s):** Paul Bergen
**Publisher:** Rokenbok Toy Company
-where will the device be used?
-how will the child access the device?
-does the child have the ability to understand spoken language?
-does the child understand cause and effect?

All of these questions contribute to developing a list of appropriate inputs and methods. It is noted that most users of augmentative and alternative communication use several different methods depending on the situation, and that one device seldom fits all.

The article would be an excellent introduction and overview for those new to AAC, and who may be in a position to develop a list of potential methods and devices for a child in the early stages of language development.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Cerebral Palsy, Communication and Speech, Developmental Disabilities, Learning Disabilities, Neurological Disorders, ADHD/ADD, Tourette Syndrome, Apraxia of Speech, Dyslexia
Cost (As of Date Entered): No charge
Website: http://specialkidstoday.com/resources/articles/speakingup.htm

556. Speak Out! about inaccessible information and telecommunication technology

Author(s): Information Technology Technical Assistance and Training Center (ITTAC)
Publisher: Georgia Institute of Technology
Publication Date: January 2005
Review: Speak Out! is a comprehensive guide for consumers to use when they face barriers information or communication access and their best efforts to correct the situation have been unsuccessful. The guide cites and explains the laws regarding accessibility; it discusses compliance procedures, including appropriate language and process; and it provides sample letters and templates. The addresses of key organizations are listed, as well as steps to legal action. Charts are included at the end of the guide to assist with different complaints, listing who is affected in what way, and citing the laws that apply in that situation. Comprehensive yet clearly written for any consumer, this guide is an invaluable resource for anyone who has met a barrier that prevents them from full participation and enjoyment of information and communication technology.
Type of Material: Resource Guide
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://www.ittatc.org/technical/speakout/index.php

557. Special Education Mediation: A Guide for Parents

Author(s): Cadre and Technical Assistance Alliance for Parents Center
Publisher: U.S. Office of Special Education Programs
Publication Date: January 2002
Review: "Special Education Mediation: A Guide for Parents" is a simple eight page guide that
554. SparkTop.org

Publisher: Schwab Learning  
Publication Date: January 2005  
Review: Schwab Learning has launched another website. SparkTop.org (www.sparktop.org) is geared toward children ages 8-12 with learning disabilities or attention disorders. The site is bright and child-intuitive, available with limited access to non-registered visitors and in entirety to registered users. Registration is free and the site is monitored for security.

That being said, there are a few elements about the SparkTop site that may disappoint parents and educators. The first and most notable--SparkTop offers lists of "Just In" CDs and video games; parents who don't want their eight year-old to pester them for "Resident Evil-Outbreak 2, PS2" or innumerable CDs that may not be age appropriate, such as Springsteen's "Devils & Dust" could be unnerved by this marketing.

Secondly, the information bar on this site is located at the bottom of the homepage, beyond all the brightly-colored (admittedly cool) brains, and the text is in small print. It took several minutes of searching before this reviewer could find the "Info for Adults" and the "About Us." Questions, for the most part, must be sent by email and people looking for in-depth answers about the SparkTop site may be disappointed.

The upside, however, is significant--registered users can build their own webpages, use monitored message boards, play games (pluses and minuses--some games are sweepstakes) and learn positive strategies for school and life using multiple choice roleplay from SparkTop characters "Zach and Zoey." The balance-point? SparkTop.org has a few issues, but overall, it is a generously entertaining, and highly supportive environment for kids with attention disorders or learning disabilities.

Type of Material: Website  
Audience: Educators, Parents / Family, People with Disabilities  
Target Disability: Learning Disabilities, ADHD/ADD  
Cost (As of Date Entered): No charge  
Website: http://www.sparktop.org

555. Speaking Up: A Voice For Every Child

Author(s): Kim Moccia  
Publisher: Special Kids Today  
Publication Date: January 2004  
Review: This two page article, while short, contains succinct descriptions of technology as it can be used today for communication for the more than one million children who need assistance with making their needs and wishes known. Both low-tech and high-tech devices are described, with examples of each. The need for learning language is emphasized, as is the need for selecting the right device. A list of appropriate questions are included, such as:
the impact of cochlear implants in the deaf community. Interspersed between the cultural discussions, this film showcases the struggle two families endure, torn by the divisiveness of the implant issue and its aftershocks in their lives, when deciding whether or not to give cochlear implants to their deaf children.

This film is not for the faint-hearted and tackles issues with an openness and audacity that illuminates painful moments without the cruelty of distance or exploitation; an achievement built by the bonds between the subjects and the filmmakers.

**Type of Material:** Video  
**Audience:** Service Providers  
**Target Disability:** Hearing Impairments / Deaf  
**Ordering Information:** Go to the following PBS link for detailed order information: http://www.pbs.org/wnet/soundandfury/film/dates.html  
**Cost (As of Date Entered):** $19.95 VHS, $24.95 DVD; plus shipping  
**Website:** [http://www.pbs.org/wnet/soundandfury/index.html](http://www.pbs.org/wnet/soundandfury/index.html)

552. Source Equipment Company Web Site

**Publication Date:** April 2004  
**Review:** This is a catalog style Web site that offers alternatives to stairs, including listings of chairlifts, exposed elevators, and stairglides. It also offers many vendor solutions for access to multiple level buildings.  
**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Health Impairments, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
**Website:** [http://www.sourceequipment.com](http://www.sourceequipment.com)

553. Spark-Space

**Author(s):** Spark Space Limited  
**Publisher:** SparkSpace Limited  
**Publication Date:** January 2005  
**Review:** Spark-Space is an idea-mapping software program that allows the user to brainstorm and diagram thoughts and convert them into text. With the text-to-speech feature built in, writers can work independently and self-check through more than one mode. The most recent version of the software now incorporates an Inspiration document-importing tool within the software. It is quite intuitive to use and the graphic tools are attractive and easy to use.

The software is compatible with Windows, MAC, and Linux operating systems.

There is an education version and a business version of the software and a version for use with a Whiteboard. This product was designed, marketed and distributed in the UK and has just become available in the U.S. A demo is available on the website as well as an option to try it online.

This program could be an attractive alternative to Inspiration or C-Map.
the ideas and suggestions provided, individuals may find ways to allow themselves to be more independent, or remain in their homes with support.

Type of Material: Book

Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

Target Disability: Autism, Brain Injury and Stroke, Communication and Speech, Developmental Disabilities, Health Impairments, Learning Disabilities, Mental Health Impairments, Multiple Disabilities, Neurological Disorders

Alternate Formats: Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print

Ordering Information: IPAT
P.O. Box 745
Cavalier, ND 58220
800-265-4728
www.ndipat.org

Cost (As of Date Entered): No Cost
Website: http://www.ndipat.org/products/solutions/sol.htm

550. Solutions for Struggling Students

Author(s): Don Johnston Inc
Publisher: Don Johnston Inc
Publication Date: January 2004

Review: This website will connect the reader with the current and archived issues of two Don Johnston newsletters. They are "The Literacy Link" and "Technology in Literacy Resources". While the information contained in the newsletters is sponsored by Don Johnston, Inc. and is primarily focused on the company's excellent products, the reader can also find assistive technology and professional development information such as conferences and web resources. It includes links to state-level events including conferences and sessions by DJ staff.

This resource is aimed primarily at educators but it could also be helpful for other professionals, parents and students. While it focuses on DJ products, this company has been a leader in the field, developing assistive technology and literacy products. The reader has the option to subscribe to the free newsletter or to read it online.

Type of Material: Newsletter
Audience: Service Providers
Alternate Formats: Electronic, Electronic
Ordering Information:
Cost (As of Date Entered): No charge
Website: http://www.donjohnston.com/newsletters/newsletters.htm

551. Sound and Fury

Publisher: Aronson Film Associates Inc., Public Policy Productions Inc.
Publication Date: January 2001

Review: Nominated for an Academy Award in 2001 as Best Documentary Film, the emotionally volatile, intimate, and thought-provoking "Sound and Fury" explores the depths of deaf culture and
It “provides a kids-friendly resource- just for young people with special needs.” It includes information on disabilities, links to online communities for kids with special needs, accessible online educational activities and much more.

The site offers links to organizations that have activities for kids with Special Needs including camps and sporting activities. There are also links to online communities hosted by other disability related websites including LD Kidzone and Exhale. There are also links to FAQ’s on other websites relevant to kids with special needs. The links go to programs in both the United States and Canada.

**Type of Material:** Website  
**Audience:** AT Professionals, Parents / Family  
**Target Disability:** Multiple Disabilities  
**Ordering Information:** na  
**Cost (As of Date Entered):** No charge  
**Website:** [http://snow.utoronto.ca/snowkids/](http://snow.utoronto.ca/snowkids/)

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**548. SNOW (Special Needs Opportunity Windows) Project**

**Author(s):** University of Toronto  
**Publisher:** University of Toronto  
**Publication Date:** January 2005  
**Review:** Policymakers and school boards should be pointed toward the University of Toronto, and the remarkable collaboration that has created the SNOW Project.

The SNOW (Special Needs Opportunity Windows) Project was formed to give educators and parents information-rich access to resources, workshops, teaching aids, technology tools, and a variety of professional development tracks. Access is a priority for the University of Toronto, and the SNOW Project is no exception. The project website is divided into eight topic categories and five web navigation levels. The site is nearly bulletproof and benefits from integrated text menus, audio page readers, and image descriptions. The website's "help" button is quite useful, and offers visitors a guide to website features.

This reviewer wishes that projects like SNOW were more common and more successful here in the United States. The SNOW Project is an excellent model.

**Type of Material:** Website  
**Audience:** Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://snow.utoronto.ca/index.html](http://snow.utoronto.ca/index.html)

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**549. Solutions: Assistive Technology for People with Hidden Disabilities**

**Author(s):** Lee, J.  
**Publisher:** North Dakota Interagency Program for Assistive Technology (IPAT)  
**Publication Date:** January 1999  
**Review:** This book provides ideas for assistive technology solutions addressing problems with hidden disabilities related to confusion, safety, socialization, and functional limitations due to a disability. It covers a host of both low tech/low cost and high tech/more expensive items that can help an individual maintain functional control in many areas of their life, without risking their safety. With
computers and how they have potential to help students with disabilities learn, participate, collaborate and be more productive. It covers many areas and presents all of the material in easy to understand language. The many illustrations also make the information easier to digest.

The reader is provided with information about positioning for computer use and a very helpful positioning checklist.

The article also provides information about low tech computer adaptations, and modifications to the operating systems of both Macintosh and Windows computers. These free and easy modifications make computers more accessible to students with disabilities by allowing the user to modify the size of the cursor, keyboard functions, sound and how things appear on the screen.

There is also a section that explains the basic parts of a computer (mouse, keyboard, printer, peripheral devices, etc.). For those who are new to computers, this section is a great introduction to their system and related devices such as scanners, digital cameras etc.

There is also specific information about computer accommodations for students with disabilities, including adaptive keyboards, such as the IntelliKeys; keyguards; typing aids; onscreen keyboards; magnifiers; and keycaps.

**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Cerebral Palsy, Multiple Disabilities, Visual Impairment / Blind, Orthopedically Impaired  
**Ordering Information:** Assistive Technology Training Online Project

University at Buffalo  
Center for Assistive Technology  
515 Kimball Tower  
Buffalo, New York 14214  
Telephone:(716) 829-3141  
Fax: (716) 829-3217  
Email: atto-webmaster@buffalo.edu  
Website: [http://atto.buffalo.edu](http://atto.buffalo.edu)  
**Cost (As of Date Entered):** No charge  
**Website:** [http://atto.buffalo.edu/registered/ATBasics/AdaptingComputers/SimpleModifications/](http://atto.buffalo.edu/registered/ATBasics/AdaptingComputers/SimpleModifications/)

**547. SNOW Kids Empowerment Zone**

**Author(s):** SNOW Project  
**Publisher:** Adaptive Technology Resource Centre, University of Toronto  
**Publication Date:** January 2005  
**Review:** SNOW Kids Empowerment Zone is a website that is part of the Special Needs Opportunity Windows (SNOW) project of the Adaptive Technology Resource Centre, at the University of Toronto.
browsers. The ability to do this is important to people with a visual impairment or people who experience eye strain while using their computers to surf the Web. The article provides helpful detailed instructions; however, it is for older versions of Netscape and Internet Explorer.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific, Visual Impairment / Blind  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Download from web site.  
**Cost (As of Date Entered):** Free to view or download on web site.  

### 545. Sights and Sounds Software

**Author(s):** ASTECH  
**Publisher:** ASTECH  
**Publication Date:** January 2005  
**Review:** Sights and Sounds is a software program for use with children of all ages who have short attention spans or visual impairments. It can be used with a mouse or through switch access. Images are presented through simple, bold graphics on a plain, contrasting background. Sound effects are then generated to help teach a child to attend to sounds and images. The sounds are common to everyday situations and include: animals, household noises, cartoon sounds, transportation, tools, people (laughing, sneezing, etc), rhythms through simple drum beats, and a surprise mixture of sounds at the end. Adults can work with children by setting it up with a mouse and then allowing a child to access with a switch. In a classroom, a switch-using child can play the software next to a mouse-using child.

Although this software is developed in New Zealand, it is available overseas by contacting Astech.  
**Type of Material:** Software  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** Autism, Brain Injury and Stroke, Mental Health Impairments, Mental Retardation, Visual Impairment / Blind, ADHD/ADD, Bipolar Disorder, Dyslexia, Epilepsy  
**Ordering Information:** ASTECH Software LTD  
Unit 3, 142 Ferry Road. PO Box 10092  
Christchurch, New Zealand  
Phone 0064 3 963 5722 Fax 0064 3 963 5721  
Email: software@astechnz.com  
**Cost (As of Date Entered):** $78  
**Website:** [http://www.astechnz.com/Pages/sounds.htm](http://www.astechnz.com/Pages/sounds.htm)

### 546. Simple Modifications

**Author(s):** Center for Assistive Technology  
**Publisher:** University of Buffalo  
**Publication Date:** January 2000  
**Review:** This module developed by the Center for Assistive Technology discusses the role of
following headings:
-- Federal Policies (including laws, regulations, guidelines and Department of Justice technical assistance letters)
-- Free Tools and Guidance on Federal Access Issues
-- Generally Available Section 508 Repair and Verification Tools
-- Commercially Available Accessible Web Page and Online Programs
-- Private Accessibility Contractors
-- Articles and other useful Background Information on IT Accessibility
-- Government Sources of General Information about Section 508 and IT Accessibility
-- Non-Government Sources of General Information about Section 508
-- Telecommunications Access

Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: Available via the website
Cost (As of Date Entered): Free
Website: http://www.katsnet.org/section508.html

543. Selecting, Buying and Maintaining Adaptive Equipment or What To Do Before You Buy

Author(s): Alberding, C.
Publisher: Increasing Capabilities Access Network (ICAN)
Publication Date: April 2004
Review: This brochure is a general guideline for considerations when deciding on different pieces of assistive technology. There is a list of questions to consider when looking at equipment and suggestions on where to go for repairs, as well as a look into warranties and repair service. The resources are general to any part of the country, but the specific locations are for the State of Arkansas.
Type of Material: Brochure
Audience: Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired
Website: http://www.arsinfo.net/ican/fs_adeqp.html

544. Setting Up Browser Fonts

Author(s): dyslexic.com
Publisher: iANSYST, Ltd.
Publication Date: January 2001
Review: This very short article provides instructions to the reader on how to change fonts on web
This article gives a good, concise overview of screen magnification products. These are products that enlarge what appears on the computer screen. Each product listed is accompanied by detailed information about its capabilities, whether or not it has speech output, and its compatibility with various operating systems. Each product also has a link to the manufacturer's web site.

In addition to screen magnification, there are a few links to other low vision products, such as software programs that enlarge the cursor.

This web article is a good starting point for someone who is looking for information in one place about a variety of screen magnification and other programs for people with low vision. The links it contains also give the reader an opportunity to explore more resources on their own.

541. Searching for Answers

Author(s): Dao Xiong
Publisher: PACER Center
Publication Date: January 2005
Review: This short article, written by a father of a now-adult child, examines how one family navigated the integration of two cultures (Hmong and U.S.) in the medical and educational growth of their daughter with significant developmental disabilities.

The persistence of the family, the assimilation of information and the desire to maintain Hmong beliefs illustrate the challenges of cultural differences in raising children with disabilities in a different country.

The article may be most helpful to professionals, by reinforcing the sensitivity needed in guiding families from other cultures through the maze of U.S. disability services.

542. Section 508 Resource Fact Sheet

Publisher: KATS Network
Publication Date: January 2002
Review: Section 508 of the Rehabilitation Act requires access to electronic information technology procured by Federal agencies. This fact sheet offers a multitude of information links under the
538. Scooters (Fact Sheet #26)

**Publisher:** ABLEDATA  
**Publication Date:** January 1996  
**Review:** There are many things to consider when purchasing a scooter for a person that has a mobility impairment, and this article outlines many of those issues. It is divided into sections so it is easy to read and includes many valuable resources that might be important to the consumer. The terminology may vary depending on a person’s geographical location, but the information is very good and applicable to persons all over the country. It is not written by a particular vendor, so it describes components of scooters and some of the different pros and cons of different options without any bias.  
**Type of Material:** Infosheet / Fact sheet  
**Audience:** AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Health Impairments, Mental Health Impairments, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Spina Bifida, Orthopedically Impaired  
**Ordering Information:** ABLEDATA  
8630 Fenton St., Ste. 930  
Silver Spring, MD 20910  
301-608-8912 TTY  
301-608-8958 Fax  
800-227-0216  
[www.abledata.com/text2/scooters.htm](http://www.abledata.com/text2/scooters.htm)  

**Cost (As of Date Entered):** No Cost  
**Website:** [http://www.abledata.com/text2/scooters.htm](http://www.abledata.com/text2/scooters.htm)

539. Screening Tool for Assistive Technology

**Author(s):** North Dakota Interagency Program for Assistive Technology  
**Publication Date:** January 1998  
**Review:** This is a comprehensive checklist for screening an individual's need for assistive technology in the school, the community, and work settings. It is very thorough and easy to understand. It is part of a larger comprehensive guide for Assistive Technology Planning.  
**Type of Material:** Evaluation Tool  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** North Dakota Interagency Project for Assistive Technology  
P.O. Box 743  
Cavalier, ND 58220  
(701)- 265-4807

540. Screen Magnification
Review: This article provides a good introduction to the different types of seating options available for the bath. While it is written for elderly people, their families and service providers, the material is useful for anyone with mobility challenges.

There are basic descriptions of bath stools, bath chairs, reclining bath seats, tub boards and transfer benches along with descriptions of their features. There are, however no illustrations of these products.

The article concludes with contact information for three companies that sell bath seats and links to two excellent "online booklets" that provide more in-depth information about bath seats, benches and even lifts.

Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: Brain Injury and Stroke, Health Impairments, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired
Ordering Information: Can be downloaded from the web site.
Cost (As of Date Entered): Free
Website: http://www.rerc.ufl.edu/pdf/insert3.pdf

536. Say Cheese! Mouse Alternatives

Author(s): Lipka, Daniel D. M.Ed., OTR/L, ATS
Publisher: RehabCentral.com
Publication Date: January 2001
Review: This short article discusses in general terms the different types of devices that will replace the typical computer mouse. It describes the devices, and the software that they use, without listing or discussing specific examples. The article could give someone looking for alternative mouse access a good starting point for researching the devices available for purchase today.

Type of Material: Article
Audience: Service Providers
Target Disability: Mobility Impaired, Orthopedically Impaired
Ordering Information: The article is available on Rehab Central's Web site.
Website: http://www.medrehabnetwork.com/art-adee.cfm?artID=9056

537. Schwab Foundation for Learning Web Site

Publisher: Schwab Foundation for Learning Web Site
Publication Date: April 2004
Review: This site provides a wealth of information for both parents and teachers on strategies and technology, as it relates to children with learning differences. It features a search tool in both parent and teacher resource sections, as well as a bulletin board for discussions.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech,
533. Rites of Passage. . .Teens Transition to the Future

Author(s): Illinois Assistive Technology Project
Publication Date: April 2004
Review: This article defines transition as it applies to teenagers moving on to work or post-secondary education. It outlines key aspects of transition and resources when navigating to adulthood.
Type of Material: Article
Audience: Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: Available on the website or from:

Illinois Assistive Technology Project
1 W. Old State Capitol Plaza
Suite 100
Springfield, IL 62701
(217) 522-7985 (Voice) (217) 522-9966 (TDD)
Website: http://www.iltech.org/rights_passage.asp

534. Roles and Responsibilities: Impact the Outcomes Expected from AAC

Author(s): Cavanaugh, M.
Publisher: University of Maine Center for Community Inclusion
Publication Date: January 1998
Review: This article describes how a transdisciplinary approach to Augmentative and Alternative Communication (AAC) device selection, use, and maintenance can provide the best results. With everyone working together, the AAC system is more likely to be successful across the individual's different environments, and with different partners. It also discusses a multidisciplinary team approach, typically called a medical model, and an interdisciplinary team approach, often used in an educational setting. Although this article specifically discusses AAC, the different approaches can be applied to several processes.
Type of Material: Article
Audience: Service Providers
Target Disability: Communication and Speech
Ordering Information: Available on Web site:

http://www.ccids.umaine.edu/FACTSFC/articles/rolesimp.html
Cost (As of Date Entered): No Cost
Website: http://www.ccids.umaine.edu/FACTSFC/articles/rolesimp.html

535. Rub a Dub Dub, Devices for the Tub -- Bath Seats

Author(s): Jennifer Weir
Publisher: Center for Assistive Technology University at Buffalo
Publication Date: January 2001
531. Resources for People Who Can't Afford Hearing Aids and Cochlear Implants

Author(s): Paula Rosenthal, J.D.
Publisher: Hearing Exchange
Publication Date: January 2001
Review: This article is written by a lawyer who is hearing impaired and who has family members who have hearing impairments as well. She addresses the high cost of hearing aids and cochlear implants and the impact that lack of financial resources either privately or through insurance might have on the quality of amplification individuals may obtain. She lists the adverse effects of hearing loss, including social isolation and language delays in children. A list of organizations and online resources is included. The article provides clear information and a short list of national resources that anyone can access.
Type of Material: Article
Audience: Parents / Family, People with Disabilities
Target Disability: Hearing Impairments / Deaf
Cost (As of Date Entered): Free
Website: http://www.hearingexchange.com/articles/paulas-110601.htm

532. Rhode Island Parent Guide to Assistive Technology

Author(s): Assistive Technology Access Partnership & Rhode Island Information Network
Publisher: Assistive Technology Access Partnership
Publication Date: April 2004
Review: The guide contains information concerning assistive technology (AT) in the areas of general information, product groups, selecting and obtaining of AT, the AT team, the IEP (Individual Education Program) process for AT, legal rights, funding, and resources. The guide was published to provide information to families/caregivers in Rhode Island, however, much of the information may pertain to families/caregivers nationwide.
Type of Material: Resource Guide
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired
Ordering Information: Assistive Technology Access Partnership
c/o Tech ACCESS of RI Inc.
Attn: Beverly Johnson
110 Jefferson Blvd.
Warwick, RI 02888
401-463-0202
Cost (As of Date Entered): No Cost
529. Resource Materials and Technology Center for the Deaf and Hard of Hearing

Author(s): Florida Diagnostic and Learning Resources System  
Publisher: Florida Diagnostic and Learning Resources System  
Publication Date: January 1999  
Review: This is part of the website of the Florida School for the Deaf and Blind. It is intended for teachers of deaf or hard of hearing students to utilize curriculum materials, web resources, technology, and training materials to help them be better teachers. There are links to literacy materials, teacher training resources, information of educational captioning, and a data base for a lending library of captioned videotapes. This is a great source of information for teachers as well as parents. Though first appearing in 1999, the site is updated regularly so new information is included. They also offer a monthly newsletter called "Tech Notes."

Type of Material: Website  
Audience: Educators, Parents / Family  
Target Disability: Deaf / Blind, Hearing Impairments / Deaf  
Ordering Information: Resource Materials and Technology Center for Deaf and Hard of Hearing Students  
207 N. San marco Ave.  
St. Augustine, FL 32084  
1-800-356-6731  
Website: http://www.fsdb.k12.fl.us/rmc/

530. Resources for Older Computers

Author(s): Jayne Cravens  
Publisher: Tech Soup  
Publication Date: January 2003  
Review: This article, written by Jayne Cravens, owner of Coyote Communications, is not specifically about assistive technology or disability. It has relevance and value to people with disabilities and/or their families because it points out the typical computer user does not necessarily need the newest, fastest and most expensive computer on the market.

According to the article, older models can complete most common tasks such as word processing, creating spreadsheets and databases, using e-mail, viewing and creating websites and desktop publishing. The author also provides the reader with some excellent links to articles that offer more information about "obsolete" Macintosh, Windows and Linux systems.

Additionally, the article provides the reader with web links to sites which tell where to get a web browser for a low end Macintosh, how to select an internet service provider (ISP) and how to maintain and obtain parts for your older computer.

Type of Material: Article  
Audience: Service Providers  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Ordering Information: Download from web site. There is also a link to a version of this article that is updated.
Review: This article addresses amplification devices that are available to assist people with hearing impairments in successful use of telephones. Several different product options are discussed. There is also a list of resources to find out more about telephone amplification devices.

Type of Material: Article

Audience: Service Providers

Target Disability: Communication and Speech, Hearing Impairments / Deaf, Multiple Disabilities

Ordering Information: Center for Assistive Technology (CAT)/UB Products
515 Kimball Tower
University at Buffalo
Buffalo, NY 14214-3079
716-829-3141
http://wings.buffalo.edu/cat/rerca-telephones.htm

Cost (As of Date Entered): No Cost
Website: http://rerc.ufl.edu/insert13.html

527. RERC on Communication Enhancement Web Site

Publisher: The Rehabilitation Engineering Research Center (RERC)
Publication Date: April 2004

Review: AAC-RERC (Augmentative and Alternative Communication - Rehabilitation Engineering Research Center) is online to assist users of AAC technologies in achieving their goals by advancing and promoting AAC technologies and supporting the individuals that use, manufacture, and recommend them. The RERC conducts research, sponsors/conducts conferences, develops technology, provides technical assistance, conducts training seminars, facilitates technology transfer, and evaluates technology.

Type of Material: Website

Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

Target Disability: General / Non-disability Specific, Autism, Brain Injury and Stroke, Communication and Speech, Deaf / Blind, Developmental Disabilities

Ordering Information: www.aac-rerc.com
Website: http://www.aac-rerc.com

528. RERC on Hearing Enhancement Web Site

Publisher: Lexington School for the Deaf and Center for the Deaf
Publication Date: April 2004

Review: The RERC on Hearing Enhancement addresses accessibility problems of individuals with deafness or hearing impairment, by developing and evaluating a range of cost-effective technological aids. Attention is given to the differing needs of people with moderate hearing loss, people with severe or profound hearing loss, young children, older adults and people with both vision and hearing loss.

Type of Material: Website

Audience: Service Providers

Target Disability: Brain Injury and Stroke, Communication and Speech, Deaf / Blind, Health Impairments, Hearing Impairments / Deaf, Neurological Disorders

Ordering Information: www.hearingresearch.org
medical, educational, or recreational resources for children with disabilities in the Northeast Ohio area.

The website includes a Toy Adaptation Tutorial that provides step-by-step instructions with diagrams so anyone can learn how to adapt a toy. Also included are links to companies that sell adapted toys or switches and to websites that provide information related to adapting toys.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** RePlay for Kids  
600 W. Sturbridge Dr.  
Medina, OH 44256  
Phone 330-721-8281  
TollFree 866-9-REPLAY  
info@replayforkids.org  
**Cost (As of Date Entered):** No charge  
**Website:** http://www.replayforkids.org

### 525. Repurposing Microsoft Office's Autocorrect Feature

**Author(s):** David Clark  
**Publisher:** David's Access  
**Publication Date:** January 2004  
**Review:** The author of this website is an individual who has multiple disabilities. He is a consultant who presents nationally on adapting mainstream computer technologies for people with disabilities, particularly in the area of learning disabilities.

This page addresses the Autocorrect feature found in the Microsoft Office Suite. It can be easily programmed to correct errors automatically and in real time as it is being typed. It may also be used as abbreviation expansion. By simply typing initials, signatures, dates and phrases can be 'predicted' and entered into documents and emails by simply pressing the 'Enter' key. Easy directions for using this feature are included in the article. While presented as a solution for people with disabilities, it is truly a time-saving feature that could be used by anyone.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** No charge  
**Website:** http://www.davidsaccess.com/index.php?s=Microsoft+Office&searchbutton=Go%21

### 526. RERC on Aging: Helpful Products for Older Persons: Telephones Amplification Devices

**Author(s):** Center for Assistive Technology (CAT)  
**Publisher:** Center for Assistive Technology (CAT)  
**Publication Date:** April 2004
The author makes many interesting points, and concludes with this statement: "As a result, I believe there is an urgent need to address the gap in the knowledge base regarding the relationship between remediation and compensation as it applies to students with disabilities, their failure to experience high levels of successful academic performance as is their right under FAPE, and the role of assistive technology to enhance learning."

**523. Remediation vs. Compensation: A Critical Decision Point in Assistive Technology Consideration**

**Author(s):** Dave L. Edyburn  
**Publisher:** ConnSENSE Bulletin  
**Publication Date:** January 2005  
**Review:** This is a straightforward commentary essay that vividly discusses Dave Edyburn’s theories of technology and the issues surrounding remediation and compensation, his opinion of work by other theorists, and his belief that "somewhere there is an invisible line demarcating the boundaries and relationships among teaching . . , learning differences, expectations and standards, and technology-enhanced performance."

Edyburn holds that there is an "urgent need" to close the gap in the knowledge base concerning "the relationship between remediation and compensation as it applies to students with disabilities."

Although very little concrete information is provided and the language struggles briefly, the ideas remain clear and readers may be intrigued by the unique examples (see sixth paragraph, surgical recovery vs. amputation, or paragraph eight, Ask Jeeves).

**Type of Material:** Article  
**Audience:** Educators  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.connsensebulletin.com/edyburnv4n3.html](http://www.connsensebulletin.com/edyburnv4n3.html)

**524. RePlay for Kids**

**Author(s):** RePlay for Kids  
**Publisher:** RePlay for Kids  
**Publication Date:** January 2005  
**Review:** Serving Northeast Ohio, RePlay for Kids is an organization of volunteers who repair and adapt toys and assistive devices for children with disabilities. Their mission is to increase the availability of toys and assistive devices for children with disabilities. They specialize in repairing existing devices, adapting mainstream toys, designing new devices, and educating families and clinicians. These services are provided at no cost to organizations with limited resources that provide
521. Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Website

Author(s): RESNA
Publisher: RESNA
Publication Date: January 1999
Review: RESNA's Web site is a comprehensive and detailed site about the services available from RESNA, a nationally renown assistive technology organization. They are devoted to research, education, development, and advocacy. There are many sections on this site that contain a variety of information for various users. The sectors are easy to get to and it is easy to figure out which ones fit individuals' needs.
Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired
Ordering Information: www.resna.org
Website: http://www.resna.org

522. Remediation vs. Compensation: A critical decision point in assistive technology consideration

Author(s): Edyburn, Dave L.
Publisher: ConnSENSE
Publication Date: January 2002
Review: This article is meant to be a thought provoking look at how and when the decision is made to stop trying to remediate an educational problem, and begin to compensate for the lack of progress in retaining educational material caused by a disability.

"That is, where are the professional guidelines that indicate that all avenues to teach a child should be exhausted prior to the introduction of assistive technology? How do we know whether or not a child has the cognitive capabilities for learning the information? What alternative learning strategies have been used to help the child master the content? Should direct instruction continue while a child is taught the use of a performance aid? If assistive technology is permitted, what will be the consequences of this device dependency?"

The author feels that there is a lack of information available to educators and parents that allow them to make an informed decision about whether to continue remediation, or to begin using assistive technology to compensate for disability related lack of progress.
519. Reflections on the use of a PDA as an assistive technology

Author(s): TechDis Accessibility Database Team
Publisher: University of Sussex Institute of Education
Publication Date: January 2003
Review: The value of a PDA as an assistive device in an educational setting is the focus of this report from the TechDis project. The report is part of the final evaluation of the TechDis project, and as a result, is built on functional key findings covering a list of general uses for PDAs and offering specific examples of the types of difficulties that PDA tools can help surmount. The report is further broken into lists of PDA applications that are useful for specific educational tasks. The lists offer clear examples for students, educators, parents, AT technicians, and other providers; and could easily be used in IEP/CST meetings and other advocacy forums to support the use of the PDAs as appropriate assistive tools.

Type of Material: Report
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic
Cost (As of Date Entered): no charge
Website: http://www.techdis.ac.uk/PDA/reflections.htm

520. Refreshable Braille Display

Author(s): Adaptive Technology Resource Centre, University of Toronto
Publisher: Adaptive Technology Resource Centre, University of Toronto
Publication Date: January 2000
Review: "This page provides an image, a description and a list of vendors for refreshable Braille systems as well as a link to make and view comments."

This info sheet gives basic information about the specifications of various refreshable Braille displays. The information is fairly current (reviewed 6/2003), but some of the links to product web sites are not functional, and apparently some of the products mentioned have been replaced with newer versions.

However, the site provides guidelines and questions to consider for an individual who is thinking of purchasing a refreshable Braille display. The information about the differences in 40, 65, and 80 pin displays is well written, and helpful.

Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: Deaf / Blind, Visual Impairment / Blind
provided on purchasing portable ramps.

**Type of Material:** Infosheet / Fact sheet

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** Brain Injury and Stroke, Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired

**Ordering Information:** ABLEDATA
8630 Fenton St., Ste 930
Silver Spring, MD 20910
301-608-8912 TTY
301-608-8958 Fax
800-227-0216

**Cost (As of Date Entered):** No Cost

**Website:** [http://www.abledata.com/text2/ramps.htm](http://www.abledata.com/text2/ramps.htm)

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**517. Read Regular**

**Author(s):** Natascha Frensch

**Publication Date:** January 2003

**Review:** This is a website detailing a computer typeface program called ‘Read Regular’ which is aimed at helping people with dyslexia to be more successful with reading and writing. There is a description of dyslexia and how it impacts reading and writing and pages that demonstrate how the different typefaces look.

To this reviewer, the site was lacking in specific details that would inform a person as to whether or not purchase of this program would be appropriate. Attempts to utilize the program for demonstration purposes were unsuccessful. There is a disclaimer on the site to watch for details of when it will be available for purchase and what the cost will be. There may be merit to the different typeface styles for a person with dyslexia, and they are adapted to different age groups and needs, but until information is available about cost and ease of purchase, interested parties will just need to "stay tuned". There is a publication available. Ordering information is given below.

**Type of Material:** Website

**Audience:** AT Professionals

**Target Disability:** Dyslexia

**Ordering Information:** To order the publication "Read Regular", contact natascha.frensch@readregular.com

**Website:** [http://www.readregular.com/english/regular.html](http://www.readregular.com/english/regular.html)

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**518. Real Connections: Making Distance Learning Accessible to Everyone**

**Author(s):** Sheryl Burgstahler, Ph.D.

**Publisher:** Do-It (University of Washington)

**Publication Date:** January 2005

**Review:** This resource article from the University of Washington Do-It program discusses the application of universally designed learning to distance education programs. In classic Do-It style, Burgstahler presents common access issues in distance learning courses then offers educators several integrated strategies and resources to create an accessible course; including a straightforward "Getting Started" section. Readers may also find the closing list of resources and the companion video presentation as valuable.
515. Ramps and Accessible Thresholds

Author(s): Belknap, K.
Publisher: ABLEDATA
Publication Date: January 1997
Review: This fact sheet details safety and standards for ramps in accordance with the ADA (Americans with Disabilities Act) guidelines. It includes a section on types of ramps and funding information. The fact sheet also has a comprehensive list of ramp manufacturer contacts.
Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: Brain Injury and Stroke, Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired
Ordering Information: ABLEDATA
8630 Fenton St., Ste. 930
Silver Spring, MD 20910
301-608-8912 TTY
301-608-8958 Fax
800-227-0216
www.abledata.com/text2/ramps.htm
Free as of September 2000.
Cost (As of Date Entered): No Cost
Website: http://www.abledata.com/abledata_docs/ramps.htm

516. Ramps (Fact Sheet #27)

Author(s): ABLEDATA
Publisher: ABLEDATA
Publication Date: January 1997
Review: This article elaborates on standard specifications and measurements used when building a ramp. Environmental conditions are also discussed when considering building ramps. Resources are
512. Quality Indicators of Effective Assistive Technology Services

Author(s): Zabala, J., Reed, P., Korsten, J., and Bowser, G.
Publisher: Wisconsin Assistive Technology Initiative (WATI)
Publication Date: January 1999
Review: This text is a discussion of quality indicators for professionals to determine the effectiveness of assistive technology services. The quality indicators can help professionals in the consideration of assistive technology in the IEP (Individualized Education Program). It offers several illustrative case studies, which demonstrate the value of clear and concise quality indicators in determining appropriate evaluation of assistive technology.

Type of Material: Article
Audience: Educators
Target Disability: General / Non-disability Specific
Ordering Information: WATI
357 N. Main Street
Amherst, WI 54406
715-824-6415
800-565-8135

Cost (As of Date Entered): No Cost
Website: http://www.wati.org/at_services/qualityindicators.html

513. Questions from Kids about Blindness

Author(s): National Federation for the Blind
Publisher: National Federation for the Blind
Publication Date: January 2004
Review: This is a short question-and-answer page of common questions children have about blindness. Questions are those most commonly posed to staff at NFB by children and answers are direct and easy to understand.

Questions in the list include issues ranging from practical matters such as grocery shopping and selecting clothing to mobility and recreational activities. Answers often contain embedded examples of assistive technology that the general public takes for granted, but that children may not have yet learned. The list is far from comprehensive, but may be a good starting point for children who are exploring the concept of blindness.

Type of Material: Infosheet / Fact sheet
Audience: Parents / Family
Target Disability: Visual Impairment / Blind
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge
Website: http://www.nfbmass.org/questions.htm

514. Raising Deaf Kids
useful in promoting effective transition and that further research is warranted on several fronts.

Type of Material: Research Paper
Audience: Service Providers
Target Disability: Mental Retardation
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge
Website: http://jset.unlv.edu/20/JSETv20n2.pdf

510. Putting It All Together with Assistive Technology

Author(s): Inclusive Large Scale Standards and Assessment Group
Publisher: University of Kentucky
Publication Date: January 2004
Review: Readers will be impressed first by the content of this Adobe converted slide presentation, then they will be startled by the length (55 pages). This resource/training guide is worth a second look, especially for people new to the SETT Assessment system and the combination of SETT built into an AMAT Matrix. The importance of a combined process is clarified and the AMAT Matrix becomes a straightforward equation. Despite the length of the document, AMAT (and SETT) principles, examples, and related resources are presented clearly using one or two ideas per page.

Type of Material: Resource Guide
Audience: AT Professionals, Educators, Parents / Family, Service Providers
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge
Website: http://www.state.ia.us/educate/ecese/cfcs/altassess/doc/amatpres.pdf

511. Quality Indicators for Assistive Technology Services

Author(s): QIAT Consortium
Publisher: QIAT Consortium
Publication Date: January 2003
Review: Despite the implementation of laws that address assistive technologies, there has never been any standard set that assesses the quality of the assistive technology services and equipment. Since 1998, The QIAT Consortium has attempted and succeeded in defining a set of descriptors that could serve as guidelines for quality assistive technology services. QIAT has defined guidelines in the areas of administrative support, assessment, planning, budgeting, implementation, outcomes, and professional development & training. Common errors are discussed to assist in monitoring and identifying successful applications of the assistive technology.

Type of Material: Training Material
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge
Website: http://sweb.uky.edu/~jszaba0/QIATAUG2003.PDF
508. Promising Technologies

Author(s): Terry Lankutis and Kristien Kennedy
Publisher: Technology and Learning - The Resource for Education Technology Leaders
Publication Date: January 2002
Review: Assistive technology is not just for special education students and people with disabilities. It is also for those who are struggling or simply want an easier method of writing, taking notes, or completing homework and reports. This article provides a list of tested software programs and adaptive devices to assist anyone. Word prediction programs and software programs to improve the writing process are listed, as well as the companies that provide them. The guide also lists several programs which may be used to enhance music or art.

Type of Material: Resource Guide
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Learning Disabilities, ADHD/ADD
Website: http://www.techlearning.com/db_area/archives/TL/2002/03/assistive1.html

509. Promoting Independent Performance of Transition-Related Tasks Using a Palmtop PC-based Self-Directed Visual and Auditory Prompting System

Author(s): Laura A. Riffel, et. al.
Publisher: Journal of Special Education Technology
Publication Date: January 2005
Review: This paper, published in the recent spring edition of the Journal of Special Education Technology, provides an in-depth evaluation of the potential for transition success and independent task completion using antecedent prompting strategies with visual and picture cueing in combination with handheld computers and specifically designed software meant for users with cognitive disabilities.

Riffel et. al., focused on transition-aged students (16-21 yrs. old) who used a handheld with the Visual Assistant prompter. The study explored several aspects of task completion, independence, and productivity, using the following questions to direct the research:
1. Does training on and use of the Visual Assistant system decrease the need for external prompts from the instructor?
2. Does training on and use of the Visual Assistant system increase the number of steps in a given task completed without external prompts?
3. Does training on and use of the Visual Assistant system decrease the duration of time spent on each task?

Despite several limiting factors for this study (Riffel et. al, noted inter-rater reliability was not coded point-by-point, possible error due to variability in instructor styles, a need for (a)stronger indicators for the Visual Assistant related to chained tasks the students had never encountered, and (b) stronger indicators of student performance in the absence of adults or teachers) the results of the study show, as in Davies, Stock and Wehmeyer (2002) that the handheld PC and related tools may be highly...
Author(s): Kathleen S. Puckett  
Publisher: Journal of Special Education Technology  
Publication Date: January 2002  
Review: This is a research paper that analyzes special educators' knowledge, efficiency, and confidence with a wide range of assistive technology. For the project, educators were trained in two phases. The first phase involved using online modules for several weeks and the second was 25 hours of workshop. The workshop had intensive hands-on training accessing the equipment and software.

Before the training, the teachers rated themselves as not familiar with and could not support students using the named assistive technology. However, after training their knowledge increased greatly and teachers felt comfortable supporting students in meeting academic standards.

Participating teachers rated the hands-on training and accessibility to the equipment and software as the most valuable component of the program. This is not surprising, for most people learn more efficiently when they are able to use the products and equipment.

This research describes a great model for teacher training. It was based on a limited number of teachers but the data were conclusive. The negative aspect is the cost of the equipment and the time it took teachers to complete the training.

Type of Material: Research Paper  
Audience: AT Professionals, Educators  
Target Disability: General / Non-disability Specific  
Ordering Information: UNLV  
Department of Special Education  
4505 Maryland PKWY  
Las Vegas, NV 89154  
Cost (As of Date Entered): no charge  
Website: http://jset.unlv.edu/19.2/puckett/first.html

507. Project Interactivate

Publisher: Shodor Education Foundation  
Publication Date: January 2005  
Review: This website is an educational tool for teachers and students in grades 3-5 to practice math concepts. This reviewer found nothing unique that was relevant to students with disabilities although access to math activities may facilitate practice and learning by students who utilize the keyboard to enter answers. A student with motor issues who finds it difficult putting pencil to paper would appreciate the ease of use.

The student activities, which cover a broad range of general math and science knowledge, are aimed at the mainstream population and would not be used for remediation.

There are different categories for students and teachers including practice pages, a dictionary of terms, and teaching strategies. This reviewer found the site to be more geared toward the educator for use in planning independent study activities and is not geared for students who are struggling with math concepts.

Type of Material: Website  
Audience: Parents / Family
505. Profile of Success: Tommy

Author(s): unknown
Publisher: Prentke Romich Company
Publication Date: January 2004
Review: The Prentke Romich Company (PRC) profiles an Augmentative and Alternative Communication (AAC) user each month. Each profile tells the story of how an individual acquired and uses a PRC device. Although only PRC devices are featured in these case studies, the information would be useful to those interested in seeing how devices are used successfully by others, when searching for communication solutions.

This case study was selected because of the video clips and the narrative of the profiled youngster, Tommy, using his AAC device. Many families, when AAC is suggested, feel uncomfortable with such a device being used instead of the child’s natural voice. Some children resist the use of such a device. Many times, this is because they have never seen one being used by anyone else. The video clips show Tommy participating in classroom activities, using his device. Unfortunately, the video clips are not captioned, and are only available on the PC platform.

The story of Tommy and his use of the Vanguard communication system is told here by his family, his Speech/Language Pathologist, and his classroom teachers. Tommy is nine years old and has a diagnosis of Down Syndrome. The process of determining what AAC device would work best for Tommy is described and the training and intervention that has followed is outlined. The study also shows how the system has been integrated into the school setting.

Tommy’s story has a great deal of information, accessible through links found on the pages of his case study, and would be helpful to a family or educator in the early stages of developing communication with such an individual.

Type of Material: Article
Audience: Parents / Family
Target Disability: Communication and Speech, Developmental Disabilities, Mental Retardation
Alternate Formats: Electronic, Video, Electronic, Video
Cost (As of Date Entered): no charge
Website: http://www.prentrom.com/profile%20campaign/tommy1.html

506. Project ACCESS: Field Testing and Assistive Technology Toolkit for Students with Mild Disabilities
502. Preparing Teachers For Assistive Technology Using Online Learning: A Descriptive Study

Author(s): Robert K. Kuech, Walter H. Kimball
Publisher: The Journal of Interactive Online Learning
Publication Date: January 2003
Review: In a remarkable discussion of Virtual Assistive Technology University (VATU) and the effectiveness of online learning for educators seeking professional development in assistive technology, Kuech and Kimball dissected the impact of social learning and the interactive components of successful online courses. The authors took time to evaluate several of the VATU online courses, particularly idea exchange strategies and project completion, as they investigated the nature of effective learning in a world where the "question is no longer whether or not to use technology, rather, how it can be used most productively."

503. Private Insurance Contracts and Assistive Technology: Parts I and II

Publisher: Neighborhood Legal Services (NLS)
Publication Date: January 1998
Review: This is a comprehensive guide to understanding private insurance policies and how they can be used to fund assistive technology. The article deals with traditional insurance policies as well as HMO policies.

504. Product Comparison and Evaluation: Scooters
successful funding. The five steps emphasize self advocacy, organization and documentation.

The article is well-organized, presents its concepts in easy-to-understand language and lives up to its claim to be a practical guide.

**Type of Material:** Article  
**Audience:** Parents / Family, People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Free on the Web site  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.dinf.ne.jp/doc/english/Us_Eu/conf/csun_97/csun97_111.htm](http://www.dinf.ne.jp/doc/english/Us_Eu/conf/csun_97/csun97_111.htm)

### 500. Practical, Versatile, Cheap Assistive Technology Supports, Second Edition

**Author(s):** Assistive Technology Educational Network  
**Publisher:** Assistive Technology Educational Network  
**Publication Date:** January 2005  
**Review:** If you are one of those unique people with a penchant for Do-It-Yourself, jimmy-rigged, hybridized Macgyverisms, then ATEN's popular "PVC book" is the resource of choice. Reading this manual is fuel for a chorus of "Why didn't I think of that?"

Practical, Versatile, Cheap Assistive Technology Supports, Second Edition details simple innovations (constructed from furniture-grade PVC) that parents and educators can build to help children with a variety of tasks. Design favorites were the T-Bar and the Dual Easel.

Readers will be delighted to find important safety and materials tips, thorough directions and diagrams for more than fifteen devices, and a strong list of related resources. The newest edition of this DIY guide is available in PDF from the Assistive Technology Educational Network (ATEN) website.

**Type of Material:** Book  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.aten.scps.k12.fl.us/lats/LATS%20only%20resources/entire%20book040105b.pdf](http://www.aten.scps.k12.fl.us/lats/LATS%20only%20resources/entire%20book040105b.pdf)

### 501. Preparing for College: An Online Tutorial

**Author(s):** Sheryl Burgstahler  
**Publisher:** DO-IT (Disabilities, Opportunities, Internetworking, and Technology)  
**Publication Date:** January 2004  
**Review:** This PDF brochure/website which is located on the DO-IT (Disabilities, Opportunities, Internetworking, and Technology) website has an amazing number of resources that can be used by teachers, parents and students with disabilities who are preparing for postsecondary education. There are numerous website links that one can explore related to making a successful transition to college. All the videos that are available online have captioning and audio description. There are interest inventories and lots of information about funding your college education. Finally there are videos and links for assistive technology that may be useful for students who are going on to college as well as links to possible role models and possible mentors. I found this site to be very informative and particularly enjoyed the interactive part of it.
A link takes the reader to a Tampa Tribune article about the sport which states “Power soccer is not a contact sport like quadriplegic rugby, made famous in the new movie ‘Murderball.’ This game is more about wheelchair maneuverability.”

Other links include many of the team sites, contact information and more. A short video may be downloaded showing athletes engaged in competition.

**Type of Material:** Website  
**Audience:** People with Disabilities  
**Target Disability:** Mobility Impaired, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.powersoccer.net/](http://www.powersoccer.net/)

### 498. Powertalk

**Author(s):** Steve Lee  
**Publisher:** SourceForge  
**Publication Date:** January 2004  
**Review:** Powertalk is a free software program that automatically speaks presentations or slide shows in Microsoft PowerPoint for Windows. It requires PowerPoint 2000/2002 and Windows 2000 or Windows XP.

PowerTalk reads text appearing on the presentation screen during a presentation, waiting for animations to arrive before it continues and reading the ‘alt text’ behind a graphic. It even waits for you to advance the slideshow, before continuing its reading. When the next slide appears, the narration continues – automatically, without any further user intervention at all. If you have included any animation effects (e.g. flying bullet points), PowerTalk waits until each animation effect is complete before continuing.

It works well but once turned on, it won’t turn off until the targeted presentation is right clicked and Powertalk is turned off. The voices are the standard voices that come with Microsoft but additional voices can be purchased. This is a great way to make sure presentations are accessible.

**Type of Material:** Software  
**Audience:** AT Professionals, Educators  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** [http://fullmeasure.co.uk/PowerTalk/ReadMe.htm](http://fullmeasure.co.uk/PowerTalk/ReadMe.htm)  
Free software download  
**Cost (As of Date Entered):** No charge  
**Website:** [http://fullmeasure.co.uk/PowerTalk/ReadMe.htm](http://fullmeasure.co.uk/PowerTalk/ReadMe.htm)

### 499. Practical Funding for Assistive Technology: Getting the Device You Really Need

**Author(s):** Diane C. Smith, Esq.  
**Publisher:** The Assistive Technology Funding and Systems Change Project  
**Publication Date:** January 1998  
**Review:** This article is an excellent introduction to obtaining funding for assistive technology from governmental sources. The information is helpful for those seeking funding for AT, regardless of age. The article identifies common funding sources and barriers, and proposes a five-step process for
movements in a power chair. Finally she explains some of the characteristics that children should have to be considered ready for use of a power chair. The most significant factor is that the child can understand cause-and-effect. Even a child with physical limitations can be placed in a power chair with the addition of switches placed where the child does have some mobility/sensation. She adamantly recommends that the child receive a full evaluation by a trained AT professional before use of a power chair is initiated.

**Type of Material:** Article
**Audience:** Parents / Family
**Target Disability:** Mobility Impaired
**Ordering Information:** Available on web site
**Cost (As of Date Entered):** Free
**Website:** [http://www.ndipat.org/products/fact/mobseat/powermob.htm](http://www.ndipat.org/products/fact/mobseat/powermob.htm)

### 496. Powered Wheelchairs (Fact Sheet #24)

**Publisher:** ABLEDATA
**Publication Date:** January 1994
**Review:** When someone is considering the purchase of a wheelchair either for themselves or for a family member, there are many features that need to be investigated. This article outlines different aspects of a chair in a way that is easy to read and understand. Even though the article was written several years ago, the information is still current and the references at the end are very valuable resources.

**Type of Material:** Infosheet / Fact sheet
**Audience:** Service Providers
**Target Disability:** Health Impairments, Mobility Impaired, Orthopedically Impaired
**Ordering Information:** ABLEDATA
8630 Fenton St., Ste. 930
Silver Spring, MD 20910
301-608-8912 TTY
301-608-8958 Fax
800-227-0216
**Cost (As of Date Entered):** No Cost
**Website:** [http://www.abledata.com/abledata_docs/powwch.htm](http://www.abledata.com/abledata_docs/powwch.htm)

### 497. Power Soccer

**Author(s):** Power Soccer USA
**Publisher:** Power Soccer USA
**Publication Date:** January 2005
**Review:** This website is devoted to promoting the United States Power Soccer Association (USPSA). USPSA's goal is to make Power Soccer available to all who use power wheelchairs. The site is also hoping to promote the sport to compete in the Paralympics. Teams consist of 4 power chair users of both sexes so men and women compete together. Seventeen states in the US and several other countries have teams. Team names include High Voltage and Sudden Impact. This is no watered-down sport.

The site has information about the equipment that is needed and the rules, policies, procedures, and score sheets.
494. Postsecondary Options for Students With Significant Disabilities

Author(s): Meg Grigal, Debra A. Neubert, M. Sherril Moon
Publisher: The Council for Exceptional Children
Publication Date: January 2002
Review: Providing educational services in the postsecondary setting has proven to be a difficult task for students with significant disabilities. These students are being served in the high school setting until they are 21, three years longer than their ‘typical’ peers. True inclusion would provide ongoing support at a college or community college. This article defines the problem and poses a plausible solution.

The solution presented in the article requires a great deal of person-centered planning by the student, the school, community personnel, and family. Several post-secondary options are listed with benefits and challenges presented for each. A sample post-secondary schedule is given and several models of successful programs are described. A needs assessment matrix, developed by the University of Maryland, is included. The approach challenges the idea of the typical college student, but where admission barriers exist, it still may not be possible. Still, the process outlined in the article may assist many families in developing a positive and successful experience for older students. The article provides a list of helpful resources at the end including a source for the complete Needs Assessment survey.

This should be required reading for parents of students with disabilities who are nearing the chronological age of graduation, who will perhaps not receive diplomas, and who are looking for an alternative to three more years of Special Education in the high school.

Type of Material: Article
Audience: People with Disabilities
Target Disability: General / Non-disability Specific
Alternate Formats: Large Print, Large Print
Cost (As of Date Entered): no charge
Website: http://journals.sped.org/EC/Archive_Articles/VOL.35NO.2NOVDEC2002_TEC_Article%2010.pdf

495. Powered Mobility for Children: Is My Child Too Young?

Author(s): Nancy Chipman Ranalli
Publisher: North Dakota Interagency Program for Assistive Technology
Publication Date: January 1998
Review: This article addresses issues of interest to parents who have children with mobility impairments and who are considering use of a wheelchair for their children. First, it addresses the fears of those parents who feel putting their child in a wheelchair will attach a stigma or will cause further loss of mobility. Then the author describes the powerful boost to a child’s sense of independence when they are able to control themselves in their environment even through simple
Review: The article provides a quick but informative overview of the latest developments in portable keyboards, focusing on two new models with distinctive characteristics: the AlphaSmart 3000 and the Dreamwriter. Portable keyboards are lightweight, easy to transport and use, and low cost when compared to a computer. Children can use them to take notes in class if their keyboarding skills are good. They can use them, in place of computers, to complete writing assignments or practice keyboarding. Although usually used for word processing, data can be entered into other applications, such as spreadsheets and databases, too. Families and educators will find the information contained in this article to be valuable when seeking cost-effective alternatives to a home PC or as a way to more efficiently take notes in class. The article is excerpted from the "Assistive Technology Guide", which was originally developed in 1996 under the direction of Marshall Raskind, Ph.D., at the Frostig Center and updated in 2001 by Lynette Hiebert, B.A., M.L.S.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities
Target Disability: General / Non-disability Specific, Learning Disabilities
Alternate Formats: Electronic, Electronic
Ordering Information: Available on the website.
Cost (As of Date Entered): Free
Website: http://www.schwablearning.org/articles.asp?r=443


Author(s): PACER Center
Publisher: National Endowment for Financial Education
Publication Date: January 2001
Review: The diagnosis of a child’s disability affects a family in many ways, including financial. This is a resource booklet/workbook for parents taking the initial steps toward dealing with the financial realities of their children’s special needs.

Health care costs for a child with disabilities may be higher due to physical needs. Additional costs such as assistive technology, transportation, respite care, special home care, loss of work time, home renovations and more are practical considerations that must be taken into account. Worksheets, resources for more information and assistance, and practical suggestions for managing financial information are included in this booklet.

The tough practicality of this manual is balanced by insights from parents who are currently dealing with their own children’s disabilities and suggestions for family activities that may offer diversions from the daily routine.

This booklet should be given to each family as a guide upon identification of a child with a disability as a helpful planning tool.
Type of Material: Booklet
Target Disability: General / Non-disability Specific
Ordering Information: The Pacer Center

www.pacer.org
Author(s): Chad Adams  
Publisher: Pocketmod  
Publication Date: January 2005  
Review: This site is a must-try for everyone. Teachers are using it to generate disposable personal organizers for individual students as well as for themselves. First the user selects the “mods” (modules) wanted to put in the organizer. There are multiple templates to choose from. This reviewer chose some day planners including a deadline plotter, a tipping guide, and a storyboard. Drag the templates to the page desired, print it and fold it. The folding is a bit challenging but there is a video or folding template you can use to get it right. One note: those with visual difficulties will not find the PocketMod an accessible resource.

There is also a download available to convert a PDF file into the pocketmod format. There is a news section of the website and a forum section where bugs in the program, which is still in beta form, can be reported. This also acts as a reference area if questions arise about the Pocketmod. There is lots of information in the forum- some of it unmonitored so be prepared. Discussions on the forum indicate a number of people using the PDF converter to make information available for the Pocket mod format.

Type of Material: Website  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: General / Non-disability Specific, Autism, Developmental Disabilities, Learning Disabilities, Bipolar Disorder  
Cost (As of Date Entered): No charge  
Website: http://www.pocketmod.com

491. Points to Consider for an Assistive Technology Evaluation

Author(s): Cormier, Ms, CCC-SLP, ATP  
Publisher: ConnSENSE  
Publication Date: January 2000  
Review: This report guides the reader through the steps a school system, teacher or IEP team would use in attaining an assistive technology evaluation. The author discusses the reasons one should consider an AT evaluation. She offers suggestions on how to find an evaluator and what qualifications the evaluator should have. Then she follows up with a discussion of the actual process of the evaluation and reporting and follow-up. There is a useful bibliography of websites and references for additional information, as well as a list of software available to assist in AT evaluations, and systems/software matching.

Type of Material: Research Paper  
Audience: Parents / Family  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): free online  
Website: http://www.connsensebulletin.com/cormiernov2.html

492. Portable Keyboards

Author(s): Lynette Hiebert, B.A., M.L.S.  
Publisher: Frostig Center  
Publication Date: January 2001
augmentative communication devices.

**Type of Material:** Article

**Audience:** Service Providers

**Target Disability:** General / Non-disability Specific

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** Let’s Play Project

University of Buffalo/Center for Assistive Technology

515 Kimball Tower

Buffalo NY 14214

or download from web site

(716) 829-3141

**Cost (As of Date Entered):** No Charge

**Website:** [http://cosmos.ot.buffalo.edu/letsplay/AT/at.html](http://cosmos.ot.buffalo.edu/letsplay/AT/at.html)

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**489. Please Describe What Just Happened**

**Author(s):** Janet Ingber

**Publisher:** AccessWorld

**Publication Date:** January 2006

**Review:** Television and movies are captioned for people with hearing impairments but TV and movies are not totally accessible to people with vision impairments. These people may miss a lot of information carried in scene changes, body language or nonverbal actions that are not described out loud.

In 2002 the FCC (Federal Communications Commission) issued an order requiring major broadcasters to offer so-called video-description services by April 2002. Several broadcasters created descriptions for some TV shows. There was an increase in compliance of this mandate and several companies began to complete the necessary description of TV shows and some movies. It is expensive and several months later, the mandate was cancelled. Some Cable and satellite providers have continued this service and see the value in supporting the entertainment industry.

At this time, people with visual impairments have seen great value in video description. The Video Access Coalition is lobbying to continue the mandate but it is up to Congress and the results remain to be seen.

**Type of Material:** Article

**Audience:** AT Professionals, Parents / Family, People with Disabilities

**Target Disability:** Deaf / Blind, Visual Impairment / Blind

**Alternate Formats:** Large Print, Large Print

**Ordering Information:** n/a

**Cost (As of Date Entered):** No charge


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**490. Pocketmod**
487. Personal Data Assistant

**Author(s):** Adaptive Technology Resource Centre, University of Toronto  
**Publisher:** Adaptive Technology Resource Center, University of Toronto  
**Publication Date:** January 2001  
**Review:** While the title of this info sheet is Personal Data Assistant, it is focused on the devices that would be useful to individuals who need Braille input/output or voice output. The sheet gives basic information about what a PDA does: "Personal Digital Assistants (PDAs) are portable computers that are designed to act as organizers, note takers and/or communication devices. Due to the small physical size of these devices they often possess the latest and most compact user interfaces such as touch screens, handwriting recognition, or miniature keyboards [both on-screen and attached to the device]. There is also a group of PDAs that are designed to be used by users with disabilities. These PDAs use aural output, Braille displays and Braille keyboards to comprise their user interface."

There is a short section of questions to consider when thinking of purchasing a PDA, and then a list of the devices, divided into four categories, Electronic Dictionaries, and Portable Notetakers for People with Visual Disabilities, Personal Organizers and eText Readers. Each section lists several products that one might consider, with links to the appropriate web sites. All of the devices listed were chosen because they have either voice output or Braille output. There is also a link to a website with downloadable, free ebooks.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Deaf / Blind, Visual Impairment / Blind  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** View the information at this website: http://www.utoronto.ca/atrc/reference/tech/portnote.html  
**Cost (As of Date Entered):** free to print from website  
**Website:** http://www.utoronto.ca/atrc/reference/tech/portnote.html

488. Playing with Switches

**Author(s):** Let's Play Project  
**Publisher:** University of Buffalo Center for Assistive Technology  
**Publication Date:** January 2000  
**Review:** "Playing with Switches" begins by describing the importance of play and the necessity for children with disabilities of having opportunities to play. Adapted toys can help provide these opportunities and give the children a feeling of success. The Let's Play! Project gives examples of highly reactive toys, switches and accessories, and single-message communication devices. This excellent and easy to understand article also describes how to adapt a toy, how to choose toys and provides the reader with contact information for vendors that sell adapted toys, switches and
are provided to access CAST's UDL toolkit called "Providing for All Learners" or "PAL" and to digital curricula.

**Type of Material**: Website  
**Audience**: Educators  
**Target Disability**: General / Non-disability Specific  
**Alternate Formats**: Electronic, Electronic  
**Cost (As of Date Entered)**: No charge  
**Website**: http://www.education.ky.gov/KDE/Instructional+Resources/Curriculum+Documents+and+Resources/Universal+Design+for+Learning/default.htm

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### 485. Patins Project

**Author(s)**: Indiana State Department  
**Publisher**: Vicki Hershman  
**Publication Date**: January 2005  
**Review**: The Patins Project is a program designed in the state of Indiana to develop organizational and professional capabilities within school systems in order to effectively deliver assistive technology services and implement Universal Design for Learning (UDL) principles. "PATINS" stands for Promoting Achievement through Technology and Instruction for All Students.

The program has developed five regional sites which offer computer refurbishing, a lending library, state-wide software purchases, and training, to assist school systems in effectively implementing a Universal Design approach to teaching and learning. The website provides examples of lesson plans that are comprehensive and include the scope and sequence from Indiana’s state standards. These lesson plans are good templates for creating similar plans aligned with other state standards. Many school systems have already developed action plans for implementing UDL in their curricula and for evaluating progress.

This program is in the early stages, with several school systems evaluating the use of Universal Design principles, using research techniques that will create interesting data. At this time there are many questions but the plan is solid and the Patins Project is something to keep an eye on.

**Type of Material**: Website  
**Audience**: Educators  
**Target Disability**: General / Non-disability Specific  
**Alternate Formats**: Electronic, Electronic  
**Cost (As of Date Entered)**: No charge  
**Website**: http://www.patinsproject.com

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### 486. Persistence Pays...Getting a

**Author(s)**: Illinois Assistive Technology Project  
**Publication Date**: April 2004  
**Review**: This is a brochure describing strategies and planning for obtaining funding for assistive technology devices and service needs through family health insurance plans.

**Type of Material**: Brochure  
**Target Disability**: General / Non-disability Specific  
**Ordering Information**: Illinois Assistive Technology Project  

1 W. Old State Capitol Plaza,. Suite 100
482. Parent's Guide to Transition: What Happens After High School?

Author(s): Kelker, K. & Holt, R.  
Publisher: Parents, Let's Unite for Kids (PLUK)  
Publication Date: January 1997  
Review: This book is a resource guide to help parents understand the process of transition. It includes information about supports available in the state of Montana, as well as how to determine eligibility for existing services. The book ends with a sample of futures planning and sample Individualized Transition Plans (ITPs).  
Type of Material: Resource Guide  
Audience: Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: General / Non-disability Specific  
Ordering Information: Parents Let's Unite for Kids  
516 N. 32nd St.  
Billings, MT 59101  
(406) 255-0540 In Montana (800) 222-7585  
A hard copy may be obtained for $1.00. It is available, however, without cost, on the PLUK website.  
Website: http://www.pluk.org/trans.html

483. Parents Helping Parents Website

Publisher: Parents Helping Parents  
Publication Date: April 2004  
Review: This website provides information on parenting children with disabilities. It also lobbies for membership and donations. There is a great amount of information concerning early intervention, identification, appropriate education, and support for parenting. While the material is appropriate and beneficial for both parents and professionals, the layout of the site is not especially user-friendly and includes menu items that are not immediately recognized for their content.  
Type of Material: Website  
Audience: Educators, Parents / Family, People with Disabilities, Service Providers  
Target Disability: General / Non-disability Specific  
Website: http://www.php.com

484. Pathway to Achievement: Universal Design for Learning

Author(s): Kentucky Department of Education  
Publisher: Kentucky Department of Education  
Publication Date: January 2004  
Review: This website defines Universal Design for Learning (or UDL) as teachers defining and planning instruction and using technology to meet a wide variety of needs of their students while considering individual learning differences. UDL can be achieved by presenting information in a different way (digital text, audio, photos, captions) and providing alternate means for students to express themselves (writing, speaking, video recording and/or using assistive technology).  
The website is designed for Kentucky teachers, but can provide valuable information to others. Links
480. Parent Pals.com

**Publisher:** Ameri-corps Speech and Hearing  
**Publication Date:** January 2002  
**Review:** This website is very comprehensive in targeting all aspects of special education. Parent Pals.com offers a number of resources in areas that are disability-specific, as well as broad topics such as assistive technology and Special Education. The site offers recommendations for books, a dictionary of common terms associated with Special Education as well as a newsletter.  
**Type of Material:** Website  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Available via website  
**Cost (As of Date Entered):** free  
**Website:** [http://www.parentpals.com](http://www.parentpals.com)

481. Parents Get Your ACT Together...and Take it to School

**Author(s):** Illinois Assistive Technology Project (IATP)  
**Publisher:** Illinois Assistive Technology Project (IATP)  
**Publication Date:** January 1998  
**Review:** This is a seven page report which encourages parents to engage fully in the planning of their child's educational plan. It offers tips on record keeping, planning, Individualized Education Program (IEP) meetings and how to handle disagreements. It also references other materials on the specifics of the legal aspects and individual and parental rights.  
**Type of Material:** Brochure  
**Audience:** Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Audio Tape, Large Print, Audio Tape, Large Print  
**Ordering Information:** Illinois Assistive Technology Project  

1 W. Old State Capitol Plaza  
Suite 100  
Springfield, IL 62701  
(217) 522-7985  
**Cost (As of Date Entered):** free
Author(s): Caroline Alphonso, Education Reporter
Publisher: The Globe and Mail
Publication Date: January 2004
Review: This is a short, easy-to-read article about the use of two-way pagers by Canadian high school students who are deaf. Parents, teachers, and school administrators/policymakers will learn of the benefits these pagers provided to deaf students. The focus of the article is better communication leading to more independence with a surprising bonus of improved literacy skills in both writing and reading.

Deaf students typically graduate from high school with a 4th grade reading level. They must depend on TTYs for communicating with their parents when they are away from home. Deaf students who use pagers to communicate with their families when they are away from home have discovered an increase in their literacy scores in school assignments.

A teacher from a Canadian high school was able to secure donations of pagers for deaf students and implement a monitoring/assessment component to study use of the pagers and track progress in student improvements in written communication and reading skills. The benefits to students have been significant and now the teacher is attempting to challenge school policies that permit the purchase of hearing aids but not of two-way pagers for deaf students.

Use of a pager allows deaf students to enjoy the same opportunities as hearing peers in socializing, studying, and working outside the home because they are able to quickly and easily notify their parents of changes in their schedules or locations.

Pagers might be considered as assistive technology for deaf students as well as communication aids to all people who are deaf.

Type of Material: Article
Audience: Service Providers
Target Disability: Hearing Impairments / Deaf
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge
Website: http://www.theglobeandmail.com/servlet/ArticleNews/TPStory/LAC/20041103/SCHOOLDAF03/TPEducation/

479. Parentally-Placed Students with Disabilities

Author(s): Art Cerrosia
Publisher: Council for Exceptional Children
Publication Date: January 2002
Review: This report is aimed primarily at educators, legislators and advocates for children with disabilities and their parents. Written by an attorney, in legalistic prose, the report is an overview of IDEA, its regulations and relevant case law regarding parentally-placed students with disabilities in private schools. The report addresses the rights and responsibilities under IDEA concerning the identification and provision of special education services to these children.

Type of Material: Report
Audience: Parents / Family
Target Disability: General / Non-disability Specific, Developmental Disabilities
Ordering Information: Council on Exceptional Children

1110 N. Glebe Rd., Suite 3011
Overboard symbols are clear and easily understood but they don't have the black and white line drawings sometimes needed for specific individuals. Overboard also does not have a "scatter" button to create identical cells in once document but the cells can be created by simply clicking a button and positioning it on a palette. Overboard's default cell is 2" x 2" and when a larger or smaller size is needed, the cell can be changed but the picture and words do not have a "snap-to-grid" feature. There is, however, more functionality in drawing and tweaking the symbols in Overboard and it has a quick link to the paint program. The difficulty with this is that the copy and paste short cut commands can't be used. These commands have to be accessed through the edit menu.

Overall, Overboard is a great program with clear symbols and pictures. It certainly has the makings to rival Boardmaker.

**Type of Material**: Software  
**Audience**: Service Providers  
**Target Disability**: Cerebral Palsy, Communication and Speech, Developmental Disabilities, Health Impairments, Mental Retardation, Apraxia of Speech  
**Ordering Information**: Gus Communications, Inc  
866-487-1006  
**Cost (As of Date Entered)**: $169  

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**477. PACE vs. Fast Forward**

**Author(s)**: The Stowell Learning Center  
**Publisher**: LearningDisability.com  
**Publication Date**: January 2000  
**Review**: This article compares the strengths and differences between two of the most popular programs for developing processing skills in children, PACE (Processing and Cognitive Enhancement) and Fast Forward.

There is a good but basic description of each of the programs and looks at their respective strengths and success claims. However, neither program's claims are supported by research. Rather, they are based on anecdotal information reported by parents and teachers.

The information in this article is very helpful for anyone interested in finding quality programs for children with learning and/or processing challenges. They will need to follow the links provided in the article to the PACE and Fast Forward web sites for specific ordering and cost information, and for a discussion of how to implement the programs.

**Type of Material**: Article  
**Audience**: Educators, Parents / Family, People with Disabilities  
**Target Disability**: General / Non-disability Specific, Developmental Disabilities, Learning Disabilities, ADHD/ADD  
**Ordering Information**: Download from the web site  
**Cost (As of Date Entered)**: Free on web site  
**Website**: [http://www.learningdisability.com/newsletter_archive/paceffw.htm](http://www.learningdisability.com/newsletter_archive/paceffw.htm)

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**478. Pagers Offer Deaf Students Independence, Literacy Skills**
reading, writing, math, measurement and social studies topics. Many of Jennings' students excelled academically and gained an improved sense of self-esteem as a result of the experimental curriculum.

This teacher illustrates the use of creativity and meaningful, real-life situations to assist students in developing academic skills. He emphasizes the need for experimentation, risk-taking and changing what is not working as a necessity in special education.

Type of Material: Article
Audience: Service Providers
Target Disability: Learning Disabilities, ADHD/ADD
Cost (As of Date Entered): No charge
Website: http://www.ldonline.org/articles/5822

475. Over 65 Tricks and Tips for People with Low Vision to Use in the Home

Author(s): Patricia Koenig, NIU
Publisher: North Dakota Interagency Program for Assistive Technology
Publication Date: January 1998
Review: This article is a listing of tips for people with low vision to help them be safe and productive in their homes. It stresses the following areas: placement of items in the home, use of contrasting colors in all areas of the home, use of effective lighting, and the need to utilize "BIG," such as on the telephone number pad, on controls of appliances, and through photocopying and enlarging all instruction sheets/manuals that come into the home. Many of these are common-sense tips but, for someone new to low vision, these are invaluable for ensuring safety and independence in the home.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Visual Impairment / Blind
Ordering Information: Available on the website
Cost (As of Date Entered): Free
Website: http://www.ndipat.org/products/fact/visionhear/tipstrics.htm

476. Overboard

Author(s): Gus Communications, Inc
Publisher: Gus Communications, Inc
Publication Date: January 2005
Review: Mayer Johnson is renowned for their picture/symbol software program, Boardmaker. Although they have many other fine products, Boardmaker has been widely used by professionals, caregivers, and school systems throughout the country and there hasn't been another program to rival Boardmaker until now. Gus Communications, Inc. has developed a product similar to Boardmaker named Overboard.

While the Overboard program is similar to Boardmaker, there are some differences. Overboard is less expensive by almost $100 and there is no cost to upgrade as there is with Boardmaker. Overboard takes up less hard drive space and there are 5500 symbols to Boardmaker's 3000 symbols.
Publication Date: January 2005
Review: This article was written by the mother of a boy with multiple disabilities who found that through creative thinking and the use of technology, her son could complete the same projects as his general education peers. She describes the effects of his disabilities on his academic abilities and the thrill of discovering that her son’s teacher expected him to complete the same assignments as the other children in the class.

With a vivid description of the various projects and her family’s creative approaches to helping the boy complete and present his projects in class, this mother gives hope to all parents struggling to help their child be accepted and successful in a general education classroom. She includes both high-tech and low-tech solutions that enabled her son to deliver his own presentation to the class, with a little help from his brother and his classmates.

This is a great article highlighting the benefits of inclusion and utilizing assistive technology to help children with disabilities contribute to the classroom environment. It contains lots of great ideas for parents to use to assist their own children with completing assigned projects.

Type of Material: Article
 Audience: AT Professionals, Educators, Parents / Family
 Alternate Formats: Foreign Language - Spanish, Foreign Language - Spanish
 Cost (As of Date Entered): No charge
 Website: http://www.tsbvi.edu/Outreach/seehear/spring05/yes.htm

473. Onscreen Keyboards

Author(s): North Dakota Interagency Program for Assistive Technology
Publisher: North Dakota Interagency Program for Assistive Technology
Publication Date: January 2000
Review: This article is simply a description of onscreen keyboards and the features that are available. It is a comprehensive introduction to onscreen keyboards for people with disabilities as well as for those who are trying to help them gain easy access to computers.

Type of Material: Article
 Audience: Service Providers
 Target Disability: General / Non-disability Specific
 Alternate Formats: Electronic, Electronic
 Ordering Information: Available to download or print from the web site
 Cost (As of Date Entered): Free on web site
 Website: http://www.ndipat.org/products/fact/comp_acc/okeybrds.htm

474. On Taking Risks in Teaching: A Teacher Speaks Out

Author(s): Carolyn Cosmos
Publisher: CEC Today
Publication Date: January 2002
Review: This article describes the unusual curriculum of New Jersey Teacher of the Year, Matthew Jennings. Jennings’ special projects required his class of 7th and 8th graders, some with disabilities, to become reading tutors to younger children who were in special education, to teach senior citizens to use computers and to make quilts for infants born addicted to drugs. Each project incorporated
This article gives a concise overview of the benefits of combining assistive technology (AT) and occupational therapy (OT). The article gives a good overview of assistive technology and how an occupational therapist would use it to assess a client. It discusses how therapists find the appropriate AT to assist their clients during therapy and in their daily lives.

The website is a good overall source to learn about the various topics in occupational therapy, such as funding, uses for children, current events, and the use of technology in OT. The site also includes an "Ask an Occupational Therapist" feature.

Both the article and the website are written in language appropriate for people who are not trained in occupational therapy.

**Type of Material:** Website  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Accessible through the website  
**Cost (As of Date Entered):** free through the website  
**Website:** http://www.otworks.com/otworks_page.asp?pageID=753

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**471. Office 2003 Accessibility Resources**

This Microsoft website has a wealth of resources to help a user understand the accessibility features that are available in Microsoft® Office 2003. The features for display and readability, keyboard and mouse, and sounds and speech are presented on the home page.

The user can access step-by-step tutorials that introduce the most commonly used accessibility features. Case studies are included which showcase organizations that have integrated accessible technology solutions into their technology plans to help employees with difficulties and disabilities. At this site you can also search for AT products to fit a variety of user needs. The resources available through Microsoft are extremely useful, comprehensive and very professional.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** http://www.microsoft.com/enable/products/office2003/default.aspx

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**472. Oh Yes You Can: How Creativity and Assistive Technology Helped My Child to Do Class Reports**

Author(s): Yolonda Scarlett  
Publisher: Texas School for the Blind and Visually Impaired
468. Not on the Sidelines

Author(s): Achtenberg, B. and McMillen, K.
Publisher: Fanlight Productions
Publication Date: January 2000
Review: This video documentary interviews individuals (children and young adults) with physical disabilities concerned with inclusion in leisure and sports.
Type of Material: Video
Audience: Service Providers
Target Disability: Mobility Impaired, Multiple Disabilities, Orthopedically Impaired
Ordering Information: Fanlight Productions
800-937-4113
Cost (As of Date Entered): $199 as of February 2006
Website: http://www.fanlight.com/catalog/films/280_nos.php

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469. Occupational Therapy & Clicker 4

Author(s): Marina Herold & Betsy Coville and Celeste Mukheibir
Publisher: ConnSENSE
Publication Date: January 2002
Review: This article is a review of Clicker 4 and how it can be used in therapy as well as a school setting. It lists features of the software program but it is not comprehensive. It describes Clicker grids and the operation or functional possibilities of the grids. This article gives a good, brief overview of Clicker and is written in a way that even a novice in technology would understand and could make some preliminary decisions based on the information.
Type of Material: Resource Guide
Audience: Educators, Parents / Family, Rehabilitation Professionals
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Learning Disabilities, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired
Alternate Formats: Electronic, Electronic
Ordering Information: Available at the Website below.
Cost (As of Date Entered): none
Website: http://www.connsensebulletin.com/clicker.html

470. Occupational Therapy: Skills for the Job of Living
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Deaf / Blind, Health Impairments, Hearing Impairments / Deaf
Ordering Information: NIDCD
1 Communication Ave
Bethesda, MD 20892-33456
800-241-1055

Cost (As of Date Entered): No Cost
Website: http://www.nidcd.nih.gov/health/hearing/coch.asp

466. No Child Left Behind: Implications for Assistive Technology

Author(s): Lisa Wahl
Publisher: Education Week
Publication Date: January 2004
Review: Lisa Wahl's five page report "No Child Left Behind: Implications for Assistive Technology" evaluates several factors for AT and the efforts to implement the NCLB Act. Wahl's highly focused, six-point discussion includes: accountability issues, testing exemptions and AT access (especially when considering curriculum), AT as part of teacher development programs (Is it raising or lowering the "highly qualified" bar?), positive AT impacts resulting from the NCLB emphasis on research-based practice, NCLB future revisions and AT access, and the importance of AT advocates when implementing NCLB.

This publication is informative and extensively researched--voicing issues, demonstrating impacts, and raising questions to lead further research.

Type of Material: Report
Audience: Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge
Website: http://www.ataccess.org/resources/nochild.pdf

467. No More Friday Spelling Tests? An Alternative Spelling Assessment for Students with Learning Disabilities

Author(s): Kelly A. Loeffler
Publisher: Teaching Exceptional Children
Publication Date: January 2005
Review: Spelling is a difficult task for students with learning disabilities. The typical spelling test every Friday for students just doesn't always teach them how to spell. They simply remember words just for the test, but when required to pull that information out while authoring, they can't do it.

This article discusses a spelling rubric. It suggests teaching students how to self-correct spelling in writing using a specific matrix of skills. Students using this rubric begin to monitor their spelling during the writing process and become more efficient writers and effective spellers. Rather than grading memorization skills, students are graded on using a number of strategies for self monitoring and correction.

This short article could be helpful for teachers in both general and special education.
463. New technological options for people with physical disabilities, through the use of telecommunications equipment.

**Author(s):** Rob Garrett  
**Publisher:** Regency Park Rehabilitation Engineering  
**Publication Date:** January 2004  
**Review:** This is one of the few research articles that studies the access and functional capabilities of communication products "off-the-shelf".

Three groups with physical disabilities ranging from mild to severe used communication systems right out of the box, such as phones, and personal digital assistants. The subjects were observed using the technology before, during and after training. Pivotal to the success of these trials was an in-depth knowledge of existing mobile phone technology options and features, a clear understanding of the client's telecommunication needs and abilities, and the appropriate matching of the technology to an individual.

Omitted from the article is any reference to Section 508 of the Telecommunications Act which requires phone manufacturers and telecommunications service providers to make their products accessible when readily achievable to do so. Benefits to consumers with disabilities are clearly illustrated in this article.  
**Type of Material:** Research Paper  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Cerebral Palsy, Communication and Speech, Multiple Disabilities  
**Cost (As of Date Entered):** no charge  
**Website:** [http://e-bility.com/articles/telecommunications.shtml](http://e-bility.com/articles/telecommunications.shtml)

464. NICHCY: National Information Center for Children and Youth with Disabilities Website  

**Publisher:** The National Information Center for Children and Youth with Disabilities  
**Publication Date:** April 2004  
**Review:** This is an extremely well organized site that provides information for parents, teachers, and other professionals who work with children and youth with disabilities. It offers answers to questions relating to special education and special education laws. It includes links to sites that offer information about specific disabilities, education practice, and professional organizations that offer support and information.  
**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Website:** [http://www.nichcy.org](http://www.nichcy.org)

465. NIDCD Fact Sheet: Cochlear Implants  

**Publisher:** National Institute on Deafness and Other Communication Disorders (NIDCD)  
**Publication Date:** January 2000  
**Review:** This article discusses the features of a cochlear implant, and the way that the implant works after surgery. It lists sources for additional information.  
**Type of Material:** Infosheet / Fact sheet
461. News-2-You

Author(s): Jackie Clark
Publisher: News-2-You
Publication Date: January 2004
Review: News-2-You is an excellent symbol-based (Boardmaker) online newspaper designed for the classroom. It is published weekly during the school year and provides students with current events, jokes, activities and simple recipes. The newspaper has a regular edition, simplified edition and a higher level edition. It comes in color or in black and white. There is a charge for a subscription ($79 per year). A sample copy is available for download at no charge.
Type of Material: Journal / Magazine
Audience: People with Disabilities
Target Disability: Developmental Disabilities
Ordering Information: News-2-You

PO Box 550
Huron OH 44839

800 697-6575
Cost (As of Date Entered): $79.00/year
Website: http://www.news-2-you.com

462. New technological options for people with physical disabilities, through the use of telecommunications equipment

Author(s): Rob Garrett
Publisher: e-bility.com
Publication Date: January 2004
Review: This research paper by Rob Garrett describes the results of a 2003 telecommunications clinical trial conducted by Regency Park Rehabilitation Engineering (RPRE), Research and Development department. RPRE "trialed and evaluated new configurable ‘off-the-shelf’ telecommunication options such as car kits, voice recognition and hands-free technology (eg speakerphone), and network features such as voice mail that can improve the lifestyle, independence, security and social interaction of people with physical disabilities." Strong focus was placed on discovering the client's technological needs and tailoring devices to suit the client.

The trial was admittedly small, ten participants drawn from a select population of 1300, but according to the author, the results showed that the current mobile phone technology can be adapted for use by people with disabilities and that many participants were unaware of the full range of mobile telecommunications options that are available.
Type of Material: Research Paper
Audience: AT Professionals, Educators, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific, Cerebral Palsy, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Orthopedically Impairedphysical disabilities
Cost (As of Date Entered): No charge
Website: http://e-bility.com/articles/telecommunications.shtml
459. New Format Hastens Textbook Accessibility

Author(s): Cara Branigan
Publisher: E School News
Publication Date: January 2004
Review: The newly USED-endorsed National Instructional Materials Accessibility Standard (NIMAS) is the primary topic of Cara Branigan's August 12, 2004 eSchool article. Branigan outlines the significance of the USED NIMAS-specific endorsement and the positive impacts (if the reference to NIMAS stays) of creating one accessible textbook format that allows publishers to use XML file structure for all texts in all 50 states.

A note to readers, this article comes from the eSchool website, and requires free registration to access. The reader may have better luck and find stronger information from the U.S. Department of Education (http://www.ed.gov) or the CAST website link (http://www.cast.org/NFF/NIMAS).

Type of Material: Article
Audience: Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge
Website: http://www.eschoolnews.com/news/showStory.cfm?ArticleID=5218&CFID=111029&CFTOKEN=50311631

460. New No Child Left Behind Provision Gives Schools Increased Flexibility While Ensuring All Children Count, Including Those With Disabilities

Author(s): Jim Bradshaw
Publisher: U.S. Department of Education
Publication Date: January 2003
Review: In today's quagmire of policies, laws, regulations, and provisions in regards to special education, it is difficult to sift through legislation and understand meanings and implications. This article tries to explain the No Child Left Behind Act and the provision under this law to give schools more flexibility in assessment while still being accountable. The final rules state that schools will be able to count the proficiency scores of students with severe disabilities based on alternate achievement standards. This fact sheet, and indeed, the law itself, does not explain the alternate assessment and how to apply it to state standards.

Type of Material: Infosheet / Fact sheet
Audience: Educators, Parents / Family
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Large Print, Electronic, Large Print
Ordering Information: Address: U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202
Ph # 1-800-USA-LEARN
FAX (202) 401-0689
customerservice@inet.ed.gov
Closed Captioning and its associated technologies of subtitling/translation, described video and internet captioning, are clearly described on this web site, which is supported by the National Captioning Institute, Inc. (NCI). The downloadable brochure (using Adobe Acrobat) is three pages, and gives an overall view of the subject with contact information and considerable details, for those wishing to order the service.

The website itself is well organized with uncluttered windows and menus showing choices for more detailed descriptions. The site gives the FAQ such as "What is closed captioning", with detailed answers. Other answers given are to such questions as "What do captions look like", and "How does NCI caption programs?"

The background of the development of CC is explained and the schedule for the complete captioning of new television by 2006 (20 hours daily, with none between 2:00AM and 6:00AM) is noted. This technology is an excellent example of a service developed initially for the deaf and hard of hearing populations, now available to all, and found to be of considerable benefit to many more than the originally planned recipients. The site would be of interest to anyone who has difficulty hearing or understanding the spoken language. For people learning English closed captioning is helpful because they can hear the spoken word and read it simultaneously. Finally, the Described Video service allows those who cannot see the screen clearly understand what is going on.

**Type of Material:** Website

**Audience:** People with Disabilities

**Target Disability:** Autism, Communication and Speech, Hearing Impairments / Deaf, Visual Impairment / Blind, Apraxia of Speech

**Cost (As of Date Entered):** no charge

**Website:** [http://www.ncicap.org/](http://www.ncicap.org/)

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**458. NCI Described Video**

**Publication Date:** January 2004

**Review:** Described video is one of the many services available from the National Captioning Institute which is a leader in the field of captioning. At this website you can see all the services that this non-profit company offers including described video.

The described video process provides access to television and video programming for people who are blind or have low vision. The described video script is presented with the program sound track without interfering with the original sound track.

There is an explanation of how the process is done to include all of the visual elements of a video in captioning while still keeping the pace of the programming. A PDF pamphlet can be downloaded from the site which provides information about the services that are available.

**Type of Material:** Website

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** General / Non-disability Specific, Deaf / Blind, Hearing Impairments / Deaf, Visual Impairment / Blind

**Ordering Information:** click on services and then described video
needs of children and young adults who are deaf-blind and to support their families. The information found on the website is available to families and service providers who serve children, from birth to 18 years, with a goal of helping to strengthen families of children or young adults who are deaf-blind. This is a useful reference for parents of children with hearing and vision loss and for service providers who work to bring these children to their highest level of development.

**Type of Material:** Resource Guide  
**Audience:** Educators, Parents / Family, Service Providers  
**Target Disability:** Deaf / Blind, Hearing Impairments / Deaf, Visual Impairment / Blind  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.tr.wou.edu/ntac/](http://www.tr.wou.edu/ntac/)


**Author(s):** Joseph W. Madaus  
**Publisher:** Council For Exceptional Children  
**Publication Date:** January 2005  
**Review:** Transitioning from secondary school to post-secondary school is difficult under the best of circumstances. When a student with a learning disability transitions to a college or university it can be a daunting task. However, being armed with knowledge and accurate expectations can help the transition be a successful one.

This article discusses the difference in services provided by secondary and post-secondary school systems. There are no two identical special education systems at the post-secondary level. The article offers an explanation for this, and lists questions to ask the institution before applying, to identify whether it will best serve a particular student’s needs.

Useful transition resources are given with complete contact information. This article is a must-read for students and families who are looking at colleges and universities. The information will prepare the student, helping to facilitate a smooth and successful transition.

**Type of Material:** Article  
**Audience:** People with Disabilities  
**Target Disability:** Learning Disabilities  
**Alternate Formats:** Large Print, Large Print  
**Ordering Information:** 1110 North Glebe Road  
Suite 300  
Arlington, VA 22201-5704

Toll-free: 888/CEC-SPED  
Local: 703/620-3660  
TTY: 866/915-5000 (text only)  
Fax: 703/264-9494  
**Cost (As of Date Entered):** No charge  
**Website:** [http://journals.sped.org/EC/Archive_Articles/VOL.37NO.3JanFeb2005_TEC_Madaus37-3.pdf](http://journals.sped.org/EC/Archive_Articles/VOL.37NO.3JanFeb2005_TEC_Madaus37-3.pdf)

457. NCI Closed Captioning

**Author(s):** National Captioning Institute, Inc  
**Publisher:** National Captioning Institute, Inc
Publication Date: April 2004
Review: This is a Web site with lots of very good information on the effective use of technology to enhance educational outcomes for students with disabilities. It contains specific information on voice recognition, early childhood, reading aids, writing aids, as well as product information. Each link has a summary which is very helpful.

Type of Material: Website
Audience: Service Providers
Target Disability: General / Non-disability Specific
Website: http://www2.edc.org/NCIP/

454. National Library of Virtual Manipulatives for Interactive Mathematics

Publisher: Utah State University
Publication Date: January 2005
Review: Supported by the National Science Foundation, the National Library of Virtual Manipulatives for Interactive Mathematics is a collection of Java applets used as virtual classroom tools to encourage students to connect concepts, build applications, and integrate mathematics into the usable numerical and spatial relationships that they will need beyond the classroom. The NLVM is a strong supporter of mathematics as an inclusive, truly interactive discipline, and the use of Java programming makes these tools highly web-accessible. Although some concern has been raised in the past that the site and the tools may not be as approachable for students or instructors with visual and physical disabilities, all graphics and buttons are labeled and captioned for screen readers, hyperlinks are labeled (and should be readable under most circumstances) and the site offers a bi-directional index (choose from tools by discipline or by grade level). For example, when users click on an virtual tool, a separate workspace opens. In addition to the typical navigation page bars, the workspace includes zoom buttons and mathematical choices related to the current exercise. The workspace offers side by side explanations, a menu for exercise instructions, parent or teacher lesson plans, related activities and educational standards for each individual exercise.

Type of Material: Website
Audience: Educators
Target Disability: General / Non-disability Specific
Alternate Formats: CD-ROM, CD-ROM
Ordering Information: To order the NVLM CD-ROM, visit Matti Math at: http://www.mattimath.com/browse_dept_items.asp/categ_id/3/parent_ids/0/Name/bNLVM_CDb

CD-ROM costs vary widely.
Cost (As of Date Entered): Varies: see website
Website: http://nlvm.usu.edu/en/nav/index.html

455. National Technical Assistance Consortium for Children and Young Adults who are Deaf-Blind (NTAC)

Author(s): NTAC
Publisher: NTAC
Publication Date: January 2005
Review: The National Technical Assistance Consortium assists families and local and state agencies to improve the quality of early intervention, education, and transition services to children and young adults who are deaf-blind. NTAC works to ensure collaborative partnerships for meeting the unique
451. My Breath, My Music

Author(s): Ruud van der Wel
Publication Date: January 2005
Review: "My Breath, My Music" is a website dedicated to the discovery of adapted instruments and teaching techniques for music students with physical and cognitive disabilities. If a Dutch physiotherapist can help children create music using modified instruments, a unique coda, and simple technology, then opportunities are out there for all the students who are aching to play music. The "My Breath, My Music" site offers methods and explanations, including potential technical bugs in the Yamaha 5X5 midi wind controller, sheet music downloads, and a variety of examples from students.
In spite of some lapses in terminology and a few oddities in site design (such as the page navigation menu on the right side of the screen), "My Breath, My Music" can offer music teachers and eager students a chance to try something new.
Type of Material: Website
Audience: Educators, Parents / Family, People with Disabilities
Target Disability: General / Non-disability Specific, Developmental Disabilities, Mental Retardation, Mobility Impaired, Multiple Disabilities
Cost (As of Date Entered): no charge
Website: http://www.mybreathmymusic.com/index2.htm

452. Myth of a Quick Fix

Author(s): Diana Moore
Publisher: Schwab Learning
Publication Date: January 2000
Review: This article provides information for parents of children with learning disabilities. It encourages them to thoroughly investigate programs which promise to cure their children. It discusses ways to properly evaluate such programs and treatments before investing money and time.
Type of Material: Article
Audience: Educators, Parents / Family
Target Disability: Learning Disabilities
Website: http://www.schwablearning.org/articles.asp?r=86

453. National Center to Improve Practice Web Site
449. Music for Everyone! Part 1

Author(s): Annette Cerreta, AT Specialist  
Publisher: PACER  
Publication Date: January 2001  
Review: This article is Part 1 of a series about the importance of making music accessible for people with physical disabilities. It is aimed at both children and adults with disabilities. Part 1 discusses the benefits that music provides as well as low-tech solutions to make music accessible to people with physical disabilities. Among the benefits listed are self-expression and creativity, increased social interaction, improvement of functioning, especially fine motor skills, and ease of teaching basic concepts. The author provides examples of low tech solutions such as use of switches to operate radios or stereos, straps to adapt shakers and mallets, and popsicle sticks on piano keys. Also provided are examples of musical items that can be purchased. Some resources are listed, but no info as to how to contact vendors or price of the equipment is included. A letter written by parents about the benefits their child received from his involvement with music is included at the end of the article.

Type of Material: Article  
Audience: Educators, Parents / Family, People with Disabilities  
Target Disability: Mobility Impaired, Multiple Disabilities, Muscular Dystrophy, Spina Bifida, Orthopedically Impaired  
Ordering Information: View online  
Cost (As of Date Entered): Free  
Website: [http://www.pacer.org/stc/cm_fall01.htm#music](http://www.pacer.org/stc/cm_fall01.htm#music)

450. Music Therapy and Leisure for Persons with Disability

Author(s): Alicia L. Barksdale  
Publisher: Sagamore Publishing, Inc.  
Publication Date: January 2003  
Review: This book serves as a good introduction to the uses of music therapy for children with disabilities. It discusses in clear terms how music therapy can be beneficial for children with disabilities, and how the music therapist is included in the student’s IEP plan. The author offers specific goals for students, and identifies the activities that will help students achieve the goal. Vignettes are included in the book to give the reader an idea of how different approaches can benefit the student. The author also offers plans for a community based music program, and suggests how to couple music therapy with other therapies.

Type of Material: Book  
Audience: Educators  
Target Disability: General / Non-disability Specific  
Ordering Information: Sagamore Publishing, L.L.C.  

804 N. Neil St., Suite 100  
Champaign, IL 61820
446. Moving Toward the Vision of the Universally Designed Classroom

Author(s): Lucinda M. O’Neill
Publication Date: January 2003
Review: CAST has been developing universally designed, technologically based learning materials for all students since the 1980’s. One example of CAST’s research and demonstration projects, in partnership with a school district in Wakefield MA and an educational software publisher, called Strategic Reader is described in this article. The article emphasizes that multiple strategies, including digitized format of printed materials as well as individualized supports, are necessary to help all students thrive in the classroom. Indicators of the successful impact on students resulting from a universally designed classroom are described. This article is useful for those who would like an introduction to CAST and its vision and strategies for promoting Universal Design for Learning (UDL).

Type of Material: Article
Audience: Service Providers
Target Disability: General / Non-disability Specific, Learning Disabilities, ADHD/ADD
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): Free
Website: http://www.hpsnj.org/PDF/accessibility/p_mtvudc.pdf

447. Multimodal Presentation as a Solution to Access a Structured Document

Author(s): Truillet, P., Oriola, B., and Vigouroux, N.
Publisher: Institut de Recherche Informatique Technologique (IRIT)
Publication Date: April 2004
Review: Although somewhat complex, this article shows how, by way of a multimodal presentation, the blind can efficiently and effectively access and read World Wide Web documents. It describes software that is currently available to help assist visually impaired persons access the web and some of the problems that may be experienced with these methods. It further describes a presentation model called SMART and why this is more successful. There is an extensive list of references that have been reviewed for this article and may assist a person studying this new presentation approach.

Type of Material: Article
Audience: Service Providers
Target Disability: Deaf / Blind, Visual Impairment / Blind
Cost (As of Date Entered): No Cost
Website: http://www.ra.ethz.ch/CDstore/www6/Posters/758/758_POST.HTM

448. Multiple Sclerosis Information Sourcebook

Publisher: National Multiple Sclerosis Society
Publication Date: January 2001
Review: The Multiple Sclerosis Information Sourcebook provides up-to-date information about MS in an easy-to-use format, including information on relevant assistive technology. It includes answers to frequently asked questions, current information on treatments and symptoms, and descriptions of the social and psychological impact of the disease. The Sourcebook also provides references to other health and social agencies when appropriate.

Type of Material: Resource Guide
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Multiple Sclerosis
444. Movie-Making for Kids

Author(s): Town4Kids
Publisher: Town4Kids
Publication Date: January 2006
Review: Movie-Making for Kids is a series of web pages with basic information about making a
digital movie. There are seven subjects, (1) Movie Categories, (2) Key Elements in a Movie, (3) Write a Movie Script, (4) Video Shooting Techniques, (5) Movie Editing, (6) Music & Sound Effects and (7) Movie Text. The information is easily printed and topics are introduced with short, clear explanations. The drawings are appealing, and the whole experience is described as an 'introductory course to Movie Making'. For children and teachers with some experience with computers and a movie editing program, this amount of direction may well be sufficient.

The information on Movie-Making will stand alone, with more experienced students and teachers, and is a part of a much larger program of computer resources. The basic approach of the information might make the activity a part of an inclusion program for children with disabilities, although that subject is not addressed in the information presented.

Type of Material: Website
Audience: Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://www.town4kids.com/town4kids/kids/digitalmedia/moviemaking/movie_main.htm

445. Moving from an Attendant to Assistive Technology

Author(s): Barrett, S. and Johnson, K.
Publisher: Washington Assistive Technology Alliance (WATA)
Publication Date: January 1999
Review: This article describes one man's desire and subsequent plan to move into independent living through substitution of assistive technology for attendant care. The author provides a brief history of his condition and an explanation for why he wishes to decrease his reliance on attendant care. He then details a process of determining one's own needs and how they might be balanced with assistive technology rather than attendant care. The reader follows his exploration and is allowed to see the outcome of his decision as well as how he deals with the set-backs.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: WATA
Center for Technology and Disability Studies, Univ of Washington
P.O. Box 357920
Seattle, WA 98195-7920
206-685-4181 Voice
206-616-1396 TTY
800-841-8345 outside Seattle
206-543-4779 Fax

Cost (As of Date Entered): No Cost
Website: http://www.wata.org/pubs/articles/moving.htm
443. Mouse Options

**Author(s):** Assistive Technology Training Online Project  
**Publisher:** Assistive Technology Training Online Project  
**Publication Date:** January 2000  
**Review:** This well written module examines the alternatives to a standard mouse. It examines and explains several categories of mouse options including those within the computer’s operating system, Trackballs, Touch Pads, Touch Screens and more. There is also a PDF file that can be downloaded with a list of some of the more well known alternative mouse vendors.

There is a lot of excellent information on how to use the free utilities within the computer’s operating system that can be used to change the click actions, slow the cursor down, change the speed of the pointer and more. There is also a link to a tutorial on the Microsoft Web site that will guide the reader through these utilities.

The other sections describe various mouse options and include very helpful photos of these products. Many of the products shown are specially sized or designed for kids.

In two of the sections, you can click on "In the Classroom" and read stories about how some of these mouse alternatives have been successfully used in a classroom setting.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Spina Bifida, Orthopedically Impaired  
**Ordering Information:** Manufacturers and their contact information are listed in a PDF file on this site.  
**Cost (As of Date Entered):** Free to view on web site  
**Website:** [http://atto.buffalo.edu/registered/ATBasics/AdaptingComputers/MouseOptions/index.php](http://atto.buffalo.edu/registered/ATBasics/AdaptingComputers/MouseOptions/index.php)
education, community acceptance, and necessary services for children with disabilities. The information is accurate and includes IEP, mediation, laws, and resource lists. Be warned, however, that some of the humor is not for the faint-hearted and could be offensive to some.

**Type of Material:** Website

**Audience:** Parents / Family

**Target Disability:** General / Non-disability Specific

**Alternate Formats:** Electronic, Electronic

**Cost (As of Date Entered):** No charge

**Website:** [http://www.mothersfromhell2.org/index.html](http://www.mothersfromhell2.org/index.html)

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### 441. Mouse Alternatives

**Publisher:** Ability Hub

**Publication Date:** January 2003

**Review:** This resource is a portion of the Ability Hub website, focusing specifically on mouse alternatives. It provides links to 10 different commercial alternatives. Included are an eyegaze system, foot control mouse, head tracking mouse, joystick used as a mouse such as a sip-n-puff, mouse keys which use the numeric keyboard to move the cursor, switch adapted mouse such as the Gus mouse, trackball, touch pad, touch screen, and pointing devices. The descriptions are brief, but include photos and additional links to vendors.

**Type of Material:** Website

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Orthopedically Impaired

**Cost (As of Date Entered):** Free

**Website:** [http://www.abilityhub.com/mouse/index.htm](http://www.abilityhub.com/mouse/index.htm)

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### 442. Mouse Assessment Guide

**Author(s):** Call Centre

**Publisher:** Call Centre (University of Edinburgh)

**Publication Date:** January 2001

**Review:** The Call Centre developed this quick guide (which is in PDF only) of suggestions to help people who have difficulty using a mouse. The reasons covered by this article are hitting buttons by mistake, can’t double click fast enough and can’t see the pointer. The Call Centre offers simple suggestions which range from considering the user’s seating and positioning to using a switch instead of a mouse or using software to slow down the double click. While this article is very short (only one page) it is an excellent resource.

**Type of Material:** Article

**Audience:** Service Providers

**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Mobility Impaired, Neurological Disorders, Spina Bifida, Orthopedically Impaired

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** The CALL Centre

University of Edinburgh
experience in their school settings.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** Learning Disabilities  
**Cost (As of Date Entered):** No charge  
**Website:** [http://journals.sped.org/EC/Archive_Articles/VOL.36NO.3JanFeb2004_TEC_Rotter36-3.pdf](http://journals.sped.org/EC/Archive_Articles/VOL.36NO.3JanFeb2004_TEC_Rotter36-3.pdf)

439. ModuMath

**Author(s):** Wisconsin Technical College System Foundation, Inc  
**Publisher:** Wisconsin Technical College System Foundation, Inc  
**Publication Date:** January 2005  
**Review:** This approach to the learning of mathematics and algebra was developed by professional teachers to reach those students who find it difficult to grasp the subject matter. It is a multimedia experience with 51 Basic Math and 32 Algebra digital video lessons. Lesson topics are listed on the website. The method provides timely feedback and review while adjusting to the pace of the learner. Originally developed in the 1970's, this has been redesigned for interactive learning on computers.

Sample lessons are provided for downloading with Internet Explorer or Netscape, and the Flash Plugin is needed as well. Along with lessons, tests for course assessment and lesson competency are provided. There is help with records management, and for current users more information on how to develop classes, and technical help on using and installing the ModuMath software. While lessons are provided as samples, ModuMath is not an internet course. The minimum requirements for PC computers are provided on this web site, but Macintosh computers would need to run Virtual PC software since ModuMath is native to the Windows operating system only.

The ModuMath software includes an installation CD, a narrated video (on DVD-ROM) and a Study Guide. The cost includes all 83 lesson modules.

**Type of Material:** Software  
**Audience:** Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Wisconsin Technical College System Foundation, Inc.  
One Foundation Circle  
Waunakee, Wisconsin 53597-8914  
**Cost (As of Date Entered):** $975.00  
**Website:** [http://www.modumath.org](http://www.modumath.org)

440. Mothers From Hell 2

**Author(s):** Mothers From Hell 2  
**Publisher:** Mothers From Hell 2  
**Publication Date:** January 2003  
**Review:** In a perfect world, the relationship between a school system and their parents is a positive experience. However, there are those instances when the expectations from either side are not understood and this leads to conflict. The situation can be especially challenging when a child with a disability is concerned. Navigating the paperwork and laws can be extremely daunting. Mothers From Hell 2 is a website that teaches advocacy to parents in a format that is easy to understand and that brings a great deal of humor to a rather emotional situation. The website promotes appropriate
437. Misunderstood Minds

Author(s): PBS  
Publisher: PBS  
Publication Date: January 2003  
Review: This highly recommended website is a component of the PBS documentary Misunderstood Minds and is an excellent resource whether or not it is used with the video and multimedia library. The website features stories of five children with learning disabilities and learning differences and discusses attention, reading, writing, and math. One of the most interesting portions of this website is the simulation of various learning disabilities so the reader may experience firsthand what it is like to have difficulty maintaining attention, decoding phonemes, recalling math facts and getting a pen or pencil to move the way he or she wants it to. Additionally, it features an excellent section of books, websites, videos, assistive technologies and local resources which provide more information.

Type of Material: Website  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Learning Disabilities, ADHD/ADD  
Alternate Formats: Electronic, Electronic  
Ordering Information: To order videos or the multimedia library:

http://www.shoppbs.org/home/index.jsp  
Cost (As of Date Entered): No charge to access info on website  
Website: http://www.pbs.org/wgbh/misunderstoodminds/

438. Modifying Jeopardy Games to Benefit All Students

Author(s): Kathleen Rotter  
Publisher: Council for Exceptional Children  
Publication Date: January 2004  
Review: The game of "Jeopardy!" is a mechanism for teachers to reinforce information in an interesting manner. This article points out that this is not always a good opportunity for students with learning disabilities because they may require more time to answer questions, be unable to maintain their attention and "zone out" or misbehave if they don't know the answers to the questions. The article offers clear and constructive strategies in redesigning the game in such a way that allows all students to benefit from this learning opportunity. It offers an outline of the notetaking process that is often overlooked and suggests mid- and low-tech revisions of the process. Other modifications suggested by this article include: increasing preparation time and organization; working in groups; playing the round twice and looking for improvement; and having a timer to allow prep time that must go off before anyone may answer the question.

This is a good article for educators/families whose students/children may encounter the ‘Jeopardy’
modify most versions of Microsoft Windows to increase accessibility as well as tutorials to help utilize the accessibility features. This is a useful resource for those looking to modify computers and computer programs because it provides clear accessibility solutions for various impairments, as well as product information and technical assistance.

**Type of Material:** Website  
**Audience:** Educators, Parents / Family, People with Disabilities  
**Target Disability:** Hearing Impairments / Deaf, Learning Disabilities, Mobility Impaired, Visual Impairment / Blind  
**Ordering Information:** Download all information from web site  
**Cost (As of Date Entered):** Free on web site  
**Website:** [http://microsoft.com/enable/](http://microsoft.com/enable/)

435. Microsoft Windows Accessibility Tips

**Publisher:** Access Ingenuity  
**Publication Date:** January 2002  
**Review:** This resource guide lists the tools that are built into the Microsoft Windows operating system for making the computer accessible to people with a variety of disabilities. It lists the disability, the related needs for accessing the computer, and the accessibility tools that are available through Windows. It then provides a step-by-step guide to configuring your system. All is presented clearly and should be understood by anyone with a basic knowledge of the computer. It includes a glossary of terms that might not be familiar to everyone. This is an excellent guide for anyone working with people with disabilities, including parents and teachers.  
**Type of Material:** Resource Guide  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** free via the website  
**Website:** [http://www.accessingenuity.com](http://www.accessingenuity.com)

436. MindDrive

**Author(s):** Jane Seymour  
**Publisher:** Ability Magazine  
**Publication Date:** January 2003  
**Review:** One of the most exciting aspects of technology is that the limits have not been found. This ABILITY magazine interview describes MindDrive, a program that is driven by a person's mind. A sensor is put on a finger and with thoughts can turn electronics on/off, play a computer game, or navigate a computer and use the applications. The technology is in its very early stages. Developers are looking at other long-term applications, such as movies with Miramax and Fox Entertainment. There is no prediction as to when the program will be ready for release. The applications are still being defined and the technology has to be improved.  
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Communication and Speech, Mobility Impaired, Orthopedically Impaired  
**Alternate Formats:** Electronic, Large Print, Electronic, Large Print  
**Ordering Information:** ABILITY Magazine  
1001 W. 17th Street  
Costa Mesa, CA 92627
Augmentative and Alternative Communication (AAC) devices. It provides answers to the most common questions a person may have regarding the Medicare decision-making and appeals steps that apply to AAC device reimbursement claims.

**Type of Material:** Brochure  
**Audience:** AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** UCPA  
1660 L. St. NW Suite 700  
Washington, DC 20036  
800-872-5827  
**Cost (As of Date Entered):** No Cost  
**Website:** [http://www.nls.org/medihmo.htm](http://www.nls.org/medihmo.htm)

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**433. Meeting the Communication Needs of Persons With Severe Disabilities**

**Author(s):** National Joint Committee for the Communicative Needs of Persons With Severe Disabilities  
**Publisher:** American Speech-Language Association  
**Publication Date:** January 1992  
**Review:** This is a set of guidelines that was developed by the National Joint Committee for the Communicative Needs of Persons With Severe Disabilities. While written for language, speech and hearing professionals, the excellent information this article contains is great for anyone with a communication challenge, their families and advocates.

The article is comprehensive in covering issues surrounding communication for people with severe disabilities. It defines communication in its various forms; suggests a Communication Bill of Rights; addresses the importance of the environment in stimulating conversation; identifies best practices for facilitating communication; and discusses the knowledge and skills needed by the interdisciplinary team that works with the individual.

While written for professionals, the article is not full of technical jargon. The information is excellent for anyone who wants to advocate for improved communication services.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Multiple Disabilities, Muscular Dystrophy, Neurological Disorders, Orthopedically Impaired  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.asha.org/NJC/njcguidelines.htm](http://www.asha.org/NJC/njcguidelines.htm)

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**434. Microsoft Accessibility: Technology for Everyone**

**Author(s):** Microsoft Corporation  
**Publisher:** Microsoft Corporation  
**Publication Date:** January 2003  
**Review:** This is Microsoft's web page for assistive technology. It discusses software and hardware that can be used for specific impairments, and which Microsoft manufactures. It includes ways to

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430. Medicaid, Assistive Technology and the Courts

**Publisher:** 2003 AT Advocate Newsletter  
**Publication Date:** January 2003  
**Review:** This newsletter summarizes landmark court decisions made in the funding of Durable Medical Equipment and Assistive Technology 1996-2003. It includes some key concepts and definitions of AT and DME as viewed by the courts, samples of Medicaid denials and rationales, Medicaid resources on the National AT Advocacy Project’s website, and other websites for people looking for Medicaid funding.

This is a useful newsletter in that it cites pertinent cases that were either denied or approved, and reasons why. This is helpful in pursuit of funding for devices as it may provide groundwork for advocates based on precedent.  
**Type of Material:** Newsletter  
**Audience:** Parents / Family, Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.nls.org/av/spring03.htm](http://www.nls.org/av/spring03.htm)

431. Medicaid Reimbursement for Assistive Technology in Nursing Facilities

**Author(s):** Elliott, S.  
**Publisher:** Neighborhood Legal Services (NLS)  
**Publication Date:** January 1998  
**Review:** This is a comprehensive outline of Medicaid legislation and how nursing facilities are addressed.  
**Type of Material:** Research Paper  
**Audience:** AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** National AT Advocacy Project  
Neighborhood Legal Services  
295 Main St. Suite 495  
Buffalo, NY 14203  
716-847-0650 (Voice), 716-847-1322 (TDD)  
**Cost (As of Date Entered):** No Cost  

432. Medicare, Managed Care and AAC Devices

**Author(s):** Golinker, L. & Sheldon, J. R.  
**Publisher:** NLS / UCPA  
**Publication Date:** January 1999  
**Review:** This booklet describes the traditional, fee-for-service Medicare program and the funding of
428. Measuring Effectiveness: Technology to Support Writing

**Author(s):** Sally Fennema-Jansen  
**Publisher:** SETP  
**Publication Date:** January 2001  
**Review:** The author presents an excellent summary of research and practice regarding three kinds of supported writing interventions: spell checkers, word processors with speech synthesizers and word prediction programs.

The article is based on studies which demonstrate that students with learning disabilities often have difficulties with writing. Successful assessment of the value of a given type of assistive technology is based upon individual student needs and must be accompanied by instruction.

The value of word prediction programs is discussed in target students. The pros and cons of both speech synthesizers and spell checkers is well-presented.

The article concludes with specific options to measure the efficacy of each of these technologies. Multiple sources and a sound bibliography are included.

**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Learning Disabilities  
**Website:** [http://www.setp.net/pdf/SETP3-1pp16-22.pdf](http://www.setp.net/pdf/SETP3-1pp16-22.pdf)

429. Medicaid and Assistive Technology: What Should Be in a Good Doctor's Letter

**Author(s):** Neighborhood Legal Services  
**Publisher:** Neighborhood Legal Services  
**Publication Date:** January 1996  
**Review:** This article describes what information should be included in a Doctor's letter of justification for an assistive technology device claim to Medicaid. A sample letter is included.

**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Neighborhood Legal Services  

295 Main St.  
Suite 495  
Buffalo, NY 14203  
(716) 847-0650  
**Cost (As of Date Entered):** No Cost
426. Measuring Assistive Technology Outcomes: An Overview

Author(s): Dave Edyburn  
Publisher: Journal of Special Education Technology  
Publication Date: January 2004  
Review: Outcome-based measurements are gaining more and more attention in assessing instructional intervention. Assistive technology has been gaining widespread acceptance for enhancing educational performance. Although assistive technology is gaining popularity, little information is available to make informed decisions based on measurement outcomes in regards to how such technology can enhance academic abilities. This article defines 5 factors in design, measurement, analysis, and decision-making that will be needed in order to address the process of creating outcome systems for measuring the impact of assistive technology.

This is a scholarly article which left this reviewer wanting more specific information regarding these measurements and wondering when they might be available. The ongoing conflict in education regarding assistive technology as 'tool vs. cheating' might well be determined through the use of valid outcome-based measurement tools.  
Type of Material: Research Paper  
Audience: AT Professionals, Educators  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Cost (As of Date Entered): No charge  
Website: http://jset.unlv.edu/18.1/asseds/edyburn.pdf

427. Measuring Assistive Technology Outcomes in Reading

Author(s): Dave Edyburn  
Publisher: JSET ejournal  
Publication Date: January 2004  
Review: This article is the fourth and final column in a series about measuring assistive technology outcomes in various academic domains. In this article, the author addresses the use of AT to compensate for poor reading performance in struggling readers. With implementation of No Child Left Behind and its goal that all children will be able to read by the end of 3rd grade, it is crucial for educators to know how the use of technology aids students through the developmental milestones of reading. In grades K-3, the process focuses on helping kids learn to read. From 4th grade on, the emphasis becomes reading to learn. If students are struggling with reading, the entire curriculum is affected. The emphasis for teachers with students who struggle to read has traditionally been to find different instructional methods or materials. New educational standards suggest that use of technology to help students perform the task of reading may be more efficient and useful for the student to progress through education.

This article reviews various AT solutions to reading and ways to track outcomes for students using AT. Several research methodologies are presented on various tasks associated with reading and comprehension. It is the author's hope that education and educational technology will continue to focus on the area of reading and assessing how technology can improve outcomes in reading to keep up with the standards imposed by No Child Left Behind.  
Type of Material: Article
Office software but must be custom installed.

**Type of Material**: Software

**Audience**: AT Professionals, Educators, People with Disabilities

**Target Disability**: General / Non-disability Specific

**Alternate Formats**: Electronic, Electronic

**Ordering Information**: Design Science, Inc.
140 Pine Avenue, 4th Floor
Long Beach, CA 90802
USA
800-827-0685

**Cost (As of Date Entered)**: 97.00


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**424. Max and Friends**

**Author(s)**: Launch Into Learning

**Publisher**: Launch Into Learning

**Publication Date**: January 2004

**Review**: Max and Friends is a multimedia educational program that is designed for young children with autism, but it can also be used with children and adults who have developmental delays at any age. The website and promotional materials report that it is particularly useful for children who have autism because it is based on Applied Behavioral Analysis (ABA), a methodology that has been successfully used with this group for educational programming. The series of books and DVDs incorporate ABA training methods with television-type viewing, breaking down each task to be learned into components that are then practiced in various applications.

There are testimonials for the product at the website. Interested users can order a promotional DVD to sample Volume 1 of the series. A parent manual comes with each set of materials and the promotional material encourages combining these materials with a course of therapy. Though costly, proponents of the ABA method of intervention may find this tool worth exploring further.

**Type of Material**: Training Material

**Audience**: Parents / Family, People with Disabilities, Rehabilitation Professionals

**Target Disability**: Autism, Developmental Disabilities

**Ordering Information**: [http://www.launchintolearning.org](http://www.launchintolearning.org)

Launch into Learning
P.O. Box 669
Greenlawn, NY 11740

**Cost (As of Date Entered)**: Varies according to product

**Website**: [http://www.launchintolearning.org/index1.htm](http://www.launchintolearning.org/index1.htm)

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**425. Maxiaids Catalog Adaptive Devices**

**Publication Date**: January 2004

**Review**: This is a very comprehensive online catalog of adaptive devices for daily living.

**Type of Material**: Website

**Audience**: Service Providers

**Target Disability**: Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Mobility Impaired, Visual Impairment / Blind

**Ordering Information**: 1-800-522-6294
Family Center on Technology and Disability

educators, parents and others interested in the progress of students in school. The National Center for Learning Disabilities and Schwab have created a guide for parents to interpret the NCLB and to describe how they can assist their child in learning all that is required in regards to the state standards. Typically, students with learning disabilities and developmental disabilities have been assessed according to different standards. Suggestions and checklists are given as well as a wealth of websites to immediately begin to assess your school district against state standards. This guide has an incredible amount of information and is a must read if your child is attending public school. Title One schools have a more rigorous standard and this guide helps parents ask the right questions and know what is demanded and expected.

**Type of Material:** Parent Guide
**Audience:** AT Professionals, Educators, Parents / Family
**Target Disability:** General / Non-disability Specific, Learning Disabilities
**Cost (As of Date Entered):** no charge
**Website:** [http://www.schwablearning.org/pdfs/MakingNCLBworkBW.pdf?datedate=8-05-05&status=updated](http://www.schwablearning.org/pdfs/MakingNCLBworkBW.pdf?datedate=8-05-05&status=updated)

### 422. Manual Wheelchairs

**Publisher:** ABLEDATA
**Publication Date:** January 1994
**Review:** This article provides a brief history of wheelchairs and a comprehensive description of the features/components of manual chairs. It addresses the costs of manual wheelchairs and provides an extensive list of wheelchair manufacturers with their phone numbers.

**Type of Material:** Article
**Audience:** Service Providers
**Target Disability:** Brain Injury and Stroke, Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired
**Ordering Information:** ABLEDATA
8630 Fenton St., Ste. 930
Silver Spring, MD 20910
301-608-8912 TTY
301-608-8958 Fax
800-227-0216

**Website:** [http://www.abledata.com/abledata_docs/manwhch.htm](http://www.abledata.com/abledata_docs/manwhch.htm)

### 423. MathType

**Author(s):** Design Science
**Publisher:** Design Science
**Publication Date:** January 2006
**Review:** MathType is a software program that enables the user to type and solve mathematical equations in Word documents, Excel spreadsheets, most publishing software, and in web-based software. MathType installs toolbars into these programs to give one the ability to insert mathematical notations. The toolbars are similar to ones with which most users are familiar but can be customized. There is a free 30-day trial that can be downloaded with all features activated but there is a cost for the software. This is a great tool for those who struggle with paper and pencil math calculations and are efficient with a computer. Typical users would be those who need high level mathematical equation symbols that are not available in the limited Microsoft Equation Editor, which is part of the Microsoft
understanding of the needs of users with different disabilities, summarizes various approaches to
serve them, and identifies specific solutions for designing more accessible software. The guide
includes information on making multimedia presentations accessible to deaf or blind students and
offers examples of writing image descriptions for blind students. It also describes solutions for making
forms and data tables accessible, and gives information on making electronic and online textbooks
accessible. The information is detailed, specific and accurate. Links are given for further information.
These guidelines should be read by all software developers and college professors as well as anyone
creating websites.

**Type of Material:** Resource Guide  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Large Print

**Ordering Information:** To order printed copies of these guidelines, contact Mary_Watkins@wgbh.org  
**Cost (As of Date Entered):** no charge if ordering less than 10  
**Website:** [http://ncam.wgbh.org/cdrom/guideline/](http://ncam.wgbh.org/cdrom/guideline/)

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**Author(s):** Candace Cortiella  
**Publisher:** National Center for Learning Disabilities and Schwab Learning  
**Review:** The No Child Left Behind Act (NCLB) was signed into law in January 2002. So far it has
been the initiator of the most changes the American education system has seen in decades. The
impact of this law has gained criticism and applause from people of all disciplines. It mandates an
improvement in educational services for all students in the public school systems.

This guide introduces the reader to key parts of NCLB and offers tools to improve education services
for children with disabilities and ultimately all children. It clearly describes in layman’s terms what the
law means to teachers, parents, and students. It is a navigational tool by which to further your
knowledge and to become an efficient advocate for your child or students.

**Type of Material:** Parent Guide  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Large Print

**Ordering Information:** Scroll down to the 3rd publication on the page
([http://ncld.softsourcecorp.net/content/view/284/322/](http://ncld.softsourcecorp.net/content/view/284/322/)). From there you will need to save the pdf to
view it.  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.ncld.org/NCLB/MakingNCLBwork.pdf](http://www.ncld.org/NCLB/MakingNCLBwork.pdf)

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**Author(s):** Candace Cortiella  
**Publisher:** Schwab Learning  
**Publication Date:** January 2005  
**Review:** The No Child Left Behind Act (NCLB) has been the center of many discussions by
418. Making Connections

Author(s): Locke, P. & Levin, J.
Publisher: AbleNet, Inc.
Publication Date: January 1999
Review: Making Connections is a practical guide for bringing the world of voice output communication to students with severe disabilities. This guide is written for educators, family members, care providers, people with disabilities, paraprofessionals and friends of individuals with severe disabilities. It gives tips for choosing a communication device, selecting messages, creating communication opportunities and providing outcomes.
This is an excellent, easy to understand resource for beginning the communication process.
Type of Material: Book
Audience: AT Professionals, Educators, Parents / Family, Rehabilitation Professionals
Target Disability: Communication and Speech
Ordering Information: AbleNet, Inc.
1081 10th Ave. SE.
Minneapolis, MN 55414-1312
800-322-0956

419. Making Educational Software And Websites Accessible Design Guidelines Including Math and Science Solutions

Author(s): Geoff Freed, Madeleine Rothburg, and Tom Wlodkowski
Publisher: The CPB/WGBH National Center for Accessible Media
Publication Date: January 2003
Review: New policies, including the No Child Left Behind Act, are requiring software developers, curriculum publishers, colleges, web sites, and ultimately teachers to present materials so that they are accessible to students with a variety of disabilities. This resource guide provides a basic
**Publisher:** Colligo  
**Publication Date:** January 2005  
**Review:** Magnify OutLoud is a wireless keyboard and mouse with software that enables someone with low vision, poor computer skills, or who needs verbal reinforcement, to understand written material. The website includes information, purchasing options, and an actual demo of how the product works, including the zoom feature and the many different voices available. The text magnification is not as high quality as software designed for screen magnification, but is easily accessible through the use of a keyboard ‘slider key’ rather than a series of keyboard commands.

This looks to be a great piece of equipment for the beginning computer user, or elderly person with poor eyesight.  
**Type of Material:** Software  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Visual Impairment / Blindelderly  
**Ordering Information:** Colligo  
1304 Meador Ave., Suite B5  
Bellingham, WA 98229  
Phone: 360-647-3404  
Fax: 360-647-5004  
**Cost (As of Date Entered):** $249.00  
**Website:** [http://www.colligo.us/Products/MagnifyOutLoud/](http://www.colligo.us/Products/MagnifyOutLoud/)  

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**416. Major Victory in the Fight for Greater Coverage of Assistive Technology**  
**Author(s):** Peter Thomas  
**Publisher:** UCP National  
**Publication Date:** January 2003  
**Review:** This online article, published by UCP National, was written by Peter Thomas and outlines changes to TRICARE (formerly CHAMPUS) insurance that covers individuals in the military, their dependents and military personnel who are retired. PL 107-107 provides expanded coverage for assistive technology devices (prosthetic, orthotics, augmentative communication devices, hearing aids and durable medical equipment) and services for those insured by the program. However, this law’s greater significance is that it sets a precedent for other insurance programs such as Medicare, Medicaid, Veterans Administration and Federal Employee Heath Care Benefits program to provide like benefits to their insured.  
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** UCP National (aka United Cerebral Palsy)  
1660 L Street, NW, Suite 700, Washington, DC 20036  
Phone: 800-872-5827/202-776-0406  
TTY: 202-973-7197  
Fax: 202-776-0414  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.ucp.org/ucp_printdoc.cfm/1/16/11431/11431-11431/2976](http://www.ucp.org/ucp_printdoc.cfm/1/16/11431/11431-11431/2976)  

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**417. Making Computers Read**
413. Mac Easy Access

Author(s): CALL Centre
Publisher: University of Edinburgh
Publication Date: January 2003
Review: In a predominately PC world, it is often difficult for Mac users who have a physical disability to find support related to making modifications to their operating system. This fact sheet offers readers an overview of accessibility features (or "easy access" as it is referred to in this fact sheet) in Mac operating systems.
Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Mobility Impaired, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired
Alternate Formats: Electronic, Large Print, Electronic, Large Print
Ordering Information: Call Center

University of Edinburgh, Paterson's Land
Holyrood Road, Edinburgh, EH8 8AQ
Scotland
tel# 0131 651 6236

Please note that the document is a rather large pdf and may take some time to download.
Cost (As of Date Entered): free
Website: http://callcentre.education.ed.ac.uk/downloads/quickguides/mac/macaccess.pdf

414. Magnification Programs for the Computer Screen

Publisher: American Foundation for the Blind (AFB)
Publication Date: January 1999
Review: This article reviews the features, pros, and cons of various screen magnification technology available today. It is an excellent introduction and overview of magnification programs.
Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities
Target Disability: Visual Impairment / Blind
Ordering Information: American Foundation for the Blind
800-AFB-LINE (800-223-5463)
Website: http://www.afb.org/info_document_view.asp?documentid=1387

415. Magnify OutLoud
412. Low-Tech Tools

Author(s): Center for Assistive Technology
Publisher: University of Buffalo
Publication Date: January 2000
Review: Sometimes the most useful assistive technology solutions may be no-tech or low-tech. This helpful module developed by the Assistive Technology Training Online Project provides information about several of these low-tech tools and provide resources for others. Creative ideas and suggestions have come from a variety of sources, including classroom teachers, conference presentations and Internet sites. ATTO used the Wisconsin Assistive Technology Initiative (WATI) as a key source for information on how to get the most out of adapted classroom materials. The module discusses positioning aids such as adjustable height tables, seat cushions, chairs and footrests; items that make fine motor activities easier such as adapted scissors, glue pens, pencil grips and paper punches; and adaptations for reading and math.

Type of Material: Website
Audience: Service Providers
Target Disability: Cerebral Palsy, Developmental Disabilities, Multiple Disabilities, Spina Bifida, Orthopedically Impaired
Ordering Information: Assistive Technology Training Online Project

University at Buffalo

Center for Assistive Technology

515 Kimball Tower

Buffalo, New York 14214

Telephone:(716) 829-3141

Fax: (716) 829-3217

Email: atto-webmaster@buffalo.edu

Website: http://atto.buffalo.edu
409. Low Cost Alternatives to Remodeling

Author(s): Infinitec.org
Publisher: Infinitec.org
Publication Date: January 2000
Review: This article gives several ideas on modifying kitchens to be more accessible to persons who are limited to a wheelchair. They have listed companies and vendors who specialize in this type of modification.
Type of Material: Article
Audience: Parents / Family
Target Disability: Mobility Impaired, Orthopedically Impaired
Ordering Information: This article may be obtained via the website identified below.
Website: http://www.infinitec.org/live/homemodifications/lowcostalternatives.htm

410. Low Impact AT at Play Makes High Impact on Kids' Therapy

Author(s): Julie West
Publisher: AT Journal
Review: This article features Exerwing Flighters, originally designed as a physical therapy tool. Flighters are plush toys in the shape of airplanes, birds, and insects that attach by velcro straps to the wrists and arms of users. They were originally designed to be used in conjunction with hippotherapy to assist in working with a horse’s movements to improve neurological function and sensory processing. Children are encouraged to make the Flighter move, thereby helping the child to process movement (such as raising, lowering arms, etc.)

The toys are attractive, with bright colors and flowing wings and tails. Kids of all ages and abilities will be delighted by this product and it is predicted that the Exerwing Flighters will be used outside of the hippotherapy arena for movement and social activities. Links to further information on Exerwings and hippotherapy are found at the end of this article.
Type of Material: Article
Audience: Parents / Family, People with Disabilities, Rehabilitation Professionals
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Hearing Impairments / Deaf, Mental Retardation, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge
Website: http://www.atnet.org/news/2003/apr03/041502.htm

411. Low-Tech Augmentative Communication Tips

Author(s): Louisiana Assistive Technology Access Network (LATAN)
Publisher: Louisiana Assistive Technology Access Network (LATAN)
Publication Date: January 1998
Review: This brief article, contributed by the Louisiana Assistive Technology Access Network, provides the reader with some low-tech ideas for enhancing an individual’s ability to communicate. It discusses creating items such as communication boards and eye transfer systems (E-Trans) by utilizing common materials. These ideas are simple and easy to implement. This article is very "reader friendly."
408. Living with Limitations: Mobility

Author(s): Beverly J. Keil
Publisher: Ohio State University, Family and Consumer Sciences
Publication Date: January 2002
Review: This article provides information about making accommodations to the home for individuals who have difficulty with mobility to increase independence. These accommodations include: providing enough space for a wheelchair to go through a door and to turn and carrying household items in alternate means such as carts, baskets for walkers, lapboards or trays for wheelchairs.

The article also has examples of how those who use wheelchairs or have difficulty maintaining their balance can reach items that are placed high or low. For example, using tongs or storing items on pegboards or in lazy susans.

Finally, the article provides interesting information to help people with limited mobility choose appliances.

Type of Material: Article
Audience: People with Disabilities
Target Disability: Mobility Impaired, Orthopedically Impaired
Alternate Formats: Electronic, Electronic
Ordering Information: Download from web site or contact:

Ohio State University Extension Office
Family & Consumer Sciences
135 Campbell Hall
1787 Neil Avenue
Columbus, Ohio 43210
Director, OSU Extension.

TDD No. 800-589-8292 (Ohio only) or 614-292-1868

Cost (As of Date Entered): No charge
Website: http://ohioline.osu.edu/hyg-fact/5000/5276.html
of people with disabilities. Publications and curricula from The Full Pitcher Music Resources are described and linked to the site. For many, the links section of the website may be the most valuable, however, some of the links do not work.

**Type of Material:** Website

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** General / Non-disability Specific, Multiple Disabilities

**Cost (As of Date Entered):** no charge

**Website:** [http://www.livingmysong.org.uk/](http://www.livingmysong.org.uk/)

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406. Living with Limitations-Arthritis and Flexibility

**Author(s):** Beverly J. Keil

**Publisher:** Ohio State University Extension Office

**Publication Date:** January 2002

**Review:** This article was designed to assist people with arthritis or people who have weakness in their limbs due to stroke, nerve damage and accidents, perform activities of daily living and be more independent. The author, Beverly Keil, provides helpful suggestions to make tasks in the kitchen, dressing, and gripping items easier. Additionally, the article gives the reader resources such as the Whirlpool Corporation and Ohio Arthritis Foundation for information on setting up and remodeling homes to make them less challenging to people with physical disabilities.

**Type of Material:** Article

**Audience:** Parents / Family, People with Disabilities

**Target Disability:** Mobility Impaired

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** Ohio State University Extension Office

Family & Consumer Sciences

135 Campbell Hall, 1787 Neil Avenue

Columbus, Ohio 43210

TDD No. 800-589-8292 (Ohio only) or 614-292-1868

**Cost (As of Date Entered):** No charge

**Website:** [http://ohioline.osu.edu/hyg-fact/5000/5273.html](http://ohioline.osu.edu/hyg-fact/5000/5273.html)

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407. Living with Limitations-Eyesight

**Author(s):** Beverly J. Keil

**Publisher:** Ohio State University Extension Office

**Publication Date:** January 2002

**Review:** This helpful article, published by Ohio State University's Extension Office, suggests ways that individuals who have visual impairments can be more independent at home. Some of the suggestions are: use light bulbs with high lumens placed strategically, use light-colored furnishings, place colored tape on the bottom step, avoid patterns. Other suggestions include: use a single switch for all lights in a home or apartment, label items in Braille or large print, color code garments, use self-threading needles, buy books in Braille or on tape, use magnifying glasses (some are illuminated), use special checks with raised or larger print. The article concludes with additional resources for more information.

**Type of Material:** Article

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** General / Non-disability Specific, Multiple Disabilities

**Cost (As of Date Entered):** no charge

**Website:** [http://ohioline.osu.edu/hyg-fact/5000/5273.html](http://ohioline.osu.edu/hyg-fact/5000/5273.html)
speech has a distinctly Irish accent. It is worth checking this site as a supplemental reading program.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Large Print, Large Print  
**Ordering Information:**

**Cost (As of Date Entered):** No charge  
**Website:** [http://www.literactive.com](http://www.literactive.com)

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**Author(s):** Marcia J. Scherer, Ph.D.  
**Publisher:** Brookline Books  
**Publication Date:** January 2005  
**Review:** The heralded fourth edition of Marcia Scherer's "Living in the State of Stuck" is not for the faint-hearted or for those who believe that technology is the cheapest cosmetic bandage to "fix" the multitude of issues that people with disabilities face. Scherer is noted for her frank, hard-hitting, analytical assessment of technology's reach and its boundaries.

This edition is no exception, as Marcia Scherer steps past the tools and goes straight to those of us who use them, emphasizing access, attitude, and the essential "person first" perspective. Scherer explores the role of assistive technology in a society where disability is rarely understood and the technology is limited to the footprint of a nation where inclusion, equality, voice, and the American dream are still just dreams for many of us with disabilities. Scherer understands the difference between a high quality machine and a high quality life; "Living in the State of Stuck" shows what may be possible when assistive technology and life are balanced.

**Type of Material:** Book  
**Auditence:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Audio Tape, Braille, Audio Tape, Braille  
**Ordering Information:** Brookline Books  
P.O. Box 1047  
Cambridge, MA 02238-1047  
800-666-2665  
or  
www.amazon.com  
**Cost (As of Date Entered):** $30.00  

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### 405. Living My Song

**Publisher:** Living My Song  
**Publication Date:** January 2005  
**Review:** This basic website presents articles and links that focus on making music accessible to all. An article on the website describes variables to consider when choosing an instrument for someone who is disabled. A feature article describes the difference that access to music can make in the lives
characteristics, attitudes, and behaviors that can help lead persons with learning disabilities to successful life outcomes. By examining the lives of individuals with learning disabilities throughout their lifespan, these studies have revealed a number of "success attributes" that guide an individual to either positive or negative adult outcomes. The guide's case study approach is an excellent way of connecting with readers.

**Type of Material:** Brochure  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific, Developmental Disabilities  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Available on the website  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.ldsuccess.org/guide/what_is_success.html](http://www.ldsuccess.org/guide/what_is_success.html)

### 402. ListenUp!

**Publication Date:** January 2004  
**Review:** This website, although huge, is simple to navigate and valuable to parents of children who are deaf or hearing impaired. Listen-Up.org is easy to approach and far less presumptive than other similar websites. Originally created to be a "one-stop shop" for the parent-designed Listen-Up! and Talk It Up! programs, the website expanded, building a remarkable parent listserv and dozens of information resources grounded in advocacy and support. Listen-Up.org is a good place, full of a positive spirit that helps parents contact other parents, examine options, and gather strength.

**Type of Material:** Website  
**Audience:** Parents / Family  
**Target Disability:** Deaf / Blind, Hearing Impairments / Deaf  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.listen-up.org](http://www.listen-up.org)

### 403. Literactive - Teaching Children to Read

**Author(s):** Literactive.com  
**Publisher:** Entertainment and Information Industries Ltd  
**Publication Date:** January 2004  
**Review:** The Literactive Reading Program is an interactive literacy program available in both print and electronic format. This program is designed for students in pre-kindergarten through first grade. It includes pre-readiness activities and literacy activities. Text in the Guided Reading selections is highlighted and can be read silently or out loud. Individual words can be clicked on to be read. There are six levels of Readers with 5-8 stories each. Each Reader is leveled with information on number of pages, word count, grammar, and comprehension goals. There are supplemental activities that correlate with each Reader and black line worksheets that can be printed.

This website is free although registration is required to download all activities, readers, and, worksheets. This is a website to support young typical students with the required skills to become proficient readers; it is also accessible to many students with disabilities. The site can be used with the Discover Switch and Intellikeys. It takes some adapting but there is a pattern to the site that fits the universal design template and policy recommendations.

This reading program was developed in Ireland; there may be some vocabulary differences and the
400. Let's Play: A Guide to Toys for Children with Special Needs

**Author(s):** Toy Industry Foundation, the ATA, and the American Foundation for the Blind.  
**Publisher:** Toy Industry Association  
**Publication Date:** January 2004  
**Review:** This booklet, which was co-authored by the Toy Industry Foundation, the ATA, and the American Foundation for the Blind provides a catalogue of toys that are available at local stores. The aim of the booklet is to aid parents, friends, relatives and caregivers in choosing toys from off-the-shelf locations that could be used by children with special needs. The toys are described and have pictures and prices and were tested by over 140 children with special needs. There are six categories of children who might benefit from playing with the toys which are labeled at the beginning of the book and the labels are included with the toy descriptions. This is a good example of how universal design makes products accessible to all people.  
**Type of Material:** Catalog  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific, Autism, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Learning Disabilities, Neurological Disorders, Visual Impairment / Blind, Orthopedically Impaired, ADHD/ADD  
**Ordering Information:** An html version of this resource is available online as well.  
**Cost (As of Date Entered):** free  
**Website:** [http://www.toy-tia.org/Content/NavigationMenu/Press_Room/Publications_Resources1/Lets_Play/LetsPlay2006.pdf](http://www.toy-tia.org/Content/NavigationMenu/Press_Room/Publications_Resources1/Lets_Play/LetsPlay2006.pdf)

401. Life Success for Children with Learning Disabilities: A Parent Guide

**Author(s):** M.H. Raskind, R.J. Goldberg, E.L. Higgins, K.L. Herman  
**Publisher:** Frostig Center, Pasadena, CA  
**Publication Date:** January 2003  
**Review:** Why do some children with learning disabilities succeed while others find little reward personally, socially or financially? The guide attempts to provide answers to these and related questions for parents raising children with learning disabilities.  
The information presented is based on a 20-year study tracing the lives of individuals with learning disabilities from childhood into adulthood in an attempt to identify individual characteristics and life experiences that lead to successful life outcomes. The guide also draws upon the work of other researchers who have identified factors that contribute to success. The guide's authors admit that "success" is not easy to define, "It means different things to different people. In addition, it may mean something different at different times in a person's life." However, although views of success may differ, the authors find that there are universal success characteristics. Those characteristics can include: "good friends, positive family relations, being loved, self-approval, job satisfaction, physical and mental health, financial comfort, spiritual contentment, and an overall sense of meaning in one's life. Of course, different individuals may place lesser or greater emphasis on these various components of success."  
Results from this and other Frostig Center projects point to the importance of a set of personal
math, daily living and social skills. It also contains a resource listing for advocacy groups, internet and vendors.

Very detailed in identifying and determining the areas of learning disabilities. Excellent fact sheets on learning disabilities along with good resources. A complete package.

**Type of Material**: Article  
**Audience**: Service Providers  
**Target Disability**: Learning Disabilities  
**Ordering Information**: Georgia Tools for Life

2 Peachtree St. NW, Suite 35-413  
Atlanta, GA 30303-3166  
404-657-3084, In-State 800-479-8665  
**Cost (As of Date Entered)**: No Cost  
**Website**: http://www.gatfl.org/ldguide/default.htm

### 398. Learning Disabilities: Glossary of Some Important Terms

**Author(s)**: Lokerson, J.  
**Publisher**: ERIC Clearinghouse on Disabilities and Gifted Education  
**Publication Date**: January 1992  
**Review**: This article is written for parents and others interested in learning disabilities. It lists terms the author deems important for the understanding of learning disabilities. Included are terms related to physiology, education, and treatment.  
**Type of Material**: Article  
**Audience**: Service Providers  
**Target Disability**: Developmental Disabilities, Learning Disabilities  
**Ordering Information**: ERIC Clearinghouse - Council for Exceptional Children  
1920 Association Dr.  
Reston, VA 20191-1589  
800-328-0272  
**Cost (As of Date Entered)**: No Cost  
**Website**: http://www.eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/2a/1d/b7.pdf

### 399. Legislators Seek to Break Down Barriers to Accessing AT

**Author(s)**: Lisa Korpus  
**Publisher**: AT Journal  
**Publication Date**: January 2003  
**Review**: Lisa Korpus’s article in the March 2003 AT Journal updates readers on assistive technology-related legislation in California in 2001 and 2002 and offers a knowledgable primer for the two-year legislative session now underway in Sacramento. Korpus captures the tenor of statehouse action in the trend-setting Golden State by capsulizing pending legislation and by naming the AT bill sponsors and other leading political players. Links to other AT Journal articles are available.  
**Type of Material**: Article  
**Audience**: Rehabilitation Professionals
395. LaZee Mouse Pro

Author(s): Lazee Tek
Publisher: Lazee Tek
Publication Date: January 2006
Review: The LaZee Mouse Pro is an alternative mouse click system. It is unique in its method of activating the mouse buttons through the use of a microphone. There are 2 sets of options that can activate any typical mouse functions through a sound or even a breath sound. The system comes with the LaZee Mouse Pro, USB cord, a modified head set with microphone, and standard mounting kit. The price is $1299.00 which will be prohibitive to many individuals.

Type of Material: Website

Audience: AT Professionals, People with Disabilities, Rehabilitation Professionals
Target Disability: General / Non-disability Specific, Cerebral Palsy, Multiple Sclerosis, Muscular Dystrophy
Ordering Information: LaZee Tek
PO Box 350
Ashley, IN 46705
260 351-3274
260 351-2760 Fax

Cost (As of Date Entered): $1299.00
Website: http://www.lazeemouse.com/

396. LD Online: The Interactive Guide to Learning Disabilities for Parents, Teachers and Children

Publisher: LD Online
Publication Date: April 2004
Review: LD Online is a comprehensive site for parents and teachers of students with learning disabilities (LD), as well as for individuals with learning disabilities. It offers a section that discusses what learning disabilities are, and an area to ask for information and support from both professionals and parents. There are numerous online articles about LD, advocacy, other issues relevant to families dealing with LD and other problems associated with LD.

Type of Material: Website

Audience: Rehabilitation Professionals
Target Disability: Autism, Communication and Speech, Developmental Disabilities, Health Impairments, Learning Disabilities
Ordering Information: see website
Website: http://www.ldonline.org

397. Learning Disabilities and Assistive Technology: An Emerging Way to Touch the Future

Publisher: Georgia Technology Assistance Project
Publication Date: April 2004
Review: This is a fact sheet for learning disabilities detailing areas of difficulty in reading, writing,
Author(s): Infinitec  
Publisher: Infinitec  
Publication Date: January 2000  
Review: This article briefly describes small modifications and adaptations one can make to create a kitchen that is accessible to a person in a wheelchair. It suggests some low tech solutions as well as expensive and more comprehensive high tech ideas.  
Type of Material: Article  
Audience: AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals  
Target Disability: Mobility Impaired, Orthopedically Impaired  
Cost (As of Date Entered): free  
Website: http://www.infinitec.org/live/kitchens/basickitchens.htm

393. Know What You're Buying - Assessment key to purchasing Assistive Technology

Author(s): Mitch Jeserich  
Publisher: At Network and California Assistive Technology systems  
Publication Date: January 2003  
Review: This article contains some basic information about how to make decisions about purchasing assistive technology. The information is useful for anyone; however, the resources listed are most pertinent to residents of California. The article describes the process in assessing and purchasing assistive technology. It describes what information is needed and the many factors that are considered to make an educated decision before a purchase is made. This brief, easy-to-read article answers many questions and offers hope and practical suggestions for those who don't have the means to pay for critically needed technologies.  
Type of Material: Article  
Audience: AT Professionals, Educators, Parents / Family, Rehabilitation Professionals  
Target Disability: General / Non-disability Specific  
Alternate Formats: Large Print, Large Print  
Ordering Information: Download from web site  
Cost (As of Date Entered): Free on web site  
Website: http://www.atnet.org/news/2003/mar03/030101.htm

394. Large Print: Guidelines for Optimal Readability

Author(s): American Printing House for the Blind  
Publisher: American Printing House for the Blind  
Publication Date: April 2004  
Review: This article provides a brief overview of the history of large print and guidelines for useful large print books and documents.  
Type of Material: Article  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Deaf / Blind, Learning Disabilities, Visual Impairment / Blind  
Alternate Formats: Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print  
Ordering Information: see website
390. Kids' Quest on Disability and Health

Author(s): National Center on Birth Defects and Developmental Disabilities
Publisher: CDC
Publication Date: January 2004
Review: Kids' Quest on Disability and Health is an informative website designed to teach 4th, 5th and 6th grade students some of the issues related to daily activities, health and accessibility for people with disabilities. The website discusses such topics as fetal alcohol syndrome, Down syndrome, spina bifida and visual impairments. Topics are grouped under motor, communication, personal care and learning. Each "quest" (example, can someone in a wheelchair be an athlete?) has ten steps with the first and last being an attitude check. The website encourages students to read some quick facts about the topic and then explore other websites and books and videos that can provide more information.
Type of Material: Website
Target Disability: Communication and Speech, Learning Disabilities, Mobility Impaired, Visual Impairment / Blind
Ordering Information: Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333, U.S.A
Tel: (404) 639-3311 / Public Inquiries: (404) 639-3534 / (800) 311-3435
Cost (As of Date Entered): No charge
Website: http://www.cdc.gov/ncbddd/kids/kidhome.htm

391. Kitchen Aids

Author(s): Buddenberg, L. A.
Publisher: Arkansas ICAN (Increasing Capabilities Access Network)
Publication Date: January 2000
Review: This is a simple straight-forward listing of the types of devices that can be used to assist in normal kitchen activities. From food storage, to opening packages, to slicing, chopping, and cooking, there are suggestions of devices available from catalog sources as well as from local department stores to make food preparation easier.
Type of Material: Article
Audience: Service Providers
Target Disability: Brain Injury and Stroke, Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired
Ordering Information: ICAN
2201 Brookwood #117
Little Rock, AR 72202
501-666-8868
800-828-2799

Cost (As of Date Entered): free
Website: http://www.arsinfo.net/ican/fs_kitch.html

392. Kitchens-Creativity is the Key!
388. Kids’ Corner: Website Usability for Children

**Author(s):** Jakob Nielsen  
**Publisher:** Alertbox  
**Publication Date:** January 2002  
**Review:** This article summarizes the findings of a study which describes how kids use the Web. This is an under-studied area and the study will be useful for website designers. This is pertinent to kids with and without disabilities. Fifty-five American and sixteen Israeli kids aged six through 12 participated in the study. The assumption that kids are masters at computing and can overcome any computer challenge was not supported. Like adults, slow downloads and error messages turned kids away from a website. Confusing navigation also caused a lot of problems for kids. Differences in website usability between age and gender groups are also described. A link to the full report is available at the end of the study as well as 70 usability guidelines for designing websites for children.  
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.useit.com/alertbox/20020414.html](http://www.useit.com/alertbox/20020414.html)

389. Kids Quest On Disability and Health

**Author(s):** The National Center on Birth Defects and Developmental Disabilities (NCBDDD)  
**Publisher:** Center for Disease Control and Prevention, National Center on Birth Defects and Developmental Disabilities  
**Publication Date:** January 2005  
**Review:** This website is designed for students in grades 4-6 and is intended to get kids to think about people with disabilities and some of the issues related to daily activities, health, and accessibility. The students conduct Web-Quests to find out about people who have difficulty learning, moving, or have particular disorders such as Autism or Fetal Alcohol syndrome. Each Web-Quest has ten steps or activities in which they can participate. The first and last activities are attitude check-ups designed to help students see how their thoughts have or haven’t changed as a result of the quest. Parents or teachers may adapt the quests. This reviewer’s favorite quest had to do with using the bathroom, but disappointingly, some of the links were not working.  
This site complies with Section 508 rules regarding website accessibility.  
**Type of Material:** Website  
**Audience:** Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge
386. Keyboard Options

**Author(s):** Assistive Technology Training Online Project  
**Publisher:** Assistive Technology Training Online Project  
**Publication Date:** January 2000  
**Review:** This concise and well written module examines and explains many of the options available for someone who is unable to use a standard keyboard. The module examines standard keyboards, compact keyboards, ergonomic keyboards, mini keyboards, enlarged keyboards, cordless keyboards, 3-D keyboards, portable notetakers and keyboard layouts.

Within each of these sections, there are descriptions of the most common products, along with very helpful photos that help the reader more fully understand what the products are and who might use them.

Included in this module is a PDF file that can be downloaded. This file contains the names and contact information of the most popular alternative keyboard vendors. The file also contains the names of some popular keyboarding software programs, the publisher’s contact information and online typing games and tutors.

The reader can also click on the "In the Classroom" icon and read a story about alternative keyboards that have been successfully used in a classroom setting.

**Type of Material:** Website  
**Audience:** People with Disabilities  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Health Impairments, Learning Disabilities, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
**Ordering Information:** Can be viewed online.

PDF file with vendor information can be downloaded from this site.  
**Cost (As of Date Entered):** Free on web site  
**Website:** [http://atto.buffalo.edu/registered/ATBasics/AdaptingComputers/KeyboardOptions/index.php](http://atto.buffalo.edu/registered/ATBasics/AdaptingComputers/KeyboardOptions/index.php)

387. Kids and Computers: Eyes and Visual Systems

**Author(s):** Dr. Jeffrey R. Anshel, OD  
**Publisher:** CTC Resource Network, Inc  
**Publication Date:** January 2000  
**Review:** In the world of high technology, it is easy to forget that children make up a large part of the consumer population. With this in mind, it needs to be understood that the same problems adults have in regards to computer usage can be even more damaging to growing children. Eyestrain, physical problems, and vision problems need to be specifically addressed in the younger population. This article gives great ideas on how to minimize the stress and maximize the lighting and environment to make it conducive to computer usage for young children in any setting.

**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Large Print, Electronic, Large Print  
**Ordering Information:** Dr. Jeffrey R. Anshel, OD
385. Keyboarding Resources

Author(s): Nadine Bunnell  
Publisher: Utah State Office of Education  
Publication Date: January 2002  
Review: This web site, with its many links, is well presented and laid out for use by those teaching keyboarding to students today, be they teachers, support personnel or parents. The material is easy to use, with clear instructions. Information is presented in five areas, including Assessment, Research, Resources, Software and Tips.

The Assessment area describes the criteria for mastery; the Research area gives references for the topics listed; and the Resources area gives drills, hand-out masters, and lesson plans for seven subjects. The Software area leads the user to software that can be downloaded or used online, and provides a list of software available from other sources. Under Tips are hints for teachers, administrators and parents. The information for parents offers suggestions for an appropriate amount of practice time, by grade, and emphasizes that instruction needs to be monitored to be effective.

Altogether, this site would be a fine model for the teaching of keyboarding to any individual, child or adult, with or without a disability. No special accommodation is noted for those with disabilities, but the general approach and types of drill would no doubt be useful for all.

Type of Material: Training Material  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): No charge  
Website: http://www.usoe.k12.ut.us/ate/keyboarding/key.htm
383. Keyboard and Mouse Alternatives Ease Computer Access for People with Injuries or Disabilities

Author(s): Heather Koren, MS  
Publisher: Washington Assistive Technology Alliance  
Publication Date: January 2000  
Review: This article introduces alternatives to using a keyboard or mouse for computer access by people who are physically incapable of using conventional means of access due to injury or disability. The author describes the different keyboard alternatives that exist such as one-handed, mini, ergonomic, and expanded keyboards. She also describes mouse alternatives such as track balls and track pads, use of a joystick or video game controller, or use of the number keys only. It is a good introduction but does not address access for people with severe or multiple impairments or with sensory impairments. The article concludes with a listing of web sites, again a good sample but certainly not inclusive of all products available on today's market.  
Type of Material: Article  
Audience: AT Professionals, Educators, Rehabilitation Professionals  
Target Disability: Mobility Impaired, Orthopedically Impaired  
Ordering Information: Available via the website  
Cost (As of Date Entered): Free  
Website: http://www.wata.org/pubs/articles/keyboard%20alternatives.htm

384. Keyboard Assessment Guide

Author(s): Call Centre  
Publisher: Call Centre (University of Edinburgh)  
Publication Date: January 2003  
Review: This short but helpful article (which is a PDF file only) is a listing of suggested accommodations based upon observation which can make the keyboard easier for people with disabilities to use. An example of the self-explanatory, problem-solving information in this article is: if an individual can strike keys on the keyboard but he/she cannot reach across the whole keyboard, then consider investigating the person’s seating and positioning, consider arm supports, consider small size laptop keyboard and/or consider a miniature keyboard.  
Type of Material: Article  
Audience: Service Providers  
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Mobility Impaired, Spina Bifida, Orthopedically Impaired  
Alternate Formats: Electronic, Electronic  
Ordering Information: The CALL Centre

University of Edinburgh

Paterson’s Land

Holyrood Road
381. Justification Letters for Assistive Technology - A Recipe for Success

Author(s): Leubben A. J.
Publisher: WYNOT (Wyoming New Options in Technology) Project
Publication Date: January 1992
Review: This is a very clear outline of information that is needed when writing a letter of justification to a Health Insurance Agency for a piece of assistive technology. It is not specific to the type of equipment, but covers all the needed information that a professional would need to have in order to complete a request for funding. Even if an agency had a more specific format, this outline would be a good way to collect information and put it in an organized format. It would be a valuable tool for both the new and the experienced practitioner.
Type of Material: Article
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print
Website: http://www.cybercil.com/library/at_letters.pdf

382. Keyboard Alternatives

Publisher: Ability Hub
Publication Date: January 2003
Review: This resource is a portion of the Ability Hub website, focusing specifically on keyboard alternatives. It provides seven links to additional information on individual systems. The information at each link is brief, so viewers should access all links to get a more complete picture. Included in the links are expanded keyboards such as Big Keys and IntelliKeys, eye gaze systems, ergonomic which includes pictures, mini keyboards, one-hand typing, on-screen typing, and sticky keys. Any alternatives that are part of Microsoft Windows Accessibility Options are so indicated.
Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders,
**Author(s):** Willie Ennis, III and Shannon Mocanu  
**Publisher:** tech Learning  
**Publication Date:** January 2004  
**Review:** This is a short article describing research that supports technology integration in classrooms, designed to improve student outcomes. Research studies are cited indicating that technology-enriched classrooms improve higher order thinking and social skills. Additionally, group-based learning assists students in the integration process. Instructor concerns that technology integration into the classroom means more work are addressed; learning how to use the technology as a teaching tool in the long run does not mean more work for the teacher once skills needed to implement it are developed. Finally the point that technology integration can make classrooms accessible to all students is discussed. This is a basic article, affirming what educators who are technology-savvy already know.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.techlearning.com/shared/printableArticle.jhtml?articleID=18902862](http://www.techlearning.com/shared/printableArticle.jhtml?articleID=18902862)

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**Type of Material:** Journal / Magazine  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** online at [http://jset.unlv.edu/](http://jset.unlv.edu/)

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**Type of Material:** Journal / Magazine  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** online at [http://jset.unlv.edu/](http://jset.unlv.edu/)
This is a great resource and guide for any family or individual trying to facilitate socially acceptable behavior, class work, direction following, inclusion, or even scheduling for a student who has difficulty remembering the routines.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Large Print, Electronic, Large Print  
**Ordering Information:** Disability Solutions

PMB 179  
9220 SW Barbur Blvd.#119  
Portland, OR 97219

**Cost (As of Date Entered):** $2.50 for request of printed material  
**Website:** [http://www.disabilitysolutions.org/pdf/5-4.pdf](http://www.disabilitysolutions.org/pdf/5-4.pdf)

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**378. Is the Web for everyone? Accessibility holds the key**

**Author(s):** Royal National Institute for the Blind  
**Publisher:** Royal National Institute for the Blind Publication  
**Publication Date:** January 2005  
**Review:** With the inception of the World Wide Web, the information highway has mushroomed and created a level playing field for individuals who are blind or who have visual impairments. Individuals with visual impairments can now access wanted information without having it transcribed into alternate formats. However, with this opportunity, there are still many barriers to overcome before the Internet is as user friendly to individuals with visual impairment as it is to individuals who can see. This article describes and gives links to devices, browsers, and other software that will ensure success and ease of use on the Internet. It is not all-inclusive but is a good starting point on the way to understanding what is available.

**Type of Material:** Article  
**Audience:** AT Professionals, Parents / Family, People with Disabilities  
**Target Disability:** Visual Impairment / Blind  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** library@rnib.org.uk  
020 7391 2052.  
**Cost (As of Date Entered):** no charge  

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**379. It’s About T.I.M.E.! (Technology Improving the Methods of Education)**
Review: This article addresses new technology that is being developed at DePaul University to assist deaf people in situations where auditory awareness is imperative. Security concerns at airports is a major focus of this research and product development. The goal of the project is to develop an American Sign Language program in an animated visual format. A signing avatar is being developed to actually translate verbal instructions into ASL. Researchers hope to create a generic tool that can be utilized in a variety of formats where verbal communication is crucial, such as health care.

Deaf/hard-of-hearing adults who travel frequently will find this information especially interesting and should look forward to the day that this technology is available for widespread use. Parents of deaf/hard-of-hearing children can look to a day that their children will be able to navigate through societal situations with greater independence and greater comfort.

Type of Material: Article
Audience: Service Providers
Target Disability: Hearing Impairments / Deaf
Cost (As of Date Entered): no charge
Website: http://www.speechtechmag.com/ME2/Audiences/dirmod.asp?sid=6F7CC462F9804BA7B86FEE59A43BCA04&nm=ARCHIVES&type=Publishing&mod=Publications%3A%3AArticle&mid=8F3A7027421841978F18BE895F87F791&AudID=C7BACAE873424C4AA3347BD794887D05&tier=4&id=BE19CDBBDB1F47D69CE1

376. I See What You Mean: Examples of Visual Tools to Promote Inclusive Learning

Author(s): Pattie McVay, M.Ed., Heidi Wilson, Lucy Chiotti
Publisher: Enoch-Gelbard Foundation
Review: This article is a long series of inter-related examples of effective visual tools. Headlined in the Disability Solutions newsletter, the article and its examples are focused on inclusive general education; based on the idea "when I see, I understand." Nine classroom/home examples are provided (scheduling, food guide pyramid, cinquain poetry, photo phone books, story pyramid, personal dictionary, butterfly unit, teaching household rules, and teaching U.S. time zones).

Type of Material: Newsletter
Audience: Parents / Family
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge
Website: http://www.disabilitysolutions.org/pdf/5-5.pdf


Author(s): Patti McVay, Heidi Wilson, and Luci Chiotti
Publisher: Disability Solutions- The Enoch-Gelbard Foundation
Review: With the complexity and diverse range of technology available, it is easy to overlook low-tech ways of solving problems for individuals with disabilities. The authors of this article capture the essence of using visual strategies for many students and individuals with a disability. They remind us how often everyone uses visual strategies and how easily they can be implemented into a student's environment to create success. They describe actual case studies of students who had a variety of inclusion and classroom difficulties. Visual strategies are defined and a list of visual supports and ideas are given to make this simple strategy successful.
in an attempt to gather information for the selection of a device.

Type of Material: Article
Audience: Service Providers
Target Disability: Learning Disabilities, Visual Impairment / Blind
Ordering Information: Access via the website
Cost (As of Date Entered): Free
Website: http://www.asha.org/public/speech/disorders/Augmentative-and-Alternative.htm

374. Iowa Program for Assistive Technology (IPAT)

Author(s): IPAT
Publisher: IPAT
Publication Date: January 2002
Review: This well-organized webpage is an excellent source of information, both for individuals just learning about AT and for those already familiar with the subject. It offers a basic definition of assistive technology and excellent information regarding funding sources. (Many of the funding resources are for people who live in Iowa but many are still applicable to those who live in other states.) The Funding Strategies Brochure with "The Rules" of funding is especially helpful because it explains the role of key players, discusses eligibility, and provides links to funding sources such as Medicare, Veteran’s Administration, and state Tech Act Projects. The web resource section provides the reader with links to general assistive technology resources (such as ATA, RESNA and NIDRR); disability resources; web accessibility resources; computer resources; and Iowa resources. Finally, the website is the source of information for UERS (Used Equipment Referral Service), a listing of assistive technology which is for sale or which is needed. You do not have to live in Iowa to use this resource.

Type of Material: Website
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Ordering Information: Iowa Program for Assistive Technology (IPAT)

Center for Disabilities and Development
100 Hawkins Drive, Room S295
Iowa City, Iowa 52242-1011
800-331-3027 (voice toll-free)
877-686-0032 (TTY toll-free)
319-356-0550 (voice)

To request information, please complete the IPAT/InfoTech Feedback Form or email us at infotech@uiowa.edu.
Website: http://www.uiowa.edu/infotech/ATDevice.htm

375. I See What You Are Saying
372. Introduction to AT

Author(s): Unknown
Publisher: Assistive Technology Training Online Project
Publication Date: January 2002
Review: This is an excellent introduction to assistive technology as it applies to the education of children from ages 5-11. The article contains several sections including Defining Concepts, Basic Technologies, AT & IDEA, Primary Usage, Device Selection and Trends & Issues.

Each of these sections contains introductory information on its topic area in easy to understand language. Most of the sections contain photos that illustrate a particular AT device or a particular device being used in educational settings. Many of the sections also include links to documents or web sites that contain more in-depth information. For example, in the AT & IDEA section, the reader can download a PDF file that contains AT definitions. Similarly, in the Trends & Issues section, the reader can download a PDF file that contains an article on funding assistive technology that was produced by Assistive Technology Funding & Systems Change Project.

This article is best read online because of the live links to resources and web sites. However, there is an option that allows the reader to produce a "printer friendly" version of the article. This version will not include to additional links.

Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired
Cost (As of Date Entered): Free
Website: http://atto.buffalo.edu/registered/ATBasics/Foundation/intro/index.php

373. Introduction to Augmentative and Alternative Communication

Author(s): ASHA
Publication Date: January 2000
Review: This article is a valuable resource which will orient families and professionals to the area of augmentative and alternative communications. The article provides a list of questions to ask potential speech language pathologists as well as a list of key members of the AAC team (user and family, SLP, OT, PT, and physician. It also discusses each member's role on the team. It prepares the potential AAC user for an evaluation - for example, what to expect, and what questions will be asked
Access Technology, a book written for classroom teachers. It covers topics such as selecting a font, selecting actions for keys or buttons and using on-screen keyboards with pointing devices. The information in this article would be very valuable to a specific audience especially when paired with other chapters from this book.

**Type of Material:** Article  
**Audience:** Educators  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Learning Disabilities, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** The CALL Centre

University of Edinburgh  
Paterson's Land  
Holyrood Road  
Edinburgh  
EH8 8AQ  
Scotland  
Tel: 0131 651 6235/6236  
(International: +44 131 651 6235/6236)  
Fax: 0131 651 6234  
(International: +44 131 651 6234)  
Email: call.centre@ed.ac.uk

**Cost (As of Date Entered):** No Charge  

### 371. Introduction to Assistive Technology: Accessibility Tools and Strategies

**Author(s):** Technology Assistance for Special Consumers (TASC)  
**Publisher:** Technology Assistance for Special Consumers (TASC)  
**Publication Date:** January 2000  
**Review:** This article is really a list of assistive technology devices for computer access. It provides a very short description of the following tools: Mouse Alternatives, Keyboard Alternatives, and Visual Enhancements.  
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific
**Publication Date:** January 2005  
**Review:** Landmark College Institute for Research and Training combined several important articles and websites to address the on-going issues of integrating assistive technology into the school curriculum. Using the articles and website from Cynthia Warger in the ERIC Clearinghouse on Disabilities and Gifted Education, and Gayle Bowser and Penny Reed in Educational TECH Points, Landmark developed a brief overview to examine the curriculum and assistive technology tools to achieve better outcomes. Integrating several articles, six strategies are outlined to guide teachers and administrators in implementing and evaluating the tools and processes of integrating technology into the curriculum. The strategies include referral, evaluation, extended assessment, plan development, implementation, and periodic review.

The information is presented briefly and coherently. Links to related topics are included at the end of the article and readers are advised to take advantage of these which appear in similar format. While the article does not go into great depth, it may be used as a starting point for the target audience to get an easy-to-understand introduction to Assistive Technology.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.landmarkcollege.org/institute/assistive_technology/integration.html](http://www.landmarkcollege.org/institute/assistive_technology/integration.html)

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**369. International Society for Augmentative and Alternative Communication (IS AAC) Website**  
**Author(s):** ISAAC  
**Publisher:** ISAAC  
**Publication Date:** April 2004  
**Review:** ISAAC is an international organization for users, family, professionals, and others who are associated with augmentative and alternative communication (AAC). This site contains information concerning issues, mentoring, and policy. Publications, events, and resources are also available through this site. Anyone with a communication disability or impairment might want to consider this site for reliable information and contacts.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Communication and Speech, Developmental Disabilities  
**Website:** [http://www.isaac-online.org](http://www.isaac-online.org)

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**370. Introducing On-screen Keyboards**  
**Author(s):** The Call Centre  
**Publisher:** University of Edinburgh  
**Publication Date:** January 1998  
**Review:** On-screen keyboards display a picture of the computer keyboard on the screen. This adaptation is appropriate for early writers, students who have physical difficulties (generally, limited movement or poor motor control) and for students with reading or writing difficulties (who would benefit from visual and/or spoken prompts).

The information in this article is very specialized. It comes from Chapter 7 of the book, Special
**Author(s):** Gary Nurenberg  
**Publisher:** Tech TV/Tech Live  
**Publication Date:** January 2002  
**Review:** This article describes a wearable computer, XyberKids, which was developed to help include children with disabilities in the mainstream classroom. It is a lightweight (5 pounds), wearable computer with a flat panel touchscreen display, manufactured by Xybernaut. Touted as being able to grow with the student, various software programs allow the user to do standard word processing, calculating, multimedia and internet functions. An onscreen keyboard is standard in the unit. It may also serve as a communication device for nonverbal users.

The author, Gary Nurenberg of Tech Live, states that the XyberKids unit might help a child be included, bring a child positive attention from peers and be portable enough to carry anywhere in a backpack. The article provides information on an interesting product that with the right supports, can help kids with learning, communication and physical disabilities.

Links in the article lead to the Xybernaut website, to the Mayer-Johnson website for communication software, and to the President’s Commission on Excellence in Special Education, as well as to related articles.  
**Type of Material:** Article  
**Audience:** Parents / Family  
**Target Disability:** Autism, Learning Disabilities, Multiple Disabilities  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** No Charge  
**Website:** [http://www.g4tv.com/techtvvault/features/39827/Instant_Computing_Access_for_Disabled_Kids.html](http://www.g4tv.com/techtvvault/features/39827/Instant_Computing_Access_for_Disabled_Kids.html)

**367. Institute for Human Development Website**

**Author(s):** Arizona Technology Access Program (AzTAP)  
**Publisher:** Northern Arizona University Program  
**Publication Date:** April 2004  
**Review:** This website was developed by the Arizona Technology Access Program, and is a source of information for persons in Arizona about types of technology and where they can receive assistance. It looks at funding issues and has a questionnaire as to funding success or problems that have happened to individuals in Arizona. There is a library of fact sheets that are easy to read and topic specific if someone is looking for limited information. There are links to other regional centers if someone needs specific contact information. It is a Bobby approved website and can be viewed in a text-only format.  
**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** see website  
**Website:** [http://www.nau.edu/ihd/](http://www.nau.edu/ihd/)

**368. Integrating AT into the Curriculum**

**Author(s):** Landmark College Institute for Research and Training  
**Publisher:** Landmark College
365. Innovative Designs Tackle Disability

Author(s): Geoff Adams-Spink
Publisher: BBC News
Publication Date: January 2006
Review: Technology for individuals with disabilities can be expensive and often times out of reach for those who need it the most. A small company in the UK named Design and Manufacture for Disability (Demand), creates equipment that supports daily living and leisure activities. This equipment can help an individual who can’t walk experience the thrill of the slope through specialized skis or help a child who can’t walk independently participate in ballet classes. All this is done at no cost to the individual or their family.

Although rare, this exceptional company not only places emphasis on design but wants the equipment to be great looking and cool. Demand is an inspiration to all of us to use our talents to support and help our community.

In the U.S. similar support may be available through S.C.O.R.E. (Service Corps of Retired Engineers).

Type of Material: Article
Audience: AT Professionals, Parents / Family, Service Providers
Target Disability: General / Non-disability Specific, Mobility Impaired
Alternate Formats: Large Print, Large Print
Ordering Information: BBC,
PO Box 1922,
Glasgow G2 3WT
http://www.bbc.co.uk
Cost (As of Date Entered): No charge
Website: http://www.bbc.co.uk

366. Instant Computing Access for Disabled Kids
This article has the potential to be helpful to many people. However, it is lacking information about other funding sources besides Vocational Rehabilitation and the school system. Readers will also have to go to other sources for more information about creating a justification statement.

Type of Material: Article  
Audience: Service Providers  
Target Disability: General / Non-disability Specific, Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Learning Disabilities, Mental Health Impairments, Mental Retardation, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired  
Ordering Information: ABLEDATA  
8630 Fenton Street, Suite 930,  
Silver Spring, MD 20910  
1-800-227-0216.  
Cost (As of Date Entered): No charge  
Website: http://www.abledata.com/abledata_docs/funding.htm


Author(s): ABLEDATA  
Publisher: ABLEDATA  
Publication Date: January 1994  
Review: This resource guide provides a comprehensive discussion of the various types of wheelchairs that are available and gives some suggestions for choosing an appropriate chair to suit the user's lifestyle and meet their specific needs for independence in mobility. It addresses funding, national standards, and provides a listing of resources/publications that can be useful to individuals making their selections, perhaps for the first time.  
Type of Material: Resource Guide  
Target Disability: Brain Injury and Stroke, Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired  
Ordering Information: ABLEDATA  
8630 Fenton St., Ste. 930  
Silver Spring, MD 20910  
301-608-8912 TTY  
301-608-8958 Fax  
800-227-0216  
Website: http://www.abledata.com/abledata_docs/icg_whel.htm

364. Infrared Controlled Telephones

Author(s): Michelle Lange, OTR, ABDA, ATP  
Publisher: Wisconsin Assistive Technology Initiative (WATI)
361. Informed Consumer Guide to Assistive Products for People with Temporary Disabilities

Author(s): Halverson, L., Belknap, K., Daigle, A., Knight, L.
Publisher: ABLEDATA
Publication Date: January 1999
Review: This resource guide covers a wide range of products that an individual with a temporary disability would need to know about in order to maintain as much independence as possible during their recovery time. It offers practical and useful suggestions about how to find the types of assistive devices one might need, and gives information about resources one might use to find those devices. It includes topics on daily grooming, driving, mobility, travel, etc.
Type of Material: Resource Guide
Audience: AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired
Alternate Formats: Audio Tape, Braille, Large Print
Ordering Information: ABLEDATA
8630 Fenton St., Ste 930
Silver Spring, MD 20910
800-227-0216
301-608-8912 TTY
301-608-8958 Fax
Cost (As of Date Entered): No Cost
Website: http://www.abledata.com/Site_2/icg_tempdis.htm

362. Informed Consumer's Guide to Funding Assistive Technology

Author(s): Anjanette Daigle, Stephen Lowe, Katherine Belknap and Lynn Halverson
Publisher: Abledata
Publication Date: January 2001
Review: This article provides an excellent background for those who are seeking funding to purchase assistive technology devices for the first time. The article is especially helpful because it recommends before finding a funding source that one should consult with medical and rehabilitation professionals to determine what assistive technology is needed. The authors recommend gathering information about the disability, time of onset, cause of disability, employment history, family gross income, monthly expenses, health insurance information, and names and ages of dependents.

The article mentions the preparation of a justification statement but not much information is given to the reader about this step. It also lists two potential funders—Vocational Rehabilitation and the local school district. The article then refers the reader to their state’s Tech Act Project and Protection and Advocacy Agencies for more information on funding sources.
359. Information Technology in Education Accessibility Checklist

Author(s): DO-IT
Publisher: University of Washington
Publication Date: January 2004
Review: This is a checklist that can assist in making the educational environment more accessible to students and employees with disabilities. It was developed to inform and assist educational entities regarding information technology (IT) accessibility and presents it in a less formal manner than federal and state guidelines and standards, with the understanding that it is not a replacement for these.

Users of this checklist might choose to register and use the checklist online, or might choose to print it out and keep it on file in hard copy. Each item in the checklist, for example, ‘Our televisions are capable of displaying Closed Captions’ links to a more in-depth explanation of what each modification means, and the guideline or standard from which it originates. Users are also referred to their regional ADA and IT Centers for further information.

The knowledge base is extensive and the entire checklist is very user-friendly. It is a valuable tool for entities to use to ensure they are in compliance, whether in start-up or operational phases.

Type of Material: Evaluation Tool
Audience: Educators, People with Disabilities
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): No charge
Website: http://www.washington.edu/accessit/it-checklist/

360. Informed Consumer Guide on Assistive Technology for People with Hearing Disabilities

Author(s): Daigle, A.
Publisher: ABLEDATA
Publication Date: January 1999
Review: This article covers an amazing array of technologies to help individuals with hearing disabilities, or individuals who are deaf/blind, be more involved in typical day-to-day activities. From telephone systems, to television access, to signaling systems for environmental noises and danger, the article gives basic information on types of devices available and what they can do.

Type of Material: Article
Audience: Service Providers
Target Disability: Communication and Speech, Deaf / Blind, Hearing Impairments / Deaf
Alternate Formats: Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print
Ordering Information: ABLEDATA
357. Independent Switch Control of Battery and Electrical Devices

Author(s): Michelle L. Lange, OTR, ABDA, ATP  
Publisher: Wisconsin Assistive Technology Initiative (WATI)  
Publication Date: January 2001  
Review: This is a handy chart that lists the most popular devices available that allow a battery or electrical device to be operated by a single switch. In order to make the best use of this chart, one should have some knowledge of switches and environmental control units.

The chart provides information on the various ways that the switch can be programmed to activate the device, how many switches can be used for input at a time and the price. There is also a comments section that gives helpful information such as whether or not a cordless version is available.

A list of manufacturers is provided, although only their phone numbers are listed. However, if the reader uses the manufacturer's name in an online search engine, they will be able to get additional information on the products in the chart.

Type of Material: Infosheet / Fact sheet  
Audience: Service Providers  
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Orthopedically Impaired  
Ordering Information: Available via the web site  
Cost (As of Date Entered): Free on web site  
Website: http://www.wati.org/Curriculum/pdf/Entry_level_EADL_chart_A.pdf

358. Information Plus-Social Learning Software

Author(s): Information Plus  
Publisher: Information Plus LTD  
Publication Date: January 2004  
Review: Information PLUS has designed software to address social and behavioral issues in youth, including those with disabilities. Using the "cool factor" of computer technology, issues are presented using appealing graphics, sounds and interaction. Specific issues include drug taking, offending behavior, coming to terms with past events and building healthy relationships and citizenship in the present.

Some cultural differences may occur as this is a program developed in the UK.

While there are no downloads available, screenshots, descriptions, and factsheets about each of the software titles are available online. Recommendations for implementation of the software are also available. For those working with troubled youth, these programs could be useful. The company is based in the UK and there is currently no U.S. distributor.

Type of Material: Brochure  
Audience: Parents / Family  
Target Disability: General / Non-disability Specific
of ability or need. It is rich in links to other sites, all documents are printer friendly, and come in pdf format. It is developed by Easter Seals with funding from Mitsubishi Electric American Foundation. This site would be of interest to professionals and families working toward inclusion for all children, enabling them to find out what is currently being done, and providing a model for what might be done.

**Type of Material:** Website

**Audience:** Educators, Parents / Family

**Target Disability:** General / Non-disability Specific

**Cost (As of Date Entered):** No charge

**Website:** [http://includingallkids.easterseals.com/site/PageServer?pagename=IAK_homepage](http://includingallkids.easterseals.com/site/PageServer?pagename=IAK_homepage)

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### 355. Including Assistive Technology in the Standard Curriculum

**Author(s):** Warger, C.

**Publisher:** ERIC Clearinghouse on Disabilities and Gifted Education

**Publication Date:** January 1998

**Review:** This report promotes the use of assistive technology in the classroom to aid students with disabilities to access the standard curriculum. The author explains that school districts are faced with financial hardship in managing the needs of all their students, especially those with some form of disability. To increase educational outcomes, technology needs to be implemented within the regular curriculum so that all students can access that information and learn.

**Type of Material:** Report

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** General / Non-disability Specific

**Ordering Information:** see website

**Cost (As of Date Entered):** free


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### 356. Independent Switch Control of Battery and Electrical Devices

**Author(s):** Michelle L. Lange, OTR, ABDA, ATP

**Publisher:** Wisconsin Assistive Technology Initiative (WATI)

**Publication Date:** January 2001

**Review:** This is a handy chart that lists the most popular devices available that allow a TV and/or VCR to be operated by a single switch. The chart is pretty self-explanatory. The reader does not need an extensive knowledge of switches.

The chart provides information on the various ways that a switch can activate and control a TV and/or VCR, how many switches can be used for input at a time and the price. There is also a comments section that gives information about other features.

A list of manufacturers is provided, although only their phone numbers are listed. However, if readers use the manufacturer's name in an online search engine, they will be able to get additional information on the products in the chart.

**Type of Material:** Infosheet / Fact sheet

**Audience:** People with Disabilities

**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired

**Ordering Information:** This resource may be downloaded from the Web site listed below.
scooters. Each category shows a picture of the item with a brief description of how it's used as well as the pros and cons of each.

**Type of Material**: Article

**Audience**: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability**: Brain Injury and Stroke, Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired

**Ordering Information**: WATA
Center for Technology and Disability Studies, Univ of Washington
P.O. Box 357920
Seattle, WA 98195-7920
206-685-4181 Voice
206-616-1396 TTY
800-841-8345 outside Seattle
206-543-4779 Fax

**Cost (As of Date Entered)**: free


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**353. Imagination Cubed**

**Author(s)**: Artura Arunda

**Publisher**: General Electric

**Publication Date**: January 2003

**Review**: In 2003, General Electric released a drawing program that allows users to create virtual online drawings and messages. This year, General Electric updated the program to allow up to 3 people to simultaneously use the software to draw, stamp, and produce creative and alternative means of communicating and collaborating. There is even a button to replay all of the artwork from beginning to end. This website is a creative alternative to instant messaging and offers a way for people of all abilities to share in an interactive format. This could be used recreationally as well as educationally.

**Type of Material**: Website

**Audience**: AT Professionals, Educators, Parents / Family, People with Disabilities

**Target Disability**: General / Non-disability Specific

**Alternate Formats**: Electronic, Electronic

**Cost (As of Date Entered)**: No charge

**Website**: [http://www.imaginationcubed.com/LaunchPage](http://www.imaginationcubed.com/LaunchPage)

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**354. Including All Kids: Assisting Your Organization in Engaging Young People of All Abilities**

**Author(s)**: Easter Seals

**Publisher**: Easter Seals

**Publication Date**: January 2006

**Review**: The IncludingAllKids.org website is focused on Developing Inclusive Programs. The site offers checklists and guidelines for creating and implementing inclusive programs. They have resources for organizations that are trying to implement inclusion including how to make the case for inclusion in your organization, understanding the laws and best-practices. They also offer a brief Self-assessment guide for organizations on the inclusion of people with disabilities.

This easy-to-navigate website provides a wealth of information on including all individuals regardless
Publication Date: January 1994
Review: This 248-page book is written in 14-point font to be accessible to persons with low vision. It may be particularly helpful and reassuring to those who are losing their vision. It also presents alternative ways to read, travel, cook, sew and provides options and hope. A list of resources and helpful products available from the National Federation of the Blind is included.

Type of Material: Book
Target Disability: Deaf / Blind, Visual Impairment / Blind
Ordering Information: National Federation of the Blind

1800 Johnson St., Suite 300
Baltimore, MD 21230-4998
Cost (As of Date Entered): Free
Website: http://www.nfbohio.org/if.htm

351. IHMC CmapTools version 3.8

Author(s): Institute for Human and Machine Cognition
Publisher: Institute for Human and Machine Cognition
Publication Date: January 2004
Review: The home page for this website gives information about this free software; the user must then download it, which requires an email address, first and last name, country, organization and name, and website.

The software allows the user to construct, navigate, and share Concept Maps (graphic organizers). It may be compared to other commercial software products such as Inspiration and Spark-Space. For those who have familiarity with graphic organizers, this product is intuitive and easy to use. Users may develop graphic 'maps' and import documents, pictures, video and sound clips into each section. Finished products may be posted and shared with others who use the same software. These postings may be used and modified as needed, enabling online collaboration.

For those new to graphic organizers, using the Help menu will assist in creating new maps. Textual and graphic information are included in the Help section for each step needed to create concept maps from simple to complex.

The software is free and can be used by school districts. Used correctly, it could be a tool in any classroom as a visual aid in organizing, particularly as part of a writing process or study tool It is configured for Windows, MacOSX, Linux and Solaris.

Type of Material: Software
Audience: AT Professionals, Educators
Target Disability: Learning Disabilities
Cost (As of Date Entered): no charge
Website: http://cmap.ihmc.us/

352. Illustrated Tour. . .Technology for Mobility

Publication Date: January 1999
Review: This article provides an illustrated listing of the different technological aids available to enhance mobility for the physically impaired, such as canes, crutches, walkers, wheelchairs, and
While organizational and individual resources are listed in the binder, sources for the original documents would also be helpful. The package would be of great assistance to those working in areas of policy, as a training tool for increasing awareness and advocacy for technology for people with special needs.

The resource kit is available from Council for Exceptional Children and contains the video, CD and binder. The video and text materials may also be accessed for free on the Mountain Plains Regional Resource Center website at: http://www.usu.edu/mprrc/icansoar/icansoar2.cfm

**Type of Material:** Video  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** CD-ROM, Video - Close Captioned, CD-ROM, Video - Close Captioned  
**Ordering Information:** Council for Exceptional Children  
www.cec.sped.org  
$39.95 non-members  
$26.95 members  
**Cost (As of Date Entered):** Free on line; From CEC, $39.95/$26.95  
**Website:** http://www.usu.edu/mprrc/icansoar/icansoar1.cfm  

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**349. Ideas for Accommodating Individuals with ADD/ADHD in Postsecondary Training and College**

**Author(s):** LaRosse, M.  
**Publisher:** Job Accommodations Network (JAN)  
**Publication Date:** January 1998  
**Review:** This resource guide describes the legal requirements for colleges and other postsecondary educational institutions in regards to students with disabilities. It is written in easy to understand language, and quotes relevant portions of IDEA (Individuals with Disabilities Education Act), ADA (Americans with Disabilities Act) and the Rehabilitation Act of 1973. It also gives a very good definition of ADHD symptoms, along with suggested accommodations for different classroom activities. Included is a list of resources for individuals with learning disabilities and attention deficit disorders.  
**Type of Material:** Resource Guide  
**Target Disability:** Developmental Disabilities, Learning Disabilities  
**Alternate Formats:** Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print  
**Ordering Information:** JAN  
918 Chestnut Ridge Road, Ste 1  
West Virginia University  
P.O. Box 6080  
Morgantown, WV 26506-6080  
800-526-7234  
**Cost (As of Date Entered):** No Cost  
**Website:** http://janweb.icdi.wvu.edu/media/ADDADHDPost.html

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**350. If Blindness Comes**

**Author(s):** Jernigan, K.  
**Publisher:** National Federation of the Blind (NFB)
**Publication Date:** April 2004  
**Review:** The video is a documentary that profiles individuals with disabilities "who lead physically active lives." The video is inspiring and encouraging for people with disabilities and/or physical limitations who wish to engage in challenging recreational activities.  
**Type of Material:** Video  
**Audience:** Service Providers  
**Target Disability:** Mobility Impaired, Multiple Disabilities, Visual Impairment / Blind, Orthopedically Impaired  
**Ordering Information:** Fanlight Productions  
800-937-4113  
**Cost (As of Date Entered):** $99.00  

**347. Hunters of The Past**

**Author(s):** Caroline Hensby and Bernard Brahm  
**Publisher:** Grey Olltwit  
**Publication Date:** January 2004  
**Review:** This interactive book is found on the website www.adders.org. You can find it by navigating to the free software and then to the ‘Eduational Software’ link from the menu items on the website. This e-book has two formats, an easy reading version and a full version for more competent readers. Users navigate the story by clicking on the green arrows. Some objects on the pages have sound files embedded which, if clicked, may further motivate users to explore within the content.

The story likens the obstacles of the hunter of the past to the obstacles that a child with ADD or ADHD faces. It is another way to encourage acceptance of a problem and celebrate the differences in people. The website itself has a great deal of freeware and information that is useful to parents, teachers, and children alike.  
**Type of Material:** Website  
**Audience:** People with Disabilities  
**Target Disability:** ADHD/ADD  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.adders.org/hunter.htm](http://www.adders.org/hunter.htm)

**348. I Can Soar**

**Author(s):** National Center for Technology Innovation  
**Publisher:** U S Office of Special Education Programs  
**Publication Date:** January 2004  
**Review:** This well-produced video kit includes a documentary-style video and supplemental materials great for building awareness of assistive technology. The video was developed with families, practitioners, school administrators, and state administrators in mind. Viewers learn about real life challenges, benefits of assistive technology, and strategies for integrating assistive technology into daily routines in the home, school, and community. A resource guide and accessible
Technology is not the only tool to assist the students with learning disabilities. This article is extremely helpful in developing a comprehensive educational plan that will provide on-going support for any student whether technology is used or not.

**Type of Material**: Article  
**Audience**: People with Disabilities  
**Target Disability**: Learning Disabilities  
**Alternate Formats**: Electronic, Electronic  
**Ordering Information**: available on the web only  
**Cost (As of Date Entered)**: free  
**Website**: [http://www.ldresources.org/?p=549](http://www.ldresources.org/?p=549)

### 345. How We Play

**Author(s)**: Let's Play Project  
**Publisher**: University of Buffalo Center for Assistive Technology  
**Publication Date**: January 2001  
**Review**: This helpful article was created by the Let's Play! Project for parents of young children birth to three and the early intervention professionals who work with them. "How We Play" describes the importance of play to children with disabilities and then categorizes types of play into six emerging play stages. These stages are: exploring with the senses; exploring function; organizing, sorting and building; pretending; creating; and reading and listening. Each stage has information about what the child does, what the caregiver does, play materials and positioning options and adaptations. Adaptations from the natural environment (lean the child against an adult to sit or rolled up towels for support) as well as adaptations that are commercially available (Boppy Pillow or seating systems) are offered for each of the stages.

**Type of Material**: Article  
**Audience**: Parents / Family  
**Target Disability**: General / Non-disability Specific  
**Alternate Formats**: Electronic, Electronic  
**Ordering Information**: Let's Play Project

University of Buffalo/Center for Assistive Technology  

515 Kimball Tower  

Buffalo NY 14214  

716 829-3141  

or download from web site.  
**Cost (As of Date Entered)**: No charge  
**Website**: [http://cosmos.ot.buffalo.edu/letsplay/products/index.htm](http://cosmos.ot.buffalo.edu/letsplay/products/index.htm)

### 346. How We Play: Recreational Options for People with Disabilities

**Author(s)**: Craven, C.  
**Publisher**: Texas Parks and Wildlife
those they'd created for themselves. Many were reported to especially like the 'Try it again' piece, so that if they did not succeed the first time, they could modify the goal to something achievable.

The article offers examples of student goals, and could be a useful model for IEP teams when students reach Transition age. A student who knows what is on his or her IEP and who has been a part of the process in helping to develop goals tends to be more invested in this important step toward personal growth, responsibility and independence.

Type of Material: Article
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): No charge

343. How to Set Up Your Home to Help the Nonverbal Child

Author(s): Rouse, C. & Katera
Publication Date: April 2004
Review: This video is designed to show parents strategies to increase communication in their nonverbal children in various communication environments in the home.
Type of Material: Video
Audience: Educators, Parents / Family, Service Providers
Target Disability: Autism, Communication and Speech, Developmental Disabilities
Ordering Information: Creative Communication Solutions
8516 W. Lake Mead, Suite 916
Las Vegas, NV 89128
or Mayer Johnson
P.O. Box 1579
Solana Beach, CA 92075
619-550-0084 FAX: 619-550-0449
Cost (As of Date Entered): $39.00 video, $59.00 if purchased with book

344. How to Support Students With Learning Differences - The Assistive Technology and Education Connection

Author(s): Leonard V. Pisano
Publisher: LD Resources
Publication Date: January 2002
Review: With the demands of educational performance and graduation requirements increasing on a national level, it is becoming increasingly difficult for a student with a learning disability to be competitive or successful. Assistive technology has been very successful for those children with a physical disability and is becoming a valuable tool for those with learning disabilities as well.

This article defines assistive technology and the referral process, discusses when technology needs to be considered, and gives examples of the kinds of technology often recommended for students with a learning disability. It continues to stress the importance of analyzing curriculum objectives and how accommodations are going to be made. However, it would help to have a clearer description of accommodations versus modifications. This is one important consideration to be made when planning for a student's future.
341. How-To Guides: Digital Moviemaking with iMovie

**Author(s):** College of Education, Texas Tech University  
**Publisher:** College of Education, Texas Tech University  
**Publication Date:** January 2005  
**Review:** Digital video and digital stories are being used increasingly by people with and without disabilities to tell their stories and to document details of their lives or imaginations.

This is a guide on digital movie making for Macintosh users who have iMovie. The guide is one of many available online. There are five sections to the guide and each one has step by step screenshots to illustrate the directions. Although iMovie is now iMovie HD or iLife, the guide is easy to follow.

The first section has tips on how to plan and shoot your movie. The next section gives detailed instructions on how to capture your video using a digital camcorder. (Pictures of a Canon camcorder are used in the instructions.) Part 3 describes hardware and software needs, down to the Firewire connection, to transfer the video from the camcorder to the computer with iMovie2 software. Then you are shown how to connect your camcorder to the computer. The final step instructs you in how to use the software.

Still shots may be used in addition to video. This is a good basic instructional guide. Users should be advised that they should not expect professional production results, but will end up with a product that is unique to them in video format.

**Type of Material:** Training Material  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.educ.ttu.edu/howto/dv/digitalmoviemaking.html](http://www.educ.ttu.edu/howto/dv/digitalmoviemaking.html)

342. How to Help Young Students Get Ready to Participate in Their IEP Meetings

**Author(s):** Mary B. Schreiner  
**Publisher:** Council for Exceptional Children  
**Publication Date:** January 2005  
**Review:** This short article describes a method called "GO FOR IT", developed by the author. GO FOR IT, an acronym for "Goal set, Organize my plan, Follow my plan, Observe my progress, Record my progress, Inspect my progress and Try it again" is a goal-setting process which prepares students in the sixth and seventh grades to participate in their IEPs. They learn how to set measurable goals and to self-monitor their progress towards them.

Interestingly, the goals they set for themselves are typically athletic or personal and social goals as compared to the academic ones set by teachers. Students’ own goals were incorporated into their IEPs and it was noted that although they felt the teacher-created academic goals were equally important and despite the struggle to develop their own goals, they preferred working on achieving...
Publication Date: January 1996
Review: This article is written by a man who has learning disabilities and who shares his experiences with the difficulties of the writing process. He explains how learning disabilities affect the writing process and how the use of a computer, without special programs or attachments, can ease the process, reduce the frustration, and produce a coherent, successful document. His personal experiences make this particularly valuable reading.

Type of Material: Article
Audience: Service Providers
Target Disability: Learning Disabilities
Website: http://www.ldresources.org/?p=172

339. How Technology Can Help Your Child Be More Active

Author(s): Patti Slobogin, Ph.D.
Publisher: PBS Parents
Publication Date: January 2004
Review: It is so refreshing to see information on children with disabilities on a mainstream website that is heavily used by the public.

This article presents basic information on assistive technology, why it is important, how its implementation is supported by law, and gives examples of the different types, including Access and Environmental Controls, Aids to Daily Living, Assistive Listening, Augmentative/Alternative Communication, Computer-Based Instruction, Mobility, Positioning and Visual Aids. The information is accurate and in laymen’s terms so that it is easily understood by anyone.

The unique quality of this article is that it is on a mainstream website used by parents and children and may help to bridge the gap in understanding the field of Assistive Technology. Assistive Technology is viewed and presented as a way to include everyone. Readers should click on the ‘Additional Resources’ link on the right side of the screen (in blue) for more in-depth information.

Type of Material: Article
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Foreign Language - Spanish, Electronic, Foreign Language - Spanish
Cost (As of Date Entered): no charge
Website: http://www.pbs.org/parents/inclusivecommunities/assistive_tech.html

340. How to Choose Appropriate Adaptive Technology

Author(s): Kelly Pierce
Publication Date: January 2000
Review: This article goes into great detail concerning the process of choosing the right assistive technology device for the user. The article discusses who should be involved in the evaluation and buying process as well as helpful places to turn to, to ask questions.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
disability. With the passing of federal laws, employers are required to address the needs of their employees with assistive technology if necessary. It doesn’t have to be expensive and computer companies are innovative and trying to create operating systems that are designed to support those with a disability without additional costly software and hardware. This article is helpful to both employer as well as a potential employee.

**Type of Material:** Article  
**Audience:** AT Professionals, People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Large Print, Large Print  
**Ordering Information:** 1800 Duke Street • Alexandria, Virginia 22314 USA  
Phone US Only: (800) 283-SHRM  
Phone International: +1 (703) 548-3440  
TTY/TDD (703) 548-6999  
Fax (703) 535-6490  

**Cost (As of Date Entered):** No charge  
**Website:** [http://www.shrm.org/hrmagazine/articles/0206/0206hrtech.asp](http://www.shrm.org/hrmagazine/articles/0206/0206hrtech.asp)

### 337. How Can K-12 Educators Promote the Use of Accessible Technology in Schools?

**Author(s):** Sheryl Burgstahler  
**Publisher:** National Center on Accessible Information Technology in Education (Access IT)  
**Publication Date:** January 2005  
**Review:** Students with disabilities should be given equal access to information technologies in the school setting, but this frequently does not happen. This publication was developed to provide information to teachers, parents and administrators to assure that all students have equal access to technology-based learning activities. Terms such as Assistive Technology, Information Technology, and Universal Design are defined. The importance of universal design is stressed. This is an easy to read document, following the theoretical case of a student with a visual disability through the steps a school might go through to provide her with equal access to the internet through the use of certain tools and preplanning.

This guide provides general information and ways to actively promote universal design and begin to change the outlook of what accessibility and adaptation can mean to all individuals, not just the disabled population.

**Type of Material:** Resource Guide  
**Audience:** AT Professionals, Educators, Parents / Family, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Large Print, Large Print  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.washington.edu/accessit/articles?252](http://www.washington.edu/accessit/articles?252)

### 338. How Computers Changed the Writing Process for People with Learning Disabilities

**Author(s):** Richard Wanderman  
**Publisher:** LD Resources

Author(s): Gayl Bowser & Penny Reed  
Publisher: Wisconsin Assistive Technology Initiative (WATI) and Oregon Technology Access Project (OTAP)  
Publication Date: January 2001  
Review: This handbook is available online and the reader is encouraged to make copies of the document and use it with due credit given to the authors. It is easy to read and use and was used in the reviewers class.

The handbook is a student-focused packet which, as its title implies, is designed to be used for "Choosing and using AT". The first step in choosing is knowing what you want to do. The next step presents self-determination strategies for decision-making about AT. Case studies of successful self-determined students are available throughout the packet to demonstrate how the materials presented in the handbook work. There are also easy-to-use worksheets that can be used to help a student assume an active role in the team process of choosing AT.

The handbook reflects the high quality work that one would expect from these two authors.  
Type of Material: Booklet  
Audience: People with Disabilities  
Target Disability: Learning Disabilities  
Alternate Formats: Electronic, Electronic  
Cost (As of Date Entered): no charge  
Website: http://www.wati.org/curriculum/pdf/student_handbook.pdf

336. High-Tech Enables Employees

Author(s): Frank Jossi  
Publisher: Society for Human Resource Management  
Publication Date: January 2006  
Review: The work force is competitive in nature and when faced with a disability, it can be the barrier which can prevent a person from obtaining gainful employment. According to U.S. Census data, 54 million Americans have some kind of disability, with 33 million of those between the ages of 16 and 65 and in the employable population. Federal studies indicate that 56 percent of individuals with a disability actually participate in the work force.

These numbers are eye-opening and this article analyzes these statistics and discusses how assistive technology can be a pivotal factor in increasing gainful employment for individuals with a

**Publisher:** Better Hearing Institute  
**Publication Date:** April 2004  
**Review:** This article answers common questions about the causes and warning signs of hearing loss. Topics covered include advances in technology, selecting a hearing aid, common myths, and resources on hearing loss and hearing aids.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Hearing Impairments / Deaf  
**Ordering Information:** Better Hearing Institute  
515 King St., Ste 420  
Alexandria, VA 22314  
703-684-3391  
800-EAR-WELL

You can order a copy of this brochure at the website below.  
**Cost (As of Date Entered):** No Cost  
**Website:** [http://www.usher-europe.org/eng_web/HAhearaid0.html](http://www.usher-europe.org/eng_web/HAhearaid0.html)

334. Hey, Can I Try That?

**Author(s):** Gayl Bowser and Penny Reed  
**Publisher:** Oregon Technology Access Program and Wisconsin Assistive Technology Initiative  
**Publication Date:** January 2001  
**Review:** This is a comprehensive step-by-step guide for choosing assistive technology. It is aimed at students, but parents and teachers would benefit from it also. Scenarios describe students, their problem, and how assistive technology was applied. Examples are mostly applicable to someone with learning disabilities rather than a broad range of disabilities, but the advice given is practical and geared toward students, not adults. Language is appropriate for any age. The student "worksheets" are especially geared for use by students in any age range.  
**Type of Material:** Booklet  
**Target Disability:** General / Non-disability Specific, Developmental Disabilities, Learning Disabilities, ADHD/ADD  
**Ordering Information:** May be viewed and downloaded at the Web address below. The organization may be contacted at:

Oregon Technology Access Program  
1871 NE Stephens  
Roseburg, OR 97470  
541-440-4791
331. Helpful Hints for Getting Assistive Technology Devices and Services through the Office of Vocational Rehabilitation

Author(s): Pennsylvania Initiative on Assistive Technology (PIAT)
Publication Date: April 2004
Review: This article lists 12 easy-to-follow steps by which to initiate funding of assistive technology through the Office of Vocational Rehabilitation. The steps are clearly stated and easy to understand. Special emphasis is given to fulfilling the IEP (Individual Education Program) through needed assistive technology. Problem resolution is also addressed.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Alternate Formats: Foreign Language - Spanish
Ordering Information: PIAT
800-204-PIAT (7428) Voice
800-750-PIAT (7428) TTY
Cost (As of Date Entered): No Cost
Website: http://disabilities.temple.edu/publications/assistive/ovr.htm

332. Helpful Hints for Getting Assistive Technology Devices and Services Through Your School

Author(s): Kids Together, Inc.
Publisher: PIAT
Publication Date: January 1999
Review: This article lists 10 easy-to-follow steps by which to initiate funding of assistive technology through local school districts. The steps are clearly stated and easy to understand. The information provides instructions from how to initiate the process by requesting an evaluation/assessment and how to use the IEP (Individual Education Program) to assist with obtaining both the evaluation and the equipment, as well as to educate parents on what responsibilities the school district has to the child and his assistive technology equipment.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Author(s): Nick Fina  
Publisher: Nick Fina  
Publication Date: January 2005  
Review: Mr. Fina hosts his own web page and added this section on hearing loss when he chose to have a cochlear implant after several years of considering and investigating the procedure. His story, though written in chapters, is more of a journal of the experience. Included in the story is the history of his hearing loss and experiences with "traditional" amplification. He talks about choosing the surgery, working through problems with insurance, preparing for surgery and then for activation, and the impact since activation. Told from this first-person adult perspective, one gets a good view of the decision-making process, the physical and emotional preparations, and the anxiety and exhilaration as activation occurs and the effects on his life since.

This is a vivid description of the process of a sometimes controversial procedure. It could be a helpful resource to anyone considering a surgical approach to amplification, or to families who may be researching this option.  
Type of Material: Website  
Audience: Parents / Family, People with Disabilities, Service Providers  
Target Disability: Hearing Impairments / Deaf  
Cost (As of Date Entered): No charge  
Website: http://nickfina.tripod.com/Hearing%20Loss/CI.htm

329. Hear Our Voices

Author(s): Alexander Graham Bell Association for Deaf and Hard of Hearing  
Publisher: Alexander Graham Bell Association for Deaf and Hard of Hearing  
Publication Date: January 2006  
Review: This is a website for people who are deaf and hard-of-hearing with a special focus on people who use spoken language to communicate. It includes sections on job searches and interviews, communication options, college programs and scholarships, safety, and health. There is a technology section, but it too, is geared toward communication through spoken language. There is information on a deaf/HOH person’s rights under IDEA and ADA as well as information on how to advocate for oneself and others. There is also a listserve for teens. Links to resources for financial assistance for hearing aids or cochlear implants are available. Colorful and easy to browse, this website has information for anyone regardless of their communication choice.  
Type of Material: Website  
Audience: Educators, Parents / Family, People with Disabilities  
Target Disability: Hearing Impairments / Deaf  
Cost (As of Date Entered): No charge  
Website: http://www.hearourvoices.org/DesktopDefault.aspx


Author(s): Girard Sagmiller  
Publication Date: January 2003  
Review: This compendium of tips, aids and helpful lists is compiled by Girard Sagmiller, actor, professional model, motivational speaker, author of "Dyslexia My Life" -- and a dyslexic. Sagmiller reminds readers that dyslexia means "poor language" in Greek and that "it is not a disease." The assistance and advice he offers is packaged in a reader-friendly format that is eye-catching and clear. Contents are aimed not only at dyslexics but also at family members, friends and teachers. Linked
what to buy, and where to buy. It begins at the point when someone is identified with hearing loss or suspects that they have one and continues with a description of different styles of hearing aids and how they differ from each other. A link is provided to locate a certified audiologist in one's geographic area. Some purchasing information is also included. Questions about using hearing aids and what benefits can be expected are answered in clear, concise language. Good comprehensive discussion that provides lots of information for someone who is unfamiliar with the procedures or newly diagnosed and looking for answers to basic questions.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, Service Providers  
**Target Disability:** Hearing Impairments / Deaf  
**Ordering Information:** The article can be obtained via the organization's website.  
**Website:** [http://www.asha.org/public/hearing/treatment/hearing_aids.htm](http://www.asha.org/public/hearing/treatment/hearing_aids.htm)

### 326. Hearing Aids and Assistive Devices

**Publisher:** BEGINNINGS: For Parents of Children Who are Deaf or Hard of Hearing, Inc.  
**Publication Date:** April 2004  
**Review:** This article discusses the selection of proper hearing aids and assistive listening devices. Contents include the following: daily hearing aid checklist, what are assistive listening devices, sound field systems, FM systems, infrared systems, loop systems, cochlear implants, and public access devices. Technology updates are included regarding the Auto Cue, High Frequency Aid, and Programmable Hearing Aids.  
Note: If the reader goes to [www.beginningssvcs.com/printabl.htm](http://www.beginningssvcs.com/printabl.htm), a two-page matrix can be found that describes communication options.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Hearing Impairments / Deaf  
**Ordering Information:** BEGINNINGS  
800-541-HEAR (North Carolina only)  
919-850-2746  

### 327. Hearing Aids and How They Work

**Publisher:** Boystown National Research Hospital  
**Publication Date:** April 2004  
**Review:** This article explains the pros and cons of different types of hearing aids currently available. It also explains how the hearing aid works and the features that are commonly available. The article also describes considerations for selecting a hearing aid and suggests that the selection should be by a team which includes a hearing specialist.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Health Impairments, Hearing Impairments / Deaf  
**Website:** [https://www.boystownhospital.org/Hearing/hearingaids/how.asp](https://www.boystownhospital.org/Hearing/hearingaids/how.asp)

### 328. Hearing Loss: My Story of Cochlear Implant
suggestions and tips presented.

Many of the suggestions listed are Macintosh based, but alternatives are available for the PC platform.

There did not appear to be alternative text options for the images on the site.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific, Learning Disabilities
Cost (As of Date Entered): no charge
Website: http://www.4j.lane.edu/%7Ehaugen/iphoto_how.htm

324. Have a Nice Trip: Metaphors for Parenting a Special Needs Child

Author(s): Jill Cornfield
Publisher: Brain, Child: The Magazine for Thinking Mothers
Publication Date: January 2005
Review: This article by Jill Cornfield describes the experiences of the author around the birth of her special-needs child. It is her response to the essay written in 1987 by Emily P Kingsley, called 'Welcome to Holland' where she describes giving birth to a child with special needs as planning for a trip to Italy, but finding you’re in Holland instead.

Cornfield says ‘For what it’s worth, some parents find solace in the metaphor. I’m just not one of them.” As her story unfolds and she outlines her struggle with raising a child with disabilities, readers are led to think that in the past nearly twenty years, progress has been made in many areas relating to the birth of children with special needs, but there is still a long way to go. This author presents a first-person perspective on the realities and difficulties of navigating parenting a child with special needs. No matter how good the support systems may be, there will be continuous battles, misunderstandings, perceptions by others and human mistakes for which there are no platitudes that can compensate for the loss of the ‘normal’ child.

This essay would be of interest to all those who have read the first essay, ‘Welcome to Holland’, and relate to the feelings of this author.

Type of Material: Article
Audience: Educators, Parents / Family
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No cost
Website: http://www.brainchildmag.com/essays/summer2005_cornfield.html

325. Hearing Aids

Publisher: American Speech-Language-Hearing Association
Publication Date: January 1997
Review: This article provides an in-depth look at hearing aids including when to buy, how to buy,
Despite this, the site would seem to be an excellent resource for children with epilepsy, their families, friends and any adult coming into contact with individuals with epilepsy.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Brain Injury and Stroke, Health Impairments, Neurological Disorders  
**Cost (As of Date Entered):** no charge  
**Website:** [http://library.thinkquest.org/J001619](http://library.thinkquest.org/J001619)

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### 322. Hannah’s Discovery

**Author(s):** Linda Anderson  
**Publisher:** LAB Resources  
**Publication Date:** January 2005  
**Review:** It is rare to find a story about a teenager who uses an augmentative communication device, but this story features Hannah, a sixteen year old girl with cerebral palsy who helps to solve a mystery. She works for the school paper, and when funds for a trip to Florida for the choir disappear, Hannah uses her skills to discover the answer. The initial page of the site gives a short description of the plot, an appealing drawing of Hannah, and information on how to access the free story. Hannah’s Discovery is an Intellipics Studio 3 file, and can be opened with that program or the free Player from IntelliTools.

The content of the story will appeal to ages 8 and older and the story uses many of the IntelliTools Studio features including text-to-speech and animation.

**Type of Material:** Website  
**Audience:** People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.elabresources.com/Hannah.htm](http://www.elabresources.com/Hannah.htm)

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### 323. Haugen’s Tech Tips Pages!

**Author(s):** Kirsten Haugen  
**Publisher:** Kirsten Haugen  
**Publication Date:** January 2005  
**Review:** This site provides excellent resources for designing publishing opportunities for students with or without disabilities. Examples of projects include students using digital photography to communicate their learning, creating newsletters, and developing school-wide anthologies. The author is a specialist in designing inclusive educational activities and everything on the site can be applied to inclusive classrooms or family activities.

There is a PowerPoint presentation that demonstrates how to use a digital camera and iPhoto software. The content could be useful for classroom teachers and aides. There are also useful links to other websites that provide additional materials to supplement the topics at this site. Samples of newspapers and other projects are available to help the reader think about how to use the...
320. Great Possibilities: Adapted Toys

Author(s): Lousiana Assistive Technology Access Network  
Publication Date: April 2004  
Review: This article is an online article about the ways that toys can encourage and develop skills. It lists the types of toys that children with various disabilities use and the features that such toys should have to be appealing.

Type of Material: Article  
Audience: Parents / Family  
Target Disability: General / Non-disability Specific  
Ordering Information: LATAN  

P.O. Box 14115  
Baton Rouge, LA 70898  
800-270-6185, 225-925-9500  
From LATAN's homepage, click on Tech Notes, then on Adapted Toys, to find the article.  
Website: http://www.latan.org/facts/facts4.html

321. Growing Up With Epilepsy

Publisher: Oracle Education Foundation  
Publication Date: January 2000  
Review: This is an interactive website about seizure disorders targeted at young people of middle school age. Users have the option of exploring many aspects of seizure disorder including factual information about Epilepsy, a first person account by a young girl living with Epilepsy, and information on what to do if someone has a seizure.

This website combines understandable language with more scientific words to explain a common but complex problem. Graphics are hand-drawn and appealing to younger visitors to this site. The information on this site could be useful to not only families of children with the diagnosis, but to their friends and other children with the diagnosis.

It is noted that printing from this site is not entirely accessible. Graphics may obscure text when printed.
318. GPAT Resource Web Site-Reading, Writing, and Spelling

**Author(s):** Georgia Project for Assistive Technology  
**Publisher:** Georgia Project for Assistive Technology  
**Publication Date:** January 2005  
**Review:** This highly recommended website must be viewed beyond the opening URL, as it takes the user to a grid with little explanation beyond category titles. Despite an unfinished appearance, the user is advised to continue into the site, following the links described below.

By clicking the link to Assistive Technology Devices, the site provides the reader with AT adaptations which can help students who have difficulty with reading, writing and spelling. Clicking on links for Spelling, Reading or Writing takes the user to lists of devices or tools with excellent descriptions. It should be noted that this is a work in progress and new resources are added each week. GPAT plans to include more categories in the future (for example, listening, computer access, and activities of daily living).

GPAT provides a narrative description for each adaptation, arranged from low-tech to high-tech. Examples include adapted writing paper. The reader can see a definition, tech tips, web resources, vendor information and in some cases pictures or online video.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** No charge  

319. Grammatical Support Tools

**Author(s):** Adaptive Technology Resource Centre, University of Toronto  
**Publisher:** Adaptive Technology Resource Centre, University of Toronto  
**Publication Date:** January 2000  
**Review:** This info sheet attempts to give the reader information about two different types of grammar software: "The first, grammar correction and support, is for programs designed to run in the background and monitor grammar as the user writes. The second, grammar learning aids, contains programs designed to actively improve the grammar of the user."

The article separates the information into Windows and Macintosh sections, listing software available for each platform in each category. Each listing for software gives the name (as a hyperlink), the publisher, and general information about whether it works within an application, or is a stand-alone software that text must be imported into.

The article lists only word expansion and word prediction software for the Macintosh, and fails to include other word prediction software in the Windows platform, such as Co:Writer 4000 (which is listed as a Macintosh resource) and Read and Write by textHelp. The article is a good starting point, but is not the definitive resource on grammar checking and word prediction.
For most users this application looks, feels, and functions like a desktop program, and can be used with keystrokes, mouse, or many equivalents. Gliffy’s availability and ease of use gives the software many potential showcases including classrooms and boardrooms.

The free version of the software is available on the Gliffy website and the premium version (geared toward business users) will be available by subscription soon.

**Type of Material:** Software  
**Audience:** AT Professionals, Educators  
**Target Disability:** General / Non-disability Specific 

**Ordering Information:** Free version of Gliffy may be found at: http://www.gliffy.com/features.shtml  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.gliffy.com/](http://www.gliffy.com/)

### 317. Good Toys for Blind Kids

**Author(s):** National Organization of Parents of Blind Children  
**Publisher:** National Federation of the Blind  
**Publication Date:** January 2004  

**Review:** This web article was developed by a group of parents of children who are blind. The toys are grouped together in three lists by manufacturer’s age recommendation: two years and up, five years and up and nine years and up.

The lists consist primarily of ‘off the shelf’ toys that are readily available at toy stores. Exceptions are toys, games, activity books, puzzles and youth activities with Braille identifiers. These are denoted by clickable links to the National Federation for the Blind website.

Within each age category are subgroups such as balls, blocks and puzzles, musical and talking toys and educational toys.

This list would be a helpful starter list for families of children who are blind.

**Type of Material:** Article  
**Audience:** Parents / Family  
**Target Disability:** Visual Impairment / Blind  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** National Federation of the Blind 

1800 Johnson Street  
Baltimore, MD 21230  
Phone: 410-659-9314  
Fax: 410-685-5653
314. Getting Past Learned Helplessness for Children Who Face Severe Challenges: Four Secrets for Success

**Author(s):** Linda J. Burkhart  
**Publisher:** Linda J. Burkhart  
**Publication Date:** January 2003  
**Review:** For students with severe and multiple disabilities, communication and classroom participation can be frustrating and difficult, for them and for their teachers and caregivers. Linda Burkhart has incredible insight into the problem of learned helplessness and how to get past this hurdle and motivate the learner stuck in such a pattern. She defines four areas that need to be developed in order for a student to become a better participant in learning: 1) Motivation, 2) Active Participation, 3) Multiple Modalities, and 4) Natural Contexts. From these areas she points out the problems and provides advice in overcoming these pitfalls.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** Multiple Disabilities  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** none  
**Website:** [http://www.lburkhart.com/learned_helplessness.pdf](http://www.lburkhart.com/learned_helplessness.pdf)

315. Getting to Word Prediction: Developmental Literacy and AAC

**Author(s):** Gillette, Y. and Hoffman, J. L.  
**Publication Date:** January 1995  
**Review:** This paper explains the progression and features of word prediction programs. It offers three criteria against which prescriptions for augmentative communication devices and programs, as well as school programs, can be measured in terms of their ability to provide scaffolding toward literacy skill.

**Type of Material:** Research Paper  
**Audience:** AT Professionals, Educators, Parents / Family, Service Providers  
**Target Disability:** Communication and Speech, Learning Disabilities  
**Cost (As of Date Entered):** No Cost  
**Website:** [http://www2.edc.org/NCIP/library/wp/Gillette.htm](http://www2.edc.org/NCIP/library/wp/Gillette.htm)

316. Gliffy Beta: Diagraming on the Web

**Author(s):** Gliffy Inc.  
**Publisher:** Gliffy Inc.  
**Publication Date:** January 2006  
**Review:** It is rare to find a product still in beta-test stage that goes up against some of the biggest applications on the market and becomes a phenomenon rather than a bug-ridden joke. Gliffy sails through the hazards of web-based applications and has continued to impress users with the software's collaboration, design editing, and publishing punch.
312. General Education Accommodations

Author(s): Jan Baumel
Publisher: Schwab Learning
Publication Date: January 2002
Review: This article, from SchwabLearning.org describes several strategies to be used with children with learning disabilities to make learning easier. The article, written for parents, stresses that the accommodations are not to take the place of learning or instruction. The author, who has 35 years experience in education, provides sample accommodations such as preferential seating, recording lectures, providing an outline of the lecture, using technology, selecting a "study buddy" to copy assignments, giving reminders of due dates, developing a reward system, and increasing communication between the teachers and parents.

Type of Material: Article
Audience: Parents / Family
Target Disability: Learning Disabilities
Ordering Information: The article is available via the Web site listed below.
Website: http://www.schwablearning.org/articles.asp?r=77&g=2&print=Y

313. Getting Onboard with Online Testing

Author(s): Kay Woodfield, Rigby School District, Idaho
Publisher: T.H.E. Journal
Publication Date: January 2003
Review: Idaho selected a new Internet-based state test in 2002 in the hope of improving the learning capabilities of all students. According to the author, the implementation of the test "positions Idaho as the first state in the nation to embrace a technology-based testing system that measures academic growth." The author describes the experience of the Rigby, Idaho school district, one of the early adopters of the computerized system. According to the author, "The system has met, if not exceeded, our expectations that it can demonstrate a student's individual growth." The new system has enabled the Rigby school district, "to analyze not only the strengths and weaknesses of groups but also of individual students in specific subjects." In addition, "Teachers are able to align their above-average and below-average students so that [teachers] can identify what needs to be taught to each specific group." The dynamics and impact of the new testing system ought to be instructive for education administrators and special education teachers nationwide for its potential benefits in measuring the academic growth of students with disabilities.

Type of Material: Article
Audience: Parents / Family
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Ordering Information: Available on the website.
310. Funding of Assistive Technology: The Public Schools Special Education System: The Cutting Edge

Author(s): Hager, R. M.
Publisher: United Cerebral Palsy Associations (UCPA)
Publication Date: January 1999
Review: This booklet focuses on funding sources or tools to ensure that children with disabilities receive assistive technology. The reader will get a working knowledge of laws, regulations, and interpretations of laws as they pertain to the school’s obligation. Information valuable to parents, school personnel, advocates, attorneys and AT professionals who work with children. Readers will become of aware of what student rights are and the laws and regulations available to provide these rights, and what funding sources are available. This booklet is valuable for attorneys and advocates to be well-prepared to advocate for AT under IDEA and Section 504.

Type of Material: Resource Guide
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: May be accessed via the website identified below.

Cost (As of Date Entered): No Cost
Website: http://www.nls.org/specedat.htm

311. Funding Tips

Author(s): Job Accommodation Network (JAN)
Publisher: JAN
Publication Date: January 2000
Review: The Job Accommodations Network has compiled a non-inclusive list of funding resources. The article summarizes funding search tips and describes some types of organizations and groups that provide funding. The document is a compilation of basic suggestions and things to remember during a search for funding for assistive technology devices.

One of the best parts of the article is that it offers suggestions about how to be an advocate for assistive technology funding, how to get assistance from other advocates and how to appeal a denial.

Type of Material: Article
Audience: Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Ordering Information: 1 800-526-7234 (V/TTY)
307. Funding Assistive Technology with Medicaid

Author(s): Vermont Parent Information Center
Publisher: Vermont Parent Information Center
Publication Date: January 2001
Review: This short article explains how Medicaid can be used to fund assistive technology. It gives simple, concise information about the steps to applying for precertification, the letters of medical necessity needed, the steps for evaluations and the steps for appeal. While many of the specific contacts listed apply only to Vermont residents, the basic information is generally applicable to other states as well and there is good information about the terms that are used nationwide by Medicaid providers and agencies.

308. Funding Assistive Technology with Private Insurance

Author(s): Vermont Parent Information Center
Publisher: Vermont Parent Information Center
Publication Date: January 2001
Review: This short article gives very basic information on how private insurance policies may cover assistive technology devices. It covers the definitions of durable medical equipment, rehabilitative therapy, prosthetic devices, and the concept of medical necessity. The author gives the reader specific information on how to become informed about one’s insurance policy and how to appeal the denial of benefits for AT.

309. Funding of Assistive Technology, State Vocational Rehabilitation Agencies and Their Obligation to Maximize Employment

Author(s): Hager, R.
Publisher: United Cerebral Palsy Associations (UCPA)
Publication Date: January 1999
Review: This is a comprehensive guide to the vocational rehabilitation process, and services, including Purchase of Assistive Technology for Special Education Students in Transition: Who Pays; Assistive Technology for College Students: Who Pays; as well as Hearing and Appeal Rights under the Vocational Rehabilitation Amendments of 1998.
academic success. Accessible technology will help all students, not just those with physical disabilities or students who use assistive devices. The NCLB legislation embraces the idea that each child is unique and important. Without instructional products that can be accessed by all students NCLB’s purpose will not be met. This article encourages the U.S. Department of Education to provide leadership to ensure that state and local education agencies are aware of, and encouraged to adopt the technology standards of Section 508.

Type of Material: Article  
Audience: AT Professionals, Educators  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Ordering Information: free online  
http://www.rit.edu/~easi/itd/itdv09n1/contents.htm  
Cost (As of Date Entered): free  
Website: http://www.rit.edu/~easi/itd/itdv09n1/hendricks.htm

305. Functional AAC Use Through Teamwork

Author(s): Cotter, C.  
Publisher: California State University Northridge (CSUN)  
Publication Date: January 1998  
Review: This well written, easy to understand article states that perhaps the most critical factor in successful AAC (Augmentative and Alternative Communication) implementation in a school system is a strong support team. The author states that school systems are sometimes reluctant to use this much staff time for one student. Ms. Cotter continues the article by listing the components of an effective team (team leader, understanding the primary goal of increased participation, respect for student and family preferences, accountability, etc.). Another critical factor is the training of the team. The article contains a listing of techniques or strategies for training.

Type of Material: Article  
Audience: Service Providers  
Target Disability: Communication and Speech  
Ordering Information: CSUN  
1811 Nordhoff St.  
Northridge, CA 91330  
818-677-2578

Cost (As of Date Entered): free  

306. Funding Assistive Technology

Author(s): Vermont Parent Information Center  
Publisher: Vermont Parent Information Center  
Publication Date: January 2001  
Review: This short article gives very basic information on how individuals may find funding for assistive technology devices. The information is targeted toward Vermont residents, in that it mentions programs specific to that state. However, the article does provide an accurate overview of the different methods available to fund assistive technology, including Medicaid, the IEP process, private insurance, vocational rehabilitation, and local service organizations.
303. Frequently Used Educational Terms

Author(s): Jan Baumel, MS  
Publisher: Schwab Learning  
Publication Date: January 2000  
Review: This is a list of terms used in special education situations for students with any type of eligibility. It is a useful descriptive listing of many terms mentioned from early childhood intervention through the school years. The descriptions are easy to understand and require no expertise in the "jargon" of educators. Parents in particular need to understand these terms as they apply to their own children in order to ensure that they receive the educational opportunities to which they are entitled. Special education teachers, both pre-service and in-service, need to know how and when to use the terms in relation to the children they teach. This is a good, all-around introduction to the kind of language parents, teachers, and administrators will use throughout a child’s educational experience.  
Type of Material: Infosheet / Fact sheet  
Audience: People with Disabilities  
Target Disability: General / Non-disability Specific  
Ordering Information: Download from the Web site.  
Cost (As of Date Entered): Free  
Website: [http://www.schwablearning.org/articles.asp?r=40&g=1](http://www.schwablearning.org/articles.asp?r=40&g=1)
300. Frequently Asked Questions About Hearing Aids

Publisher: American Academy of Audiology
Publication Date: April 2004
Review: This article answers common questions about hearing aids. Topics covered include candidacy of hearing aid, if one or two are needed, hearing aid styles, whistling (feedback), hearing aid types (multi-channel, digital), adapting to the aid, cost and replacement, and assistive listening devices for multi-environments. Also covered is how to find a good audiologist.

Type of Material: Article
Audience: Service Providers
Target Disability: Hearing Impairments / Deaf
Ordering Information: American Academy of Audiology
8300 Greensboro Dr. Ste 750
McLean, VA 22102
703-790-8466
800-AAA-2336

Website: http://www.audiology.org/consumer/guides/hafaq.php

301. Frequently Asked Questions On Assistive Technology Funding

Author(s): Susan Goodman, Esq.
Publisher: United Cerebral Palsy
Publication Date: January 2000
Review: This article defines assistive technology (AT) and answers some basic questions about the funding of AT. It begins by examining the Assistive Technology Act of 1988 and how states were mandated to form AT projects to serve their residents.

The article looks at funding sources for both children and adults, addresses outreach for minorities with disabilities, how to utilize Advocacy and Protection programs, employment, and the funding responsibilities of schools.

This article is easy to understand but is a very simplistic look at the issue of assistive technology funding.

Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: General / Non-disability Specific, Multiple Sclerosis
Ordering Information: Download from web site
Cost (As of Date Entered): Free on web site

Website: http://www.ucp.org/ucp_channeldoc.cfm/1/14/86/86-86/607

302. Frequently Used Acronyms
**298. Freedom Machines Discussion Guide**

**Author(s):** Dr. Faith Rogow  
**Publisher:** www.pbs.org/pov  
**Publication Date:** January 2004  
**Review:** This discussion guide was created to accompany the film, "Freedom Machines", aired on PBS's POV in September 2004. Freedom Machines examines the role of technology and its presence in society, especially as a tool for people with disabilities.

While the film was meant to raise awareness of many issues, the guide is meant to generate discussion and action in remediating some of the imbalances in society related to technology tools, discrimination, and funding. Suggestions for gathering people together to participate in a community event, statistical information for handouts, specific questions related to the film for leading off discussions and a list of resources are a part of the wealth of information included in this guide. This is an invaluable tool that should be used with any group viewing the film.

The discussion guide is available in pdf format on the PBS/POV website.  
**Type of Material:** Resource Guide  
**Target Disability:** General / Non-disability Specific, Communication and Speech, Hearing Impairments / Deaf, Mobility Impaired, Multiple Disabilities  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  

**299. Freeware, Shareware and Demo Programs on the Internet**

**Author(s):** Glenda Anderson  
**Publisher:** Connsence Bulletin  
**Publication Date:** January 2004  
**Review:** This is a list of freeware, shareware and demo programs that exist on the Internet. Many are add-ons that either assist with computer access, such as enlarged cursors, screen magnification, or text-to-speech, or that train basic computer skills such as keyboarding and mouse skills. Also included are educational websites that offer drill and practice exercises, dictionary, thesaurus, and other references and basic sign language resources.

This is a good list of resources at no cost to the user, which is always a plus. Viewers should take note that resources for both Macintosh and PC platforms are addressed in this list. Lists such as this are subject to frequent change; it is hoped that it will be frequently updated as it is a useful tool.  
**Type of Material:** Infosheet / Fact sheet  
**Audience:** AT Professionals, Educators, Parents / Family
others to get their information. The introduction of the Kurzweil 3000 software enabled these same
students to independently read digitized text selections, gain reading skills, manipulate text and learn
study skills. The author suggests that this solution has enabled these students and the school to
adhere to NCLB standards, with children reading at or above grade level.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators  
**Target Disability:** Learning Disabilities  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.scholastic.com/administrator/march03/articles.asp?article=forum](http://www.scholastic.com/administrator/march03/articles.asp?article=forum)

### 296. Free and Cheap Solutions for Those with a Visual Impairment

**Author(s):** Ability Net  
**Publisher:** Ability Net  
**Publication Date:** January 2001  
**Review:** This short article describes simple ways that a Windows user with a visual impairment can
configure his/her operating system for improved access. It gives step by step instructions on how to
use Windows' features to enhance the screen.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation
Professionals, Service Providers  
**Target Disability:** Visual Impairment / Blind  
**Cost (As of Date Entered):** Free via the website  
**Website:** [http://www.abilitynet.org.uk/content/factsheets/pdfs/Free%20and%20Cheap%20Solutions
%20for%20Visually%20Impaired%20People.pdf](http://www.abilitynet.org.uk/content/factsheets/pdfs/Free%20and%20Cheap%20Solutions%20for%20Visually%20Impaired%20People.pdf)

### 297. Freedom Machines

**Author(s):** Jamie Stobie and Janet Cole  
**Publisher:** P.O.V. and Public Broadcasting Systems  
**Publication Date:** January 2004  
**Review:** This powerful television show is a must-see for any parent or professional in the
education/rehabilitation field, and has been televised by PBS stations throughout the country.

The documentary looks at a group of diverse people with disabilities and the technology tools that
make education, communication, vocation and recreation possible for them. Success is illustrated,
but barriers are also clearly demonstrated during the course of this hour-long presentation. Important
statistics are given throughout the presentation, illustrating the value of technology tools as well as
the societal obstacles to people with disabilities.

This is a compelling look at assistive technology and the value it holds for all of us. Information
appears throughout the film for further study.

An accompanying discussion guide is available at

**Type of Material:** Multimedia  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific, Autism, Cerebral Palsy, Communication and
294. For the High School Student: Improving Reading, Taking Tests and Planning for the Future

Author(s): Bridges to Reading Series  
Publisher: Schwab Foundation for Learning  
Publication Date: January 1999  
Review: When a student has a learning disability, it is particularly difficult for them to deal with it during their teenage years. Even though this is the time that they need to be preparing for their future, it can also be the time that they face their biggest frustrations and failures. This book was written as a part of the Schwab, Bridges to Reading Series, and is targeted for teens, particularly those with learning disabilities. It focuses on strategies for overcoming their difficulties, tips for test taking and encourages them to plan toward the future. There are good resources for additional assistance that can be utilized by a student at the end of the guide. It is well written and could be very motivating for some students.

Type of Material: Book  
Audience: Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Learning Disabilities  
Alternate Formats: Audio Tape, Large Print, Audio Tape, Large Print  
Ordering Information: Schwab Foundation for Learning  
1650 S. Amphlett Blvd., Ste. 300  
San Mateo, CA 94402  
800-230-0988 Voice  
650-655-2411 Fax  
Cost (As of Date Entered): free  
Website: http://www.schwablearning.org/pdfs/7630_high_school_guide.pdf

295. Forum: Software for Special Needs

Author(s): Roger Rachow  
Publisher: Scholastic Administrator  
Review: This is a very short article in a mainstream journal stating that assistive technology is not just for students with severe physical needs, but is useful for students with mild to moderate needs as well. The author cites a group of children with learning disabilities as the target population. Students with learning disabilities who were reading two or more years below grade level were put in special self-contained rooms and had materials read to them by paraprofessionals. Instead of understanding the reading process and becoming independent learners, they were reliant upon...
band that was set aside for FM systems used by deaf and hard of hearing students and adults. It includes personal stories of parents and children and the impact FM systems have had on their lives at school, work, home, and in the community. The article concludes with a request, and instructions, for other families to send their comments or stories about FM systems to the FCC. Overall, the article provides good information on how FM systems improve the lives of their users.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Hearing Impairments / Deaf  
**Ordering Information:** Access via the website.  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.hearingexchange.com/articles/paulas-0208.htm](http://www.hearingexchange.com/articles/paulas-0208.htm)

### 292. Focus On Technology

**Author(s):** Sheryl Burgstahler  
**Publisher:** University of Washington  
**Publication Date:** January 1998  
**Review:** This article is an overview of what technology can do. This is a good starting article and information sheet for individuals just beginning to investigate technology uses for individuals with disabilities. The focus is on computers, software, and some adaptive technology that provides access to the computer.

There needs to be specific details on where to go for more information. A list of some of the vendors that provide the described technology would be helpful. It could also be updated as technology has come a long way in the several years since this has been published. However, this article uses terms that the general population can understand and as mentioned, is a good beginning article.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** [http://staff.washington.edu/sherylb/haring.html](http://staff.washington.edu/sherylb/haring.html)  
**Cost (As of Date Entered):** free  
**Website:** [http://staff.washington.edu/sherylb/haring.html](http://staff.washington.edu/sherylb/haring.html)

### 293. Fonts for Dyslexia

**Author(s):** Dyslexic.com  
**Publisher:** Iansyst, Ltd.  
**Publication Date:** January 2001  
**Review:** This short article found on the dyslexic.com website discusses various fonts such as Geneva, Arial, Sassoon, and Comic Sans and their readability to people who have dyslexia. It also describes the role of "ascenders" and "descenders" ("stems" on letters such as p and b) in the readability of a font.

**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Learning Disabilities, Neurological Disorders  
**Alternate Formats:** Electronic, Electronic
290. Five Assistive Technologies You Should Be Aware Of

Author(s): Nomensa
Publisher: Nomensa
Publication Date: January 2006
Review: This is a list of five devices or software that can be useful to those with special needs. These are: (1) Mouth or Head Wands, (2) Speech Enabled Websites, (3) Screen Magnifiers, (4) Voice Recognition Software, and (5) The Browser.

The one page handout is organized with similar information for each of the five subject areas: a definition of the device, a short description of how it is used, who might use this type of technology. Valuable information is given regarding how each adaptation affects web site development, for example, "Voice Recognition software will require a website with links to text that is separate from the page graphics."

The site also has links to case studies, training courses, writing for the web and ‘Accessibility Explained’.

The descriptions contained on this page would be of help to families and others beginning to make use of technology, and by those who develop training courses for professionals.

Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Parents / Family, People with Disabilities
Target Disability: General / Non-disability Specific, Dyslexia
Cost (As of Date Entered): No charge
Website: http://www.nomensa.com/resources/articles/five-assistive-technologies-you-should-be-aware-of.html

291. FM Systems Help Children Learn

Author(s): Paula Rosenthal
Publisher: Hearing Exchange
Publication Date: January 2001
Review: This article was written in response to an FCC directive from Congress to sell the radio
287. Fast Facts on...Reasonable Accommodations & the Americans with Disabilities Act

Author(s): U.S. Chamber of Commerce and Virginia Commonwealth
Publisher: U.S. Chamber of Commerce and Virginia Commonwealth University, Rehabilitation Research & Training Center on Workplace Supports
Publication Date: April 2004
Review: This fact sheet provides definitions of key terms and procedures related to job accommodations under the employment provisions (Title I) of the ADA.
Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Foreign Language - Spanish, Foreign Language - Spanish
Ordering Information: U.S. Chamber of Commerce and Virginia Commonwealth University, Rehabilitation Research & Training Center on Workplace Supports
804-828-1851 Voice
804-828-2494 TTY
Cost (As of Date Entered): free
Website: http://www.worksupport.com/Topics/fastfacts1.asp

288. Finding the Money

Publisher: Infinitec, Inc.
Publication Date: January 2005
Review: Infinitec, Inc. long known as a resource for assistive technology information, now offers "Finding the Money" a guide to funding sources for AT; including an explanation of school-based AT funding. The article calls "knowledge and research" the primary tools for AT funding in general, while strongly advising beginners to have support from professionals and helpful advocates.

Unlike many articles related to AT funding, "Finding the Money" takes the time to briefly show readers where that money may be, exploring non-governmental funding (private insurance), Medicaid, Medicare, SSI PASS Plans, and other funding resources, including the ATA, FCTD, NICHY and ABLEDATA.
Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): No charge
Website: http://www.infinitec.org/learn/money/findingthemoney.htm

289. First Steps: A Parent Information Handbook
285. Fact Sheet: Funding For Assistive Technology

Author(s): South Carolina Assistive Technology Project
Publisher: South Carolina Assistive Technology Project
Publication Date: January 2000
Review: The South Carolina Assistive Technology Project has created a short fact sheet about several different aspects of funding. While the contact phone numbers listed at the end of the fact sheet are only useful to individuals living within that state, the general information is useful to others.

The fact sheet begins with a short discussion of assistive technology (AT), and moves into the steps an individual or family needs to take to seek funding for AT. Each step is clearly defined.

The third section of the fact sheet covers some of the organizations that might be accessed for funding, and mentions under what circumstances they might be contacted.

The final section is about how to appeal if your request is denied. This section is mostly for residents of SC, but would give residents of other states a good idea of which organizations to contact in their own state.

Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: Available from the web site or via email from SCAT
Cost (As of Date Entered): Free on web site
Website: [http://www.sc.edu/scatp/fundingfact.htm](http://www.sc.edu/scatp/fundingfact.htm)

286. Family Guide to Assistive Technology

Author(s): Kelker, K. A. & Holt, R.
Publisher: Federation for Children with Special Needs
Publication Date: January 1997
Review: The Family Guide to Assistive Technology is a wonderful resource for parents. This highly recommended guide provides information for parents about assistive technology, how it can help their children, and how to advocate for their children's technology needs.

Has a family friendly "let's share information" feel. Great resource for services and vendor contact information. Explains AT in a very readable format.

Type of Material: Book
Audience: Parents / Family
Publisher: Increasing Capabilities Access Network (ICAN)
Publication Date: April 2004
Review: This fact sheet will be invaluable to persons in Arkansas. Contact information is given for the following categories: computer access, mobility and environmental controls, augmentative communication, daily living, and driving aids. Could be used as a model for other states. Very clear and concise.
Type of Material: Brochure
Audience: Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: ICAN

2201 Brookwood Dr. Suite 117
Little Rock, AR 72202
(501) 666-8868 , (800)-828-2799
Website: http://www.arsinfo.net/ican/fs_eval.html

283. Fact Sheet : Computer Access

Author(s): South Carolina Assistive Technology Project
Publisher: South Carolina Assistive Technology Project
Publication Date: January 2000
Review: This short fact sheet gives good general information about adaptations that assist individuals with disabilities in accessing a computer successfully. It covers input and output devices in a general way, without mentioning any specific products. The fact sheet would be a good starting point for someone who is just beginning to look for assistive technology, as it is written simply and offers additional links to other organizations as a way to find additional information. While the phone numbers listed are limited in use to residents of South Carolina, the general information is applicable for all.

Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: Available online at http://www.sc.edu/scatp/computer.htm, or via email at that same site.
Cost (As of Date Entered): Free
Website: http://www.sc.edu/scatp/compaccessfact.htm

284. Fact Sheet for Medicaid Funding of AAC Devices

Author(s): Oklahoma ABLE Tech
Publisher: Oklahoma ABLE Tech
Publication Date: January 1996
Review: This fact sheet is targeted toward professionals who apply for funding for Augmentative and Alternative Communication (AAC) devices in Oklahoma. It describes conditions which must be met for funding from Medicaid, the eligibility, where to submit applications, the AAC evaluation requirements and application contents.
280. Facts About Telecommunications Relay Services

Author(s): National Institute on Deafness and Other Communication Disorders (NIDCD)
Publisher: National Institutes of Health (NIH)
Publication Date: January 1999
Review: Very brief, but concise and informative article describing a variety of telecommunications relay services. Included are voice carry over (VCO), hearing carry over (HCO), and text telephone (TTY). Also included are a good number of national relay numbers for interstate and international use. This is a very helpful article.
Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Communication and Speech, Hearing Impairments / Deaf
Ordering Information: NIDCD at NIH
301-402-0252 TTY
301-496-7243 Voice
301-402-0018 Fax

Cost (As of Date Entered): no cost
Website: http://www.nidcd.nih.gov/health/hearing/telecomm.asp

281. Fact Sheet: Adapted Toys

Author(s): Decker, B. & Fuller, S.
Publisher: Increasing Capabilities Access Network (ICAN)
Publication Date: April 2004
Review: This fact sheet is written in simple language and offers ideas about playthings for children with various disabilities. A list of resources includes Adapted Toy catalogs, sources for micro switches, and books about adapting toys. Resources are listed from across the United States. Information is accurate across geographic regions. Resources listed are from around the US.
Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: ICAN
2201 Brookwood Dr. Suite 117
Little Rock, AR 72202
(800) 828-2799
Cost (As of Date Entered): No Cost
Website: http://www.arsinfo.net/ican/fs_toys.html

282. Fact Sheet: Assistive Technology Evaluations
277. E-Text Resources from West Ed RTEC (Regional Technology in Education Consortia)

Author(s): RTEC Exchange
Publisher: Regional Technology and Education Consortium
Publication Date: January 2004
Review: The new RTEC (Regional Technology in Education Consortia) Exchange includes lists of resources for using electronic text in the classroom (thoughtfully divided into steps and classroom-based examples) and links for finding electronic texts to include in curriculums. It includes a list of texts for young children as well as historical documents, adapted books, and other hard-to-find information including curricula and UDL resources.

Simple registration gives users access to resources. Best of all, these resources are not limited to the WestEd regions (Arizona, California, Nevada, Utah). This is an excellent tool.

Type of Material: Website
Audience: Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://rteceXchange.edgateway.net/cs/rtecp/view/rtec_sub/94

278. Exceptional Computing Website

Publication Date: April 2004
Review: This website provides information on assistive technology products for people with disabilities to enhance their use of computers. It includes information on adaptations, single switch toys, technology tips, and curriculum ideas. There is a listing of assistive technology manufacturers/distributors as well.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Website: http://www.exceptionalcomputing.com

279. Executive Summary of Research Synthesis on Quality Assistive Technology Devices

Author(s): Thorkildsen, R.
Publisher: Center for Persons with Disabilities - Utah State University
Publication Date: April 2004
Review: This report describes an extensive review of literature concerning the availability and evaluation of assistive technology (AT). It provides a brief overview of AT, educational uses of AT, popular AT devices and how they can be procured, assessment of need for AT, and characteristics of effective AT devices. It also contains a "recommendations" section which provides guidelines to help consumers select quality AT for school-age children.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Website: http://idea.uoregon.edu/~ncite/documents/techrep/tech08.html
275. ESL and the Use of Assistive Technology for Writing

**Publisher:** University of Calgary and the Calgary Learning Centre  
**Publication Date:** January 2002  
**Review:** This is a review describing AT options for people who use English as a Second Language (ESL). There are four areas of focus in the article:

1. the ESL writer in general  
2. Learning disabilities and the ESL student  
3. Electronic dictionaries  
4. Grammar and spell-checkers

A description of the problems in each area are described followed by potential AT solutions. Even though the author tells the reader that the paper is an informal study of literature relevant to this topic, the paper is an interesting and novel summary relating how AT could be used to help ESL students learn to write. It presents an interesting area of study for AT in a multicultural world.  

**Type of Material:** Article  
**Audience:** Educators  
**Target Disability:** Learning Disabilities  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://commons.ucalgary.ca/at-wld/includes/relResearch06/ESL_Lit_Review.pdf](http://commons.ucalgary.ca/at-wld/includes/relResearch06/ESL_Lit_Review.pdf)

276. Essential Early Education

**Author(s):** Vermont Parent Information Center  
**Publisher:** Vermont Parent Information Center  
**Publication Date:** January 2002  
**Review:** This short article gives a quick overview of the process used in Vermont to place a child into an early education program. It discusses referral, screening, testing, and the planning process for the Individual Education Plan. It gives a very brief overview of how parents might advocate for their child if they disagree with the IEP or with services provided for their child. Most of the terminology and information is specific to Vermont.  

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** The article may be obtained by calling: 1-800-639-7170. Information is available on the website as well.  
easily be used in K-12 school settings or in public community settings, such as libraries.

The Equal Access: Computer Labs video is available in several online formats for Windows Media Player and Real Player, and is also available in VHS format. Although some adjustments (and much patience) may be needed to make the online video playback and captioning easier to see, the video description is excellent and may suffice if the online video is not viewable.

**Type of Material:** Video  
**Audience:** AT Professionals, Educators, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Video, Video  
**Cost (As of Date Entered):** VHS $22.98  
**Website:** [http://www.washington.edu/doit/Video/equal.html](http://www.washington.edu/doit/Video/equal.html)

### 273. Equal Access: Libraries

**Publisher:** DO-IT at the University of Washington  
**Publication Date:** January 2000  
**Review:** This article addresses the increasing role of public libraries for computer availability and the subsequent need to ensure that libraries are accessible to all people. It cites the legal precedent that libraries must adhere to and then addressed the many areas of accessibility: building access, environmental amenities, adaptive technology, knowledgeable and compassionate staff, and alternative forms of communication. It also provides a concise listing of general communication guidelines.  
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** DO-IT, University of Washington  
Box 354842  
Seattle, WA 98195-4842  
206-685-DOIT(3648)  
206-221-4171 (fax)  
888-972-DOIT(3648) Washington only  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.washington.edu/doit/Brochures/Technology/libsrv.html](http://www.washington.edu/doit/Brochures/Technology/libsrv.html)

### 274. Equation Editor

**Author(s):** Microsoft  
**Publisher:** Microsoft  
**Publication Date:** January 2000  
**Review:** Equation Editor is a math tool within Microsoft Office. By following the HELP screen under Microsoft Word, you can install this component of MS Office onto your computer. Then it can be used to type mathematic equations onto a Word document. This tool gives the user the ability to enter complex mathematical equations onto a document. A high school or college student could utilize this MS tool in advanced math/calculus classes and it could even assist in the workplace where math functions are necessary. This provides minimal symbols and would not be able to support someone who is engaged in engineering or other highly technical fields where higher level math is required. Consumers who have need of a higher level math tool are advised to look at MathType software, reviewed elsewhere on the FCTD website.
surroundings through a variety of interfaces. For children and adults, the ability to independently turn appliances on or off, to select TV channels or to make doors open may be extremely powerful motivation in connecting with technology after a traumatic brain injury.

This short article provides descriptions of accessible interfaces and discusses the capabilities that ECUs offer users. Links are provided to assist readers in continuing their research of this topic.

**Type of Material:** Website  
**Audience:** Service Providers  
**Target Disability:** Brain Injury and Stroke  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.birf.info/home/library/assistive/ast-environ.html](http://www.birf.info/home/library/assistive/ast-environ.html)

271. Equal Access: Computer Labs

**Author(s):** Sheryl Burgstahler  
**Publisher:** University of Washington  
**Publication Date:** January 2003  
**Review:** "Equal Access: Computer Labs" provides general access questions that help lab designers evaluate their computer lab according to the "principles of universal design" and offers five steps to use when developing appropriate lab policies, staff trainings, and lab resources. The general access questions are broken into five sections: building access; lab staff; physical space and printed materials; computers and software; and electronic sources. The five steps focus on providing equipment and policies that increase ease-of-use and accessibility in the lab. Characteristic of a DO-IT publication, this article also refers to other topic-specific DO-IT publications that will be helpful to readers. "Equal Access: Computer Labs" includes resource links to Section 508 standards, technology information, and links that direct readers to technical assistance centers in their area. The article mentions an 11-minute videotape that "demonstrates key points" from the printed "Equal Access: Computer Labs."

**Type of Material:** Brochure  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Ordering Information:** Website: Free  
**Supplemental Video:** "Equal Access: Computer Labs" $25.00 USD. Mail payment to DO-IT, University of Washington, Box 355670, Seattle, WA 98195-5670.  
**Website:** [http://www.washington.edu/doit/Brochures/Technology/comp.access.html](http://www.washington.edu/doit/Brochures/Technology/comp.access.html)

272. Equal Access: Computer Labs (Video)

**Author(s):** DO-IT  
**Publisher:** University of Washington  
**Publication Date:** January 1997  
**Review:** This 1997 video, formatted to download from the DO-IT website in 2003, is a primer for staff and administrators who are working to develop universally accessible college computer labs. The video covers several points of universal design: removing external barriers to the campus and the lab; communication and support training for staff members (using the "person-first" concept); universal access to lab tools and documents; and adding basic technology, software, and tools for universal usage to the lab. While designed to be used in setting up accessible college computer labs, it could
268. Enhancing Academic Achievement and Transition Outcomes Using Technology

Author(s): Margo Vreeburg Izzo, Alexa Murray, and Nancy O'Hanlon
Publisher: National Center on Secondary Education and Transition (NCSET)
Publication Date: January 2005
Review: Published in the September 2005 issue of the NCSET Information Brief, this report describes and evaluates a notable CBI (computer-based instruction) program from the Nisonger Center (Ohio State University). The authors use this successful program to show readers how to "align standards-based instruction with transition." They offer research-based evidence that, once combined with CBI and transition, standards-based instruction is more successful when it is offered to students "in a personally relevant context."
The report offers educators a chance to see the methods and benefits of "infusing technology, learning supports, information literacy, and transition skills into their curricula." Readers will be pleased to see discussions of technology as "a means to an end" and examples of successful policies that use technology-based strategies to improve core skills and teach computer literacy. The report also stresses the importance of integrating supports into both CBI and SBI to increase equivalent information access and improve overall results. The report notes that computer searching and technical tasks can help develop critical thinking, reading, and other transition critical skills.

Type of Material: Report
Audience: Educators
Target Disability: General / Non-disability Specific
Ordering Information: To request an alternate format or additional copies, contact NCSET at 612.624.2097.
Cost (As of Date Entered): No charge
Website: http://www.ncset.org/publications/viewdesc.asp?id=2472

269. Enhancing Low Vision: Magnification and Magnifiers

Publisher: Community Services for the Blind and Partially Sighted (CSBPS)
Publication Date: April 2004
Review: This article is an excellent reference on the topic of various magnification strategies for persons with low vision. It provides an overview of the three common types of magnifiers and the strengths and drawbacks to these methods.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Visual Impairment / Blind
Ordering Information: Community Services for the Blind and Partially Sighted 800-458-4888

Cost (As of Date Entered): free
Website: http://www.csbps.com/publicinfo/magnify.shtml

270. Environmental Control Units

Author(s): Tina Butterfield
Publisher: Brain Injury Resource Foundation
Publication Date: January 2004
Review: Environmental Control Units (ECUs) allow people to manipulate and interact with their
266. EnabledOnline.com

Publication Date: January 2004
Review: EnabledOnline.com is a valuable website that offers resources, news, and information to people with disabilities.

These types of websites rarely live up to expectations and suffer from maudlin stories and soapbox coverage. This website continues to hold surprises. EnabledOnline.com does not escape either maudlin stories or soapboxes, but the broad base of resources, editorials and commentary certainly dampens any overt agendas. The site is difficult to navigate--go slowly, and be patient--the information from this rough gem is worth it.

Type of Material: Website
Audience: Service Providers
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): no charge
Website: http://enabledonline.com/index.php

267. Enabling a Student with Developmental Delays

Author(s): Emilly Hoeffel
Publisher: National Center to Improve Practice in Special Education through Technology, Media and Materials
Publication Date: January 1997
Review: While this article was written some time ago (1997), it is still an excellent illustration of how specialized software programs can help a student with multiple challenges become an enthusiastic writer after years of frustration with the process. While the hardware referred to in the article (Apple IIe and ImageWriter) is very obsolete, the software programs described (Co:Writer and Write:Outloud) are still available. In fact, there are now many similar programs on the market.

In addition to describing how the software and its features helped the student with the writing process, this article also describes various strategies that were employed to keep the student focused on the task at hand. For example, at one point the student was required to write a certain amount before she was allowed to use the program’s speech output feature. Additionally, the article points out the other skills that were taught so that the student could be as independent on the computer as possible.

This story, while five years old, does a nice job of demonstrating how a person with cognitive challenges can master the writing process using targeted software programs. While readers may have heard of these programs, it is useful to learn about their real-life application.

Type of Material: Article
Audience: Parents / Family
Target Disability: General / Non-disability Specific, Autism, Developmental Disabilities, Learning Disabilities, Mental Retardation, Multiple Disabilities, ADHD/ADD
Ordering Information: View on the web site identified below.
Cost (As of Date Entered): Free
Website: http://www2.edc.org/ncip/library/wp/Hoeffel.htm
264. Emerging Literacy Support for Older Students: Writing Big Books for Young Students

**Author(s):** Dr. Caroline Ramsy Musslewhite  
**Publisher:** AAC Intervention  
**Publication Date:** January 2002  
**Review:** It is difficult to find appropriate materials and activities for older students with developmental disabilities to develop writing skills. Generally, if it is on their functional level it is not age appropriate and if it is age appropriate, it is too difficult for the students to complete.

This article describes a great idea for emerging writers, including those who are AAC users, and helps students who are in the younger classrooms as well. Older authors create Big Books which are used by children in younger grades. Older students participate in creating ideas, language, and format for the Big Books, given specific parameters.

The Big Books and ideas in this article are typical of the experience and wealth of knowledge that this author has. She has contributed greatly to AAC and is continuing her efforts with ideas for writing and emerging literacy.  
**Type of Material:** Article  
**Audience:** Educators  
**Target Disability:** Developmental Disabilities, Learning Disabilities  
**Cost (As of Date Entered):** no charge  
**Website:** http://aacintervention.com/write.htm#Emergent

265. Empowering Rural Students with Disabilities Through Assistive Technology

**Author(s):** Patricia Deloney and Richard Tompkins  
**Publisher:** Southwest Educational Development Laboratory  
**Publication Date:** January 2003  
**Review:** It is rare to find a resource that is unequivocally at the top of its class--the SEDL "Seeds: Empowering Rural Students with Disabilities Through Assistive Technology" is the best AT guide for educators that I have seen this year.

Though focused primarily on the needs of educators trying to build policies for AT in their schools, this guide benefits from a simple outline format and clear, concise language that parents, students, and service providers will find reassuring. "Seeds: Empowering Rural Students with Disabilities Through Assistive Technology" covers the basics, supports rural school leaders, and manages to tackle important and often confusing issues including "'Best' vs. 'Appropriate': A Dilemma for School Districts" and the in's and out's of financing options for AT in a school.  
**Type of Material:** Article  
**Audience:** Educators, Parents / Family, People with Disabilities, Service Providers  
**Target Disability:** General / Non-disability Specific
Some of the links in the online version are not current. Some of the products have been discontinued and pricing is in British pounds instead of US dollars. However, despite these facts, it is still a helpful list.

**Type of Material:** Article

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** Learning Disabilities

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** iANSYST Ltd.
Fen House, Fen Road,
Cambridge CB4 1UN, UK
01223 420101

**Cost (As of Date Entered):** No charge


262. Email and Pen Pal Exchange

**Author(s):** Susie Rodde

**Publication Date:** January 2004

**Review:** This website is designed to help people with CP or related disabilities to become acquainted with others in similar situations. The "author" of the site has CP and shares her personal experiences of growing up with CP and her insights into living with a disability. There are resources on CP, various search engines and chat rooms, inspirational writings, and a bulletin board to post personal information for locating a pen pal or chat room partner. This could be a valuable resource for someone struggling to accept and live fully with a disability or for someone searching for answers to help them integrate into their communities.

This reviewer found no disclaimer related to the security or integrity of the website so anyone wishing to utilize it does so at their own risk. There is a lot of information that is worthwhile even if one does not choose to participate in either the pen pal or chatroom part of the site.

**Type of Material:** Website

**Audience:** People with Disabilities

**Target Disability:** Cerebral Palsy

**Cost (As of Date Entered):** no charge

**Website:** [http://www.susiecphome.com](http://www.susiecphome.com)

263. E-Mail Discussion Lists

**Author(s):** Assistive Technology Quick Reference Series

**Publisher:** CATEA

**Publication Date:** January 2000

**Review:** This guide is a good resource for someone not familiar with e-mail discussion lists or listserves and how they can be a low-effort source of information. It starts by giving an overview of the different kinds of listserves and how to use them. It also provides several web sites that provide listings of listserves in virtually any area of interest and a short list of disability-related listserves.

**Type of Material:** Resource Guide

**Audience:** Service Providers
260. Electronic Aids to Daily Living Comparison Chart

**Author(s):** Michelle Lange, OTR, ADBA, ATP  
**Publisher:** Wisconsin Assistive Technology Initiative (WATI)  
**Publication Date:** January 2001  
**Review:** This chart is not accompanied by any explanations of what electronic aids to daily living are or who would benefit from them. If the reader is already familiar with these devices, this chart is a good way to compare features and prices.

The chart divides EADLs into five categories—direct access systems, switch access systems, voice access systems, AAC access systems and computer access systems. Within each of these categories, there are comparisons of the input methods, controls, portability, battery back-up, interfaces and cost. There is also a comments section that contains information about displays, mounting and more.

There are some footnotes to the chart that are not particularly well displayed. However, with a little effort, the reader can understand what they are communicating.

It should be noted that this chart is best viewed on a computer screen where it can be enlarged for easy viewing. The font on the printed version is very small.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
**Ordering Information:** Free on the web site  
**Cost (As of Date Entered):** Free on web site  

261. Eleven Steps to Reading and Writing

**Author(s):** Dyslexic.com  
**Publisher:** Iansyst, Ltd.  
**Publication Date:** January 2001  
**Review:** This is a simple list of eleven things that people who have dyslexia can do to make it easier to read and write. The list includes computer software, electronic reading pens and dictionaries, notetaking and using a computer.
There are links to articles and photos which describe the impact that EagleEyes has had on its users. Contact information is current and the team response is extremely quick.

**Type of Material:** Website

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities

**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Multiple Disabilities, Neurological Disorders

**Cost (As of Date Entered):** no charge

**Website:** [http://www.bc.edu/schools/csom/eagleeyes/](http://www.bc.edu/schools/csom/eagleeyes/)

### 258. Eating Aids

**Author(s):** Decker, B.

**Publisher:** Arkansas ICAN Project

**Publication Date:** January 2000

**Review:** This article covers a good cross-section of the types of adaptations one can make to eating utensils, plates, and other items used for eating. It gives simple suggestions on the types of adaptations and the items one can use to make them. It also discusses where to find items used to make adaptations both locally and by mail order.

**Type of Material:** Article

**Audience:** Service Providers

**Target Disability:** Brain Injury and Stroke, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired

**Ordering Information:** Increasing Capabilities Access Network (ICAN)

2201 Brookwood #117
Little Rock, AR 72202
501-666-8868
800-828-2799

**Cost (As of Date Entered):** No Cost

**Website:** [http://www.arsinfo.net/ican/fs_eat.html](http://www.arsinfo.net/ican/fs_eat.html)

### 259. Educating Students with Visual Impairments for Inclusion in Society

**Author(s):** Education Work Group Participants

**Publisher:** American Foundation for the Blind (AFB)

**Publication Date:** April 2004

**Review:** This three-part paper addresses some of the unique needs of students that are visually impaired. It identifies concerns that the current approach for education provides for an inclusive setting which does not always meet a student's unique needs appropriately. The first part addresses the need for a team approach including professional, parents and students, and specialized services and equipment to meet these needs. The second part looks at the full range of program options that are needed to address a student's IEP (Individualized Education Program) and how this is necessary to ensure that a student is taught in his/her's least restrictive environment (LRE). Finally, the need for special training for professionals and parents is encouraged to remain current in the techniques for teaching as well as new technologies that will allow for the greatest success of an individual student with a visual impairment.

**Type of Material:** Research Paper

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation
256. Dyslexia My Life

Publisher: Dyslexia My Life
Publication Date: January 2003
Review: This website features news and links focusing on dyslexia specifically and on learning disabilities in general. Features and links are intuitive and are designed for dyslexic readers. The site can "read" the menu for the viewer and offers books, cassettes, movies for sale, plus free articles and book reviews. Also highlighted are tips for the dyslexic student and for teachers of dyslexic students. The Yahoo search engine has compiled timely news articles on dyslexia and learning disabilities for the viewer. These articles are accessible via a single mouse click. Other features include Yellow Pages and resource guides for children with dyslexia and other disabilities and their families.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Developmental Disabilities, Learning Disabilities
Ordering Information: Available via the website.
Cost (As of Date Entered): Free
Website: http://www.dyslexiamylife.org

257. EagleEyes Project

Author(s): Dr. Phillip DiMattia
Publisher: Boston College
Publication Date: January 2004
Review: The EagleEyes project has been in existence for ten years and its focus is to help people with disabilities access education using computers. It is a collaborative project at Boston College between the Department of Computer Science and the Campus School. Two products have been developed through this project:

The Camera Mouse is a mouse emulator that enables people who have severe physical disabilities to use a web cam and a software application as mouse input for the computer. The software can be downloaded for a 30 day trial from the website. The user must have head control to activate this interface.

EagleEyes is computer access technology designed for people with severe disabilities. It allows them to control the computer using eye or slight head movements which are perceived by a computer as mouse input. Users are able to access the computer with the EagleEyes mouse software, an onscreen keyboard and standard software applications, including educational and recreational titles. Typing speed is slow, at one character per 2.5 seconds, but success stories include individuals who have completed university degrees with the Eagle Eyes system.
teaching strategies and software that will be useful for students who have these types of learning problems.

Of questionable value is the option of obtaining an “online” diagnosis of your learning disability. The process and cost of obtaining this “online” evaluation is outlined on the website and a sample of a written report can be viewed. This reviewer cautions readers to avoid online diagnoses.

The greatest value of this site is the explanation of the different types of learning disabilities, teaching strategies, and software titles. The site needs some updating but most information is still valuable to readers searching for information about the disability, the law, and educational products.

Type of Material: Website
Audience: Educators, Parents / Family
Target Disability: Learning Disabilities
Cost (As of Date Entered): No charge
Website: http://www.dyscalculia.org/

254. Dysgraphia: Learning Disabilities in Writing

Author(s): National Center on Learning Disabilities (NCLD)
Publisher: Schwab Learning Center
Publication Date: January 2003
Review: The article describes the warning signs of dysgraphia as well as strategies to help individuals cope with this reading disorder. The strategies are aimed at early writers, young students and teens and adults. The writer emphasizes that the difficulties caused by the disorder can change throughout a child’s life. The article is comprehensive yet concise and clear. As a primer, its contents are particularly appropriate for parents and families of children with dysgraphia.

Type of Material: Article
Audience: Educators, Parents / Family, People with Disabilities
Target Disability: Developmental Disabilities, Learning Disabilities
Alternate Formats: Electronic, Electronic
Ordering Information: Available on the website
Cost (As of Date Entered): Free
Website: http://www.schwablearning.org/articles.asp?r=759&q=1

255. Dyslexia and Computing

Author(s): Abilitynet
Publication Date: January 2001
Review: This is an excellent, easy to read listing of strategies from simple to complex that compensate for the "mismatch...between an individual's intelligence and verbal skills and ability to write, read, or handle numbers." The article lists simple strategies such as using a keyboard; increasing spaces between lines; varying color, font, and size of text; and creating "macros" or computer abbreviations. It also discusses word prediction, text to speech, and organization of thoughts before writing. The article provides accurate information about using voice input as a strategy.

Type of Material: Article
Audience: Parents / Family
Target Disability: Learning Disabilities
Alternate Formats: Electronic, Electronic
252. Down Syndrome, Computers and the Curriculum

Author(s): Bob Black
Publisher: Inclusive Technology Ltd
Publication Date: January 2004
Review: This short article is authored by an assistive technology vendor but offers valuable strategies in working with children with developmental disabilities through the use of technological tools.

The article discusses computer-based strategies that can be used to include children with Down Syndrome in the classroom during their early years in educational programs. Computer options allow teachers to break down learning tasks easily and present them in multiple formats so that all students can achieve. The article includes links to software products available through the Inclusive Technology catalog.

Type of Material: Article
Audience: Educators, Parents / Family, Rehabilitation Professionals
Target Disability: Developmental Disabilities, Mental Retardation
Cost (As of Date Entered): no charge
Website: http://www.inclusive.co.uk/infosite/bblack.shtml

253. Dyscalculia.org website

Author(s): Renee M. Newman
Publisher: R. M. Newman Communications
Publication Date: January 1997
Review: This website has an incredible amount of information devoted to learning disabilities, specifically dyslexia and dyscalculia. There are links to symptoms of each diagnosis, legal questions,
This sheet gives an overview of the adaptive features of the recorders as well as an illustration. Prices (UK) are available and may be considered high as the instruments are made from natural products; contact information both for the company and for users of the products are included for further research.

**Type of Material**: Infosheet / Fact sheet  
**Audience**: People with Disabilities  
**Target Disability**: Mobility Impaired  
**Alternate Formats**: Electronic, Electronic  
**Cost (As of Date Entered)**: no charge  
**Website**: [http://www.dolmetsch.com/helppage.htm](http://www.dolmetsch.com/helppage.htm)

**250. Don't high school students need assistive technology too?**

**Author(s)**: Cindy L. George & Jenn I Shaff  
**Publisher**: Special Education Technology & Practice  
**Publication Date**: January 2002  
**Review**: Analysis and review of available technology at the high school level including websites, articles, reports and government sources.

The reasons for the relative lapse in AT from elementary to high school are laid out well. The article ably discusses five reasons for the decline in routine use of AT at the high school level. They include: the software identified, increased content levels, changing classes, teacher knowledge and training (dilemma of multiple classroom settings), and professional competency to find and utilize AT available at the high school level.

The author uses case studies from three metropolitan DC schools to identify strategies for incorporating AT at the high school level.

Case I- the school studied is a private school with a low-incidence disability population. This study explains that the combination of a software specialist with an AT specialist can spell success.

Case II- The article uses a public school for the second case study noting the students’ rotation through classrooms all day long. The school discussed is a site for testing software products to determine their relationship to the Virginia Standards of Learning. The importance of assistive technology specialists, to both teachers and students, is elaborated upon.

Case III- In this study the authors use a school with a large number of visually disabled students. The special nature of AT and team teaching are the primary focus in this success story.

Web sites for both professional conference sites and Web-based software review sites are provided. The author closes by making insightful suggestions in the following areas: assistive technology, equipment, professional competency and implementation techniques.

**Type of Material**: Article  
**Audience**: AT Professionals, Educators, Parents / Family  
**Target Disability**: General / Non-disability Specific  
**Ordering Information**: To request a free sample copy of SETP, send an email message with your mailing address to: setpinfo@setp.net  
Subscribe to SETP, visit: [http://www.setp.net/Orders.html](http://www.setp.net/Orders.html)  
**Cost (As of Date Entered)**: $9.75  
**Website**: [http://www.setp.net/archive/4-3.html](http://www.setp.net/archive/4-3.html)

**251. Doodads, Gadgets & Thingamajigs**
(these are helpfully catalogued in the site map) which range from lined writing paper to math grids and picture communication cards. The picture communication cards include 350 symbols (in categories such as home and school, social, self help, etc.) that are available in 1", 2" and full page formats. The website also provides free computer downloads which can be used to teach colors, numbers, words and emotions. These resources (as well as a section with a great deal of disability information) are free.

Another section of the website, called “Make-A-Schedule” costs $30.00 per year ($2.50 per month) to use. It contains over 1,200 frequently requested picture images that may be used to create picture cards, picture schedules and communication boards. The images are in black and white and color and are available in several languages and have instructions on their use.

Do2Learn is a website that is worth visiting.

**Type of Material:** Website  
**Audience:** Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific, Autism, Brain Injury and Stroke, Communication and Speech, Developmental Disabilities, Learning Disabilities, Mental Retardation, Mobility Impaired, Multiple Disabilities, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** Free-additional picture symbols cost $2.50/mo.  
**Website:** [http://www.do2learn.com](http://www.do2learn.com)

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248. DO-IT Program at the University of Washington Web Site

**Publication Date:** April 2004  
**Review:** This is a very large Web site that has links for people with disabilities to find information on academics, careers, assistive technology, making libraries accessible and other types of information. Menu items include: Academics and Careers, Programs to Promote Technology, Resources, and Search.

This site contains a wealth of information, articles about assistive technology. It is mostly text-based and easy to navigate through.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** ASCII, ASCII  
**Website:** [http://www.washington.edu/doit/](http://www.washington.edu/doit/)

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249. Dolmetsch Online: Gold Series Recorders

**Author(s):** Peter Norman, Brenda Dickeson, Kate Alexander  
**Publisher:** Dolmetsch.com  
**Review:** This is a short fact sheet on Dolmetsch recorders, Gold Edition, which have been adapted for use by people with missing fingers, or with a missing hand. Though it is uncommon for musical instruments to appear as assistive technology, students and adults who wish to pursue playing a musical instrument have few options.
The second CD contains accessibility resources. It has an operating system matrix that explains accessibility features across the different operating systems, assistive technology product information and tutorials that can be printed for training or step-by-step instructions. All of the information on both CD’s is available on line at www.microsoft.com/enable/

There is a great deal of information on the CD’s that can be used for non-profit training with no approval and for-profit with prior approval. The CD’s can be viewed whole-screen if installed directly to your hard drive or viewed at a smaller size directly accessing the CD through your computer. This information is a great resource to bookmark and review often.

**Type of Material**: Multimedia  
**Audience**: Service Providers  
**Target Disability**: General / Non-disability Specific  
**Alternate Formats**: CD-ROM, CD-ROM  
**Ordering Information**: www.microsoft.com/enable  
**Cost (As of Date Entered)**: no charge  
**Website**: http://www.microsoft.com/enable/

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246. Discover Technology, Inc

**Author(s)**: Amantha Cole  
**Publisher**: Discover Technology, Inc  
**Publication Date**: January 2005  
**Review**: Discover Technology is a website that enables people with disabilities to connect. They connect people with disabilities by encouraging communication through the use of e-mail and assistive technology (AT). Discover Technology helps set up computer labs by loaning computer equipment and alternate keyboards or access devices as necessary to local facilities in the Houston area. Pal formats are available for contacting people with and without disabilities to educate the community and support individuals with similar issues. There is a link for budding artists who use assistive technology and other alternative methods to create art work. The artists can then display their works on the website.

The website also includes games to allow visitors to practice using assistive technology or alternative devices. There is a directory of links targeted for people with specific disabilities interested in AT. This interesting site allows people with disabilities to connect with individuals with similar interests.

**Type of Material**: Website  
**Audience**: People with Disabilities  
**Target Disability**: General / Non-disability Specific  
**Alternate Formats**: Electronic, Electronic  
**Cost (As of Date Entered)**: No charge  
**Website**: http://www.discovertotechnology.com

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247. Do 2 Learn

**Author(s)**: Do 2 Learn  
**Publisher**: Do 2 Learn  
**Publication Date**: January 2004  
**Review**: Do2Learn is a website that was developed for parents and teachers to help students and adults who have special learning needs. It provides over 2,000 pages of free printable materials
impressive work.

**Type of Material:** Book  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Hearing Impairments / Deaf, Mental Retardation, Mobility Impaired, Multiple Disabilities, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired, Epilepsy  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** The Hesperian Foundation  
P.O. Box 11577  
Berkeley, CA 94712-2577  
**Cost (As of Date Entered):** no charge  

**244. Disappearing Captions: A Strike at the Power of Inclusive Technology**

**Publisher:** Hands and Voices  
**Publication Date:** January 2004  
**Review:** This article was written in response to an October 2003 ruling by the US Department of Education that many television shows are no longer eligible for captioning services. The author explains how captioning grants are made and how the decision to pull funding from certain shows was made. The author also describes how the loss of captioning is harmful to both deaf/hard-of-hearing children and their parents and to deaf/hard-of-hearing parents and their children.

The article includes a discussion of how the lack of captioned access to television shows impacts communication within the family and within peer groups. The article ends with a call-to-action by all consumers and provides e-mail links to the involved parties at the federal level. As the parent of a deaf child who relies on captions at home to allow him to be part of our family television viewing experience, this reviewer sees this article as highly significant to the future of all deaf children.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Hearing Impairments / Deaf  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.handsandvoices.org/articles/tech/dis_captions.html](http://www.handsandvoices.org/articles/tech/dis_captions.html)

**245. Discover How to Make the Computer Easier to Use: Accessibility Options in Microsoft Windows XP**

**Author(s):** Microsoft  
**Publisher:** Microsoft  
**Publication Date:** January 2004  
**Review:** Microsoft has designed a CD set to explain and demonstrate the accessibility features built into the operating systems. This can save individuals a great deal of money and time if they simply investigate the operating systems' features before purchasing other assistive technology software. The first CD demonstrates the accessibility features for Windows XP. The demonstrations have captions as well as auditory cues for keyboard controls. The features include: display and appearance, sounds and speech, keyboard and mouse, narrator, magnifier, and describe the wizard that can be accessed to customize the controls through prompted cues.
and education entities, businesses, and, printed materials are being required to adhere to strict rules. A disability awareness kit has been developed by the State Library of Victoria for libraries to support and bring awareness to a variety of disabilities.

This web-based resource guide offers accurate information on a variety of disabilities as well as activities to train staff and other individuals in what it is like to have a disability. This is a great site for any business or organization that is motivated to be pro-active and to support persons with disabilities through practical experiences.

**Type of Material:** Website  
**Audience:** Parents / Family, People with Disabilities, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** n/a  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.openroad.net.au/access/dakit/welcome.htm](http://www.openroad.net.au/access/dakit/welcome.htm)

242. Disability Resources Website

**Publication Date:** April 2004  
**Review:** This website provides information about disabilities, education and inclusion, current events in the field of disabilities. Users may search the site by specific disability. It also offers a Frequently Asked Question (FAQ) section, which is helpful to parents and professionals alike. The website is partnered with the Disability Resources Monthly publication, which is mentioned within the body of the website, but there is no direct link to the journal's content; there is only subscription information.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Website:** [http://www.disabilityresources.org](http://www.disabilityresources.org)


**Author(s):** David Werner  
**Publisher:** Hesperian Foundation  
**Publication Date:** January 1999  
**Review:** This compilation by David Werner is a wonderful resource for those interested in the disabilities field outside the United States. First created in 1987, and published by the Hesperian Foundation, Disabled Village Children charges headlong into the variety of experiences that rehabilitation professionals face when they provide services to disabled children in small, rural villages overseas.

The Hesperian Foundation, which publishes this book, acknowledges that the book's content and structure are constantly evolving, a very common aspect of reference writing. In spite of the book's rough layout and complex subject matter (everything from identifying disability and the social aspects of villagers' interactions with and acceptance of disabled children, to providing proper rehabilitation aides and therapies, Disabled Village Children succeeds as a much-needed reference guide. In fact, there are very few, if any, references that deal specifically with the nature of overseas work and the importance of proper rehabilitative care, regardless of the child's geographic location. This is an
technologies among educators, families, curriculum developers and policy makers is helping to make
digital curriculum content more widely available.
Finally, the article offers extensive resources for finding products to process digital text and
repositories of digital textbooks. In addition to providing links, there is also an explanation of what the
reader will and won’t find at the various web sites.
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific, Autism, Brain Injury and Stroke, Cerebral Palsy,
Developmental Disabilities, Health Impairments, Learning Disabilities, Mental Retardation, Multiple
Disabilities, Multiple Sclerosis, Muscular Dystrophy, Visual Impairment / Blind, Orthopedically
Impaired, ADHD/ADD  
**Ordering Information:** Free on the web site identified below.  
**Cost (As of Date Entered):** Free on web site  
**Website:** [http://jset.unlv.edu/17.2/asseds/rose.html](http://jset.unlv.edu/17.2/asseds/rose.html)

### 240. Disability and the Family

**Publisher:** Abilitymagazine.com  
**Publication Date:** January 1997  
**Review:** This article discusses the issues that a family faces when caring for a child with a disability. It makes suggestions about where to turn to find help for some common problems.

The first part of the article deals with medical/legal issues relating to the child’s medical care and insurance coverage. It offers important information on the rights of the child to treatment, and the parent to medical records. This part of the article takes a slightly antagonistic tone, warning parents that the physician and health insurance companies might not have the child’s best interest at heart, but might instead be more interested in saving money by denying treatments.

The second part of the article discusses the psychological reactions of parents to their child’s diagnosis of a disability. The author points out that some of the distrust of medical professionals during this time might stem from the denial phase of the grieving process. The author continues and lists some of the other coping stages that parents experience in the course of coming to an acceptance of their child’s disability and the way that it will continue to affect their family's dynamics.

"The lesson of this story is to seek help if you are finding the situation overwhelming."

**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Website:** [http://www.abilitymagazine.com/diana_family.html](http://www.abilitymagazine.com/diana_family.html)

### 241. Disability Awareness Kit

**Author(s):** State Library of Victoria  
**Publisher:** Royal Victorian Institute for the Blind  
**Publication Date:** January 2002  
**Review:** Disability awareness is becoming more and more important. New laws are being passed
238. Dictation and Speech Recognition Technology as Test Accommodations

**Author(s):** Charles A Macarthur and Albert R. Cavalier  
**Publisher:** Council for Exceptional Children  
**Publication Date:** January 2004  
**Review:** This research paper investigates and compares the potential of dictation to a scribe with dictation using speech recognition software as a test accommodation for students with learning disabilities.

The first question investigated is the issue of using handwritten composition versus dictation with speech recognition software. It was found that high school students with and without disabilities could learn to use speech recognition software with acceptable accuracy. In essays written with speech recognition software, the composition was generally improved over the traditionally hand-written essays.

The second question was whether dictation using speech recognition software or dictation to a scribe would improve the quality of the essays. The evidence indicates that software-driven dictation has the potential to improve the writing performance of students with learning disabilities by removing the barrier created by difficulties with mechanics. However, the better essays were produced when dictating to a scribe.

While essays produced through use of a scribe were better in quality, the paper makes the point that use of a scribe is not true independence. The authors summarize by stating that the research proves there is great potential for improving the writing performance of students with learning disabilities through the use of dictation and speech recognition technology.

**Type of Material:** Research Paper  
**Audience:** Service Providers  
**Target Disability:** Learning Disabilities  
**Alternate Formats:** Large Print, Large Print  
**Ordering Information:** 1110 North Glebe Road  
Suite 300  
Arlington, VA 22201-5704  
Toll-free: 888/CEC-SPED  
Local: 703/620-3660  
TTY: 866/915-5000 (text only)  
Fax: 703/264-9494  
**Cost (As of Date Entered):** No charge  
**Website:** [http://journals.sped.org/EC/Archive_Articles/VOLUME71NUMBER1Fall2004_EC_MacArth ur%2071-1.pdf](http://journals.sped.org/EC/Archive_Articles/VOLUME71NUMBER1Fall2004_EC_MacArth ur%2071-1.pdf)

239. Digital Text in the Classroom

**Author(s):** Skip Stahl, Mark Aronica  
**Publisher:** Journal of Special Education Technology  
**Publication Date:** January 2002  
**Review:** This well written and informative article begins by explaining why digital text is more flexible and superior to standard print textbooks for students with disabilities. The authors go on to cite how changes in the law and the growing awareness of the power of these
236. Designing Accessible Curriculum

Author(s): Laurie Harrison  
Publisher: University of Toronto  
Publication Date: January 2004  
Review: This is a course on designing accessible curriculum. It is a three week course created by Laurie Harrison from the University of Toronto. This course was designed to be self-paced and takes approximately three weeks, depending upon the time given each week. The course is a mixture of information and hands-on activities required of the participants. The information can be taken in any order based on interest. The course content includes background information on adaptive and accessible technology, basic design considerations and strategies, and advanced web-based design of multimedia components. This workshop is credible and is a great tool for awareness of and increased knowledge about the design of accessible curriculum. Included is a bulletin board for students and professors to discuss issues and post comments.  
Type of Material: Training Material  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Cost (As of Date Entered): No charge  
Website: http://snow.utoronto.ca/prof_dev/ict/access/index.html

237. Developing Accessible Play Space

Author(s): Karen Dunn, Michele Moore, and Pippa Murray  
Publisher: Office of the Deputy Prime Minister  
Publication Date: January 2001  
Review: This is a comprehensive guide to designing, creating, and implementing safe play spaces for children with disabilities. Although written in the United Kingdom, the content is applicable to any locale that cares about the safety of all its children. The guide does not focus on impairment-specific accessibility, but on designing ALL play spaces to be accessible to all children. Perhaps every piece of equipment cannot be used by all children, but the focus is that all children can experience the joy of playing at a communal play space. An ultimate desired outcome of this project is not only that all children can play together, but that parents will also come together and build an alliance that will benefit their communities.

The guide gives tips on how to get started, how to find knowledgeable consultants (including children with disabilities and their parents), how to design an all-inclusive play space, and then how to make it happen through funding, policy changes, and community partnerships.

Type of Material: Resource Guide  
Audience: Parents / Family, People with Disabilities, Rehabilitation Professionals  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): No charge  
Website: http://www.odpm.gov.uk/pub/763/developingaccessibleplayspaceagoodpracticeguidePDF766Kb_id1127763.pdf
successful with the game. The Home page lists eight review articles on specific games that have been written in the past two months. This allows the ‘gamers’ to follow the ever increasing number of games available. There is a list of about 300 games for the PC, with an additional list of PC Budget Games, all only a few years old. More lists are available for PlayStation2, Xbox, GameCube, GBA, Nintendo DS and N-Gage games.

A Deaf Gamers Classification is included with criteria for classification grades, and a list of about 30 games is given with game title, publisher, format, rating and DG (Deaf Gamers) Classification. Reviews of games are quite detailed, two pages in length, with pictures and price in British pounds. The site would be of great interest to those who are deaf and looking for appropriate games. It would also be of assistance to those who are interested in developing games for the deaf.

Links are listed for different sites of interest to the deaf community, forums, hardware, articles, and contact information.

NOTE: Games listed do not include those for the Macintosh or Apple family of computers.

**Type of Material**: Website  
**Audience**: Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals  
**Target Disability**: Deaf / Blind  
**Cost (As of Date Entered)**: No charge  
**Website**: [http://www.deafgamers.com](http://www.deafgamers.com)

### 234. Deaf Today.com

**Publication Date**: January 2003  
**Review**: Deaf Today succeeds in "bringing you the news daily from A to Z from around the world."
Deaf Today is essentially a headline index offering links to a series of daily news stories sorted by date, with archives going back slightly less than thirty days at a time. Need a weekly headline for your classroom social studies lesson or an article discussing national trends in science, education, medicine, entertainment, art, or law? Deaf Today offers news in all of these areas.

**Type of Material**: Website  
**Audience**: Educators, Parents / Family, People with Disabilities  
**Target Disability**: Hearing Impairments / Deaf  
**Cost (As of Date Entered)**: Free  

### 235. Dental Hygiene

**Publisher**: Infinitec Inc.  
**Publication Date**: January 1999  
**Review**: This simple article is a first person recommendation of devices and materials one can use to improve dental hygiene, even if one is unable to use both hands. The author recommends specific devices, and discusses mouthwashes, electric toothbrushes, flosses, and other equipment that helps individuals with limited use of their arms and hands.

**Type of Material**: Article  
**Audience**: Service Providers  
**Target Disability**: Brain Injury and Stroke, Cerebral Palsy, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Spina Bifida, Orthopedically Impaired  
**Cost (As of Date Entered)**: Free
231. Dasher

Author(s): David MacKay  
Publication Date: January 2002  
Review: Dasher is a free software program for text entry, driven by natural pointing gestures. It can be used whenever a full-size keyboard cannot be used such as on a palmtop computer or with a joystick, touchscreen, trackball, headpointer, or eyetracker. The website includes demonstrations, user comments, explanations about hardware options, use with speech synthesis, and web-browsing capabilities, information on the languages supported by the software, plus the free download. Although initial observation gives one the impression that this may be a difficult program to master, user input and demonstrations show that it is much easier than it appears. The website has lots of information for an interested person to look through and make an informed decision, although with a free download, there is nothing to lose in trying.  
Type of Material: Website  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities  
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired  
Alternate Formats: Foreign Language - Spanish  
Cost (As of Date Entered): No charge  
Website: [http://www.inference.phy.cam.ac.uk/dasher/](http://www.inference.phy.cam.ac.uk/dasher/)

232. DEAFBASE

Publisher: Deafbase LLC  
Publication Date: January 2005  
Review: This website is established as a "meeting place" for deaf individuals and for information on communication, legislation, and culture by those interested in the deaf population. It consists of news and announcements, job listings, chat rooms and forums, buy-and-sell page for specialized products, 711 relay connection, schedule of events, and email services. There's a lot to read and look at on this site, especially for someone wanting to learn about deaf culture and communication. Many links are available and the ability to use this site as a connecting point via chat rooms, email, and relay is especially valuable.  
Type of Material: Website  
Audience: Parents / Family, People with Disabilities  
Target Disability: Hearing Impairments / Deaf  
Cost (As of Date Entered): No charge  
Website: [http://www.deafbase.com](http://www.deafbase.com)

233. Deaf Gamers

Publication Date: January 2005  
Review: This website, created in the United Kingdom, has an extensive listing of computer games that have been reviewed for use by those without hearing. The introduction notes that popular games are often not described sufficiently for those who are deaf to know whether or not they will be
Review: This article, published in the Harvard Education Letter (Online) describes a research project study that was completed by CAST with funding from OSEP to evaluate 'Thinking Reader', a reading program for students with learning disabilities.

Thinking Reader is a software program that uses the elements of “reciprocal teaching”, an instructional method developed in the 1980’s. This is an interactive reading approach; students see and hear text presented on the computer and when prompted, must answer embedded questions. Questions vary from concrete to analytical and responses are automatically saved in a student study file. In post-testing, students who used Thinking Reader gained a half-year grade level in reading comprehension compared to the control group students who only made slight gains. The results are described as “promising” but further research is indicated. Also included in the article is some information which describes CAST and some of its work. There are references at the end.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Learning Disabilities
Cost (As of Date Entered): no charge
Website: http://www.edletter.org/past/issues/2002-jf/digitalage.shtml

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230. DAF/FAF Assistant

Author(s): ArtifactSoft
Publisher: Artifact
Publication Date: January 2003
Review: This software product is designed to help people who stutter to improve their speech and gain self confidence. DAF means Delayed Auditory Feedback and FAF means Frequency Altered Feedback. The software is based on the notion that people who stutter can become more fluent if they speak text at the same time another person does. This allows the speaker to hear his/her own voice with a shift in pitch.

A link on the website compares this software to similar products which seem to be much more costly. There is a version available for Pocket PC’s using Windows Mobile 2003 for Pocket PC and regular PC’s. A registered version of DAF/FAF Assistant Single User costs $29.95, DAF/FAF Assistant Professional costs $39.95. A registered version of Pocket DAF/FAF Assistant Single User costs $69.95, Pocket DAF/FAF Assistant Professional costs $89.95.

This website provides information including FAQ’s about the latest version of the software. You can obtain a demo of the software for seven days (PC) and 10 days (PocketPC) use. This is only available on the Windows platform.

Speech Pathologists queried about this product were skeptical. As with any ‘treatment’ option, it may be successful with some clients and is dependent upon the individual and administration of the product.

Type of Material: Software
Audience: People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Communication and Speech People who Stutter
Ordering Information: http://www.artefactsoft.com/index.htm
assessment options (group process--SETT) and examples of successful team-supported assessments Wisconsin Assistive Technology Initiative, Georgia Project for Assistive Technology; developing AT-implementation teams (leadership teams); professional development and training support; the importance of ongoing technical assistance; and, the need to access a variety of technology (hardware and software), both for trial periods and long-term use, to lessen problems caused by outdated technology; the relationship between UDL and AT; the nature of AT in the classroom.

Type of Material: Article
Audience: AT Professionals, Educators
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/te700.htm

228. CubeWriter

Author(s): Mary Hellman
Publisher: MK Technologies
Publication Date: January 2005
Review: CubeWriter is an onscreen keyboard and word prediction tool. It can also be used with other input devices such as touchscreens, switch/scanning, alternative keyboards, or mouse. It will work with any text based application. The software is very easy to use although unlike other word prediction programs, may require a bit more knowledge of how to spell words the user seeks.

There are 3 different levels of CubeWriter software: one for k-2nd grade, one for grades 3-6, and one for grade 7-adult. These can be purchased separately or together as a package. There is also bundle pricing for school districts. The vocabularies are smaller than other products in the same class. There is no text to speech feature in this software so users will not be able to hear what they type.

The website provides information and demonstration of the on-screen keyboard as well as a 45 day free trial.

Type of Material: Software
Audience: AT Professionals, Educators
Target Disability: General / Non-disability Specific
Ordering Information: MK Technologies
417 Huron Drive
Bismarck, ND 58503
(701) 255-7930
mktech@bis.midco.net
Cost (As of Date Entered): $79 level 1; $89 level 2; $99 level 3; $149/all
Website: http://www.cubewriter.com

229. Curriculum Access in the Digital Age

Author(s): David T. Gordon
Publisher: Harvard Education Letter Research Online
Publication Date: January 2002
Act). It offers the opportunity to join the Council for Exceptional Children, as well as its subgroups relating to specific disabilities and age groups. Although it says that it is intended for parents as well as educators, according to their statistics, there are few parents who participate. There is little on the site that relates to assistive technology, except as it is referenced in IDEA.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Website:** [http://www.cec.sped.org](http://www.cec.sped.org)

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**226. Criteria for Using Voice Input As a Writing Aid**

**Author(s):** LATAN Staff  
**Publisher:** LATAN  
**Publication Date:** January 2000  
**Review:** LATAN has created a simple one-page report that describes voice recognition software and discusses the abilities that an individual needs in order to become efficient using voice input. It lists seven skills that the potential user needs in order to become successful with this technology, and the reasons why those skills are necessary.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Communication and Speech, Mobility Impaired, Orthopedically Impaired  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** To find the article on LATAN's website, click on Tech Notes on the homepage. A list of hyperlinked articles will appear. This is one of them.  

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**227. Critical Issue: Enhancing System Change and Academic Success Through Assistive Technologies for K-12 Students With Special Needs**

**Author(s):** P. Reed, PhD; M. Clifford; A. Svedkausaite  
**Publisher:** North Central Regional Educational Laboratory (Learning Point Associates)  
**Publication Date:** January 2004  
**Review:** This Pathways Critical Issue from NCREL is essentially a problem-solving map for educators and policymakers trying to focus on AT in their steps toward system change and school improvement. Educators and AT professionals will value the issue to issue approach. Though seventeen pages could cost readers some time, the information is worth it; for readers who want access to inter-related information, the online article is full of links to other resources. In addition to offering action steps, system change goals, pitfalls, and a summary of viewpoints, the authors take time to discuss and dissect the quandaries that are common in schools' efforts to understand, use and improve AT options for special needs students: federal policy (IDEA pre-2004 reauthorization and NCLB) definitions and the impact of AYP; funding for AT; examples of successful systems change (Shawnee Mission School District) and guidelines based on these achievements; tools for documenting district needs and goals (Quality Indicators, School District Profile, state AT Manuals); forms and complex processes, especially the referral and request for services forms and the need to educate teachers in the use of these forms as an AT resource;
example, effect and affect. This website has 3210 words that can be searched for and specific
information given in order to use the word correctly. Each word is compared, defined, and multiple
examples of correct usage are given in a sentence for more clarity. It also asks for feedback and
suggestions in case an error or problem was found. What a great resource for all ages and abilities!

**Type of Material:** Website

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation
Professionals, Service Providers

**Target Disability:** General / Non-disability Specific, Learning Disabilities

**Cost (As of Date Entered):** no charge

**Website:** [http://www.confusingwords.com](http://www.confusingwords.com)

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**224. ConnSENSE Bulletin**

**Author(s):** Multiple

**Publisher:** Chauncey Rucker

**Publication Date:** January 2003

**Review:** The ConnSENSE Bulletin reflects the publisher's decree to provide "practical resources on
assistive technology for people with disabilities." There are seven specific categories of archives:
Articles, Washington, Resources, Positions, Reviews, Links, and Conferences. They are the meat of
this site and average 60 to 80 entries per archive, carefully sorted by volume, issue number, and
publication date. At the time of this review, there were at least 481 notations on the ConnSENSE
Bulletin site, from the "What's New" entries to the "AT Conferences" listings.

The mountains of information can present problems for users unaccustomed to horizontal page
navigation bars. However, every page is titled and fully accessible from any other page on the site.
Site searches, by Free Find, are simple; and the site map is excellent. The ConnSENSE Bulletin
website's greatest strengths are the carefully ordered archives and the straightforward, no-frills, site
design. Readers can also sign up for a bi-monthly newsletter informing them of recent additions to the
Bulletin.

**Type of Material:** Website

**Audience:** Service Providers

**Target Disability:** General / Non-disability Specific

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** [http://www.connsensebulletin.com](http://www.connsensebulletin.com)

**Cost (As of Date Entered):** free

**Website:** [http://www.connsensebulletin.com](http://www.connsensebulletin.com)

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**225. Council on Exceptional Children Website**

**Publisher:** Council on Exceptional Children Website

**Publication Date:** April 2004

**Review:** This site is focused mainly on educators, it includes links to many sites for specific subject
matters, as well as a large number of sites relating to IDEA (Individuals with Disabilities Education
The article contains a comprehensive list of the companies that manufacture and distribute adjustable workstations along with their contact information.

**Type of Material:** Resource Guide  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Brain Injury and Stroke, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired  
**Ordering Information:** Download from web site or contact:

Tech Connections of the United Cerebral Palsy Associations  
490 Tenth Street, NW  
Atlanta, GA 30318  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.catea.org/quickrefguides/guides/Workstations.pdf](http://www.catea.org/quickrefguides/guides/Workstations.pdf)

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### 222. Conference Theme: How to Make AT a Core Part of Learning

**Author(s):** Laura Ascione  
**Publisher:** eSchool News  
**Publication Date:** January 2005  
**Review:** At the 2005 National Center for Technology Innovation conference, professionals and policymakers came together to identify the chief barriers to making AT a core component in educational curriculum. In addition to identifying the barriers, participants explored ideas and ways to break down the barriers. This article summarizes the barriers in three categories: 1) inadequate teacher preparation, 2) low awareness, and 3) leadership gaps.

Advances in technology are changing the nature of teaching and learning at all levels. Because of universal design (UD), students are more empowered to choose an educational format that takes full advantage of their learning preferences. The greatest challenge is to make AT a core part of the school curriculum. This article investigates the barriers and then describes universal design and accessibility options that will improve outcomes and increase AT integration.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Large Print, Large Print  
**Ordering Information:**  
Fax: (301) 913-0119  
info@eschoolnews.com  
**Cost (As of Date Entered):** No charge  

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### 223. Confusing Words

**Author(s):** Richard and Ann Wanderman  
**Publisher:** Richard and Ann Wanderman  
**Publication Date:** January 2002  
**Review:** The English language is hard to master and it is hard to be a proficient writer. This website is a great tool for writers of all abilities to use to help with common words that are confused. For
219. Computers and Speech

**Publisher:** iansyst, Ltd.

**Publication Date:** January 2002

**Review:** This article was written by a vendor in Great Britain; however, this does not decrease the value of the information provided to the reader. It discusses software and offers helpful information about the use of software programs for voice input such as Dragon Naturally Speaking and IBM Via Voice. Additionally, the article covers voice input for the Macintosh platform--IBM Via Voice for OSX. Dyslexic.com also discusses text-to-speech software such as Text Help Read and Write and Co:Writer. The article concludes by providing information about OCR (optical character recognition) software which, when paired with a scanner, can allow users to scan books or magazines into a computer which can be read back to them.

**Type of Material:** Article

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** Cerebral Palsy, Learning Disabilities, Mobility Impaired

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** iANSYST Ltd., Fen House, Fen Road, Cambridge CB4 1UN, UK. Tel: 01223 420101

Email: sales@dyslexic.com

**Cost (As of Date Entered):** Free

**Website:** [http://www.dyslexic.com/database/articles/print/overview.html](http://www.dyslexic.com/database/articles/print/overview.html)

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220. Computer Use for Young Special Needs Children: An Instructional Guide for Families and Professionals

**Author(s):** Los Angeles Unified School District

**Publisher:** Los Angeles Unified School District

**Publication Date:** April 2004

**Review:** This is a report of a research project conducted with 79 young children. The information gathered is usable within the context of any early childhood setting or at home. It raises the level of awareness of teachers and parents of the importance of planning and setting goals for computer use.

**Type of Material:** Report

**Audience:** Service Providers

**Target Disability:** General / Non-disability Specific

**Ordering Information:** UCLA Intervention Program for Children with Disabilities, 1000 Veterans Ave. Room 23-10 Los Angeles, CA 90095 310-825-4821

E-mail- twebb@pediatrics.medscho.ucla.edu

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221. Computer Workstations

**Author(s):** Tech Connections AT Quick Reference Guides

**Publisher:** CATEA/Tech Connections

**Publication Date:** January 2001

**Review:** This article describes the various kinds of adjustable workstations (computer tables) and their features. The information is presented in a "frequently asked questions" format that is easy to follow.
218. Computer Resources for People with Disabilities: A Guide to Assistive Technologies, Tools and Resources for People of All Ages

Author(s): Alliance for Technology Access  
Publisher: Hunter House  
Publication Date: January 2004  
Review: This is the fourth edition of Computer Resources for People with Disabilities, a comprehensive book authored by the Alliance for Technology Access. It is an excellent AT resource. It is a valuable guide to AT solutions based on the collaborative model used nationwide in ATA centers. The model is well represented in the book and that’s what makes it so useful. The goal of the book is to guide consumers through the process of looking at, evaluating, acquiring and maintaining the range of assistive technology tools that might be most helpful in achieving independence and success in education, vocation, communication or recreation. The book is written in a style that makes it accessible to all levels of readers who might have AT related questions. Narratives, worksheets and resource materials are combined as a guide to help consumers develop AT solutions.

In the first part of the book, case examples and easy-to-use work sheets are available to guide the reader through the process of creating and developing an AT vision and plan. Necessary definitions and legal information are presented. Questions are posed to the reader to facilitate the planning process. All resources are listed in Part III for easy access to URLs, addresses and phone numbers.

The second part of the book is the Technology Toolbox. A seven-page grid is used to help an individual identify strengths in technology access, such as vision, or fine motor dexterity, as well as difficulties the user might encounter, for example, difficulty reading. By using the grid, the user is able to quickly find a list of possible technology solutions which can be further explored in subsequent sections of Part II. There is information about each of the items listed, such as what the tool can do, what a potential user's abilities might be, description of features, cost, and vendors. This is an extremely important part of the book as it helps to identify the most pertinent possible AT solutions from a vast range of items currently available.

Part III of the book is a list of resources, including legislation related to AT, all ATA centers, international resources, conferences, publications, internet resources and AT vendors.

The book will be available on the ATA website, free of charge, in 2005. For those who prefer printed format, the book is available through the Alliance for Technology Access, or from Hunter House.

Type of Material: Book  
Audience: Service Providers  
Target Disability: General / Non-disability Specific  
Ordering Information: Alliance for Technology Access  
Online:  
Email: atainfo@ataccess.org with your name, phone number and convenient time.  
Fax: 707.765.2080 with your name, phone number  
Phone: 800.914.3017  
or  
Hunter House  
800.266.5592  
Cost (As of Date Entered): Paperback: $24.95, Hardcover: $31.95  
Website: http://www.ataccess.org/resources/atabook/default.html
is used, and some of the disadvantages of these products. The information is presented in a “frequently asked questions” format that is easy to follow.

The article points out the accessibility options within the Windows operating system including the ability to enlarge text and icons and improve the screen contrast. There is also information about the use of Closed Circuit TVs and the voice output capabilities that come with some screen magnification products.

**Type of Material:** Resource Guide  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Visual Impairment / Blind  
**Ordering Information:** Download from web site or contact Tech Connections of the United Cerebral Palsy Association

490 Tenth St. NW

Atlanta, GA 30318

**Cost (As of Date Entered):** Free  
**Website:** [http://www.catea.org/quickrefguides.guides/Magnify.pdf](http://www.catea.org/quickrefguides/guides/Magnify.pdf)

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**217. Computer Play with Young Children**

**Author(s):** Let's Play Project  
**Publisher:** University of Buffalo Center for Assistive Technology  
**Publication Date:** January 2000  
**Review:** This outstanding article is a compilation by the Let's Play! Project of computer software and adaptive devices that aid in computer access that is suitable for children birth to three years old. The software is sorted by vendor and is coded by purpose (i.e. exploratory, choice making, and purposeful choices). The authors have also provided resources for shareware and public domain software that may be purchased or downloaded for a minimal charge or no charge. "Computer Play with Young Children" also has a matrix of various adaptations (touch windows, large trackballs, switch interfaces and adapted keyboards) that are appropriate for adapting the computer so that young children may get the most out of a computer.

**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Let's Play Project

University of Buffalo/Center for Assistive Technology

515 Kimball Tower

Buffalo NY 14214

716 829-3141  
**Cost (As of Date Entered):** No Charge  
**Website:** [http://cosmos.ot.buffalo.edu/letsplay/products/COMPLAY.doc](http://cosmos.ot.buffalo.edu/letsplay/products/COMPLAY.doc)
Mobility Impairments- alternative keyboard and mouse input devices word prediction. The final group mentioned is Health Impairments. The students in this category reported the value of the Internet in keeping in touch with school mates and teachers while being hospitalized.

A major theme that comes out of the film is that being able to do things yourself is very important to these students.

There are several options for downloading the video to fit your Internet connection interference but users should be aware that download time and buffering, it takes twenty minutes on average to be able to watch the whole video.

**Type of Material:** Video  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** Multiple Disabilities  
**Ordering Information:** www.washington.edu/doit/Video/comp_acc.html  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.washington.edu/doit/Video/comp_acc.html](http://www.washington.edu/doit/Video/comp_acc.html)

**215. Computer-Based Reading Instruction for Young Children With Disabilities**

**Author(s):** Yeunjoo Lee, Cythia O. Vail  
**Publisher:** Journal of Special Education Technology  
**Publication Date:** January 2005  
**Review:** In this 2005 study, Lee and Vail explored the value of computer assisted intervention in reading for students with disabilities. This study will be most valuable for educators trying to build instructional reinforcements through new technology and for those interested in the implications of computer assisted instruction.

Lee and Vail point to several areas of future investigation and research and are careful to note the limitations of the study. Educators might find that the limitations of the study are as valuable as the study results.

The researchers concluded that computer based reading instruction does have benefits for students with disabilities and that this trend reflects the few studies that have used computer programs to teach reading skills. Lee and Vail also note several important points: that "multimedia do not inherently provide UDL, which can be achieved only by appropriate instructional design;” and "the change in a student’s performance is the result of instruction . . . not the use of the media per se."

**Type of Material:** Research Paper  
**Audience:** Educators  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://jset.unlv.edu/20/JSETv20n1.pdf](http://jset.unlv.edu/20/JSETv20n1.pdf)

**216. Computer Magnification**

**Author(s):** Tech Connections AT Quick Reference Guides  
**Publisher:** CATEA/Tech Connections  
**Publication Date:** January 2001  
**Review:** This article provides information about screen magnification software and hardware, how it...
213. Comparison of Speech Recognition Software

**Author(s):** Neil Milliken  
**Publisher:** Dyslexic.com  
**Publication Date:** January 2003  
**Review:** This article is a comparison of Speech Recognition (SR) software. Several speech recognition options are mentioned including Microsoft Speech Recognition, Via Voice for Mac and PC, Dragon Naturally Speaking and iListen. Features of each product were examined, including ease of installation, ease of training and time taken, ease of use, transcription accuracy, integration with other computer programs, key features, prices, and system requirements. Dragon Naturally Speaking and Via Voice are heavily focused upon as being the most sophisticated, powerful and user friendly.

Methods used in evaluating products are described with links embedded in the text for more information. Charts are included in the document for easy comparison of system requirements, features, and price. Just one thing to keep in mind, since the article is part of a UK-based company that has products for people who have dyslexia, the prices of the products and accessories are in British pounds, not dollars.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities  
**Target Disability:** Autism, Communication and Speech, Learning Disabilities, ADHD/ADD  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.dyslexic.com/dictcomp.htm](http://www.dyslexic.com/dictcomp.htm)

214. Computer Access: In our Own Words

**Author(s):** DO -IT  
**Publisher:** DO-IT University of Washington  
**Publication Date:** January 2002  
**Review:** This 10 minute streaming video shows a variety of technology solutions available for students who have disabilities. Students are really the users of the AT solutions that are demonstrated. The video is captioned and audio described.

Technology solutions are presented for a variety of disability conditions including: Hearing Impairments -captioning the Internet and blinking the computer screen; Speech Impairments- using the internet and a voice output device; Learning Disabilities, using a word processor with spell check and dictionaries and text to speech software with scanned books and speech to text programs; and
Author(s): National Institute on Deafness and other Communication Disorders (NIDCD)
Publisher: National Institutes of Health (NIH)
Publication Date: January 2000
Review: This is a brief, but concise and understandable article that explains what autism is, population affected, and communication problems associated with autism. Also included is information about normal speech/language development, treatment of speech/language impairments, and research being conducted to improve the communication skills of individuals with autism. Excellent contacts are provided, for example institutes, professional organizations, and support organizations.
Type of Material: Article
Audience: Service Providers
Target Disability: Autism, Communication and Speech, Developmental Disabilities
Ordering Information: NIDCD at NIH
31 Center Dr., MSC 2320
Bethesda, MD 20892-2320
301-402-0252 TTY 301-496-7243 Voice
Cost (As of Date Entered): no cost
Website: http://www.nidcd.nih.gov/health/voice/autism.asp

211. Communication Interactions: It Takes Two

Author(s): Stremel, K.
Publisher: dblink
Publication Date: January 2000
Review: This article is adapted from a fact sheet developed by Kathleen Stremel for the Mississippi Statewide Project for Individuals Who are Deaf-Blind. It gives a definition of communication and states that communication is power to the child who is deaf-blind. The article is an excellent resource because it encourages parents and caregivers to provide opportunities for a child who is deaf-blind to communicate.
Type of Material: Article
Target Disability: Communication and Speech, Deaf / Blind
Website: http://www.dblink.org/lib/comm.htm

212. Company Helps Deaf Community Communicate

Author(s): Pocono Record
Publisher: Deaf Today
Publication Date: January 2004
Review: The Americans with Disabilities Act (ADA) requires hospitals to provide interpreters to deaf patients at no charge. This often presents a challenge because it can be difficult to find an interpreter during a medical emergency. This article is about a company in Pittsburgh called Deaf-Talk. Deaf-Talk contracts with hospitals to provide a link between hospitals and interpreters via teleconferencing. Interpreters for Deaf-Talk provide sign language interpretation and interpretation in foreign languages as well. When hospitals subscribe to Deaf-Talk (this costs about $400 per month) they receive a portable cart with a television, video camera and other equipment. The subscription is generally used when interpreting services are needed immediately such as in the emergency room and does not take the place of the need for one-to-one interpreters. This service is invaluable to people who are deaf and in need of immediate medical care as well as parents who are deaf so that they may communicate with their child’s medical staff.
how things are done in Maine through the CITE project. Roles and responsibilities of all parties in the educational process are defined. AT devices and services are described. The role of IDEA, ADA, and Section 504 in relation to the IEP are discussed, as well as how to integrate AT into an IEP. The school's role and responsibilities in regard to students with AT are explored in detail with emphasis on what schools cannot do. Although some information is specific to Maine, this guide is applicable to anyone with a child with a disability and is written in clear, simple language so everyone can understand and apply the information.

**Type of Material**: Resource Guide  
**Audience**: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability**: General / Non-disability Specific  
**Ordering Information**:  
207-621-3195 Voice  
207-621-3482 TTY  
207-621-3193 FAX  
iweb@doe.k12.me.us  
**Website**: [http://www.mecite.doe.k12.me.us/caq/index.htm](http://www.mecite.doe.k12.me.us/caq/index.htm)

### 209. Communicate: Webwide

**Author(s)**: Widgit Software  
**Publisher**: Widgit Software  
**Publication Date**: January 2005  
**Review**: Communicate: Webwide is the first symbol-supported web browser that is available to make web browsing more accessible to those who have difficulty accessing text-based English websites. This is a subscription web-based service, allowing the user to access web pages in multiple ways including normal view, simplified layout or symbol support. Users can customize the way they browse the Internet to make web pages meet individual needs. Many options, including full speech support, are available for customizing this view. A small program is installed on the user's computer that allows a log-in into the network-based system. All upgrades to the program occur on the network, meaning that the user automatically has the benefits of these changes when logging on to the system.

Lists of URLs that have been identified to work well for symbol readers are available at the web portal. This software is available in a free trial version for thirty days. The trial version convinced this reviewer that Communicate:Webwide can be a very valuable system for decreasing the digital divide for learners who do not thrive in a text based world.

**Type of Material**: Software  
**Audience**: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability**: Communication and Speech, Developmental Disabilities, Learning Disabilities, Mental Retardation  
**Ordering Information**:  
**Cost (As of Date Entered)**: Subscription fee: $119.50 for the first year, $104  

### 210. Communication and Autism
207. Color of Language

Publication Date: January 2004
Review: This website was developed to address the literacy needs of deaf and hard-of-hearing children. Statistics citing the average reading levels at graduation are listed along with legislation intended to remedy the disparities between hearing and deaf/HOH children. The site offers a number of products developed to help parents provide appropriate materials for their children to assist in language development and reading skills. There are videos, software, posters, and calendars available for purchase through the website, all based on sign language as a literacy aid, as well as a communication mode.

This site contains good information for parents who are looking for ways to help their children who communicate in sign language to improve their reading and literacy levels.

Type of Material: Website
Audience: Educators, Parents / Family, Service Providers
Target Disability: Hearing Impairments / Deaf
Ordering Information: Color of Language
Website: http://www.coloroflanguage.com

208. Commonly Asked Questions About Assistive Technology Devices and Services: An Educators', Parents' and Advocates' Guide

Publisher: Maine CITE Project
Publication Date: January 2001
Review: This guide discusses AT in a comprehensive way, although there are some references to
204. Cognitive Limitations: Functional Application of Assistive Technology

Author(s): Christopher M. Lee and Carolyn Phillips
Publisher: Georgia Tools for Life
Publication Date: April 2004
Review: This is a PDF file that is formatted to look like a Powerpoint presentation. It is geared toward assistive technology (AT) providers although it contains good information about various cognitive disabilities and the effect AT can have on people with these conditions. Different types of cognitive disabilities are defined and the problems associated with each is listed.

A good portion of this presentation is devoted to AT. It begins with listing the characteristics of a quality AT assessment. The many different categories of AT, including augmentative and alternative communication (AAC) devices, FM assistive listening systems, screen magnification programs and more are listed along with contact information for the manufacturers. There are also many more disability-specific resources listed.

Note: In order to view this document, the user must have Adobe Acrobat Reader. It can be downloaded for free on the Adobe web site http://www.adobe.com.

Type of Material: Training Material
Audience: Rehabilitation Professionals
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Learning Disabilities, Mental Health Impairments, Mental Retardation, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired
Ordering Information: Free on the web site.
Cost (As of Date Entered): Free
Website: http://www.gatfl.org/publications/coglimits.pdf

205. College and Career Programs for Deaf Students

Author(s): ed: Susan King, James DeCaro, Michael Karchner, Kevin Coli
Publisher: Gallaudet University
Publication Date: January 2005
Review: This website offers information for deaf students as they are considering their choice of careers and the colleges that will help them reach their goals. On the site is a list of 100 post-secondary institutions across the United States, alphabetized by state, plus information on admission, costs, and curriculum offered. There is also a Question and Answer section for students and parents to gather important information. A list of available majors and degrees offered is also provided. There is a program locator screen to help students choose a college by location or for their particular career aspiration. Program descriptions are available as well as contact information for the 4 regional locations. Bright colors make looking at this website easy and more engaging. This is a good hands-on resource for students and their parents alike.

Type of Material: Website
Audience: Educators, Parents / Family, People with Disabilities
Target Disability: Hearing Impairments / Deaf
Cost (As of Date Entered): No charge
Website: http://gri.gallaudet.edu/ccg/

206. Colleges with Programs for Learning Disabled Students
202. Cochlear Implants (Fact Sheet 2000)

Author(s): National Institute on Deafness and other Communication Disorders (NIDCD)
Publisher: National Institutes on Health (NIH)
Publication Date: January 2000
Review: This fact sheet provides easy-to-read information pertaining to cochlear implants. It describes what a cochlear implant is, how it works, who gets an implant, how someone receives one, and where to get additional information. Good resources are given for those who are considering an implant.
Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: Communication and Speech, Hearing Impairments / Deaf
Ordering Information: NIDCD at NIH
31 Center Dr., MSC 2320
Bethesda, MD 20892-2320

301-402-0252 TTY 301-496-7243 Voice
Cost (As of Date Entered): Free
Website: http://www.nidcd.nih.gov/health/hearing/coch.asp

203. Cognitive Disabilities and Assistive Technology: A Look into the Mind of a Creative Learner

Author(s): Christopher M. Lee and Carolyn P. Phillips
Publisher: Georgia Tools for Life
Publication Date: January 2002
Review: This information is the actual conference handout from the authors' presentation at the 2002 C-SUN conference. It provides definitions of different cognitive disabilities and the effects they have on learning, employment, and daily living.

It then provides case studies of people with cognitive disabilities and demonstrates how technology was utilized to help these individuals be successful in their educational and employment pursuits.

Much of the information is somewhat technical in nature but it is quality information. Parents who are interested in learning as much as they can to advocate for their children will find this document full of useful and interesting information.
Type of Material: Conference Handout
Audience: Rehabilitation Professionals
Target Disability: Autism, Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Learning Disabilities, Mental Health Impairments, Mental Retardation, Multiple Disabilities, Neurological Disorders
Ordering Information: Free on web site.
Website: http://www.gatfl.org/publications/csunlee.pdf
Review: This infosheet provides a fairly complete listing of Closed Circuit Television (CCTV) systems. It offers readers tips on what to features to look for (and which to look out for) in selecting such a system. The difference between inline and out-of-line systems is clearly explained and information is provided on how to use these different systems. The infosheet discusses portable systems, as well as CCTVs that connect to the computer. Each section offers examples of specific products and lists some of their specifications. The paper was written in 2000, and therefore is lacking information on some of the newer products. However, in general, the newer products are produced by the same companies that are mentioned in the Infosheet. It is somewhat difficult to find the products, as many of the links on this page are not current, or they only link to the homepage of the company, not to the page listing specific product information.

Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Multiple Sclerosis, Visual Impairment / Blind
Alternate Formats: Electronic, Electronic
Ordering Information: Available online
Cost (As of Date Entered): free
Website: http://snow.utoronto.ca/technology/products/cctv.html

200. Closing the Gap Website

Author(s): Closing the Gap, Inc.
Publisher: Closing the Gap, Inc.
Publication Date: April 2004
Review: Closing the Gap is known world-wide for the conference it holds each year. The website is a compilation of some of the resources collected by Closing the Gap. It includes a searchable database of hardware/software, although at this point the database seems to have some major holes, as there are only 2000 products listed currently. It also includes a selection of links to other websites of particular interest to educators who have the responsibility for assistive technology in their school systems. Parts of the current and past issues of the Closing the Gap magazine are online and offer good information.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Website: http://www.closingthegap.com

201. Club NDSS

Author(s): National Down Syndrome Society
Publisher: National Down Syndrome Society
Publication Date: January 2002
Review: Club NDSS is a wonderful resource for teens and adults who have Down Syndrome or other developmental disabilities. The NDSS website offers easily understandable information on important issues such as relationships, safety, advocacy, self-determination, school, volunteering, money, employment and more. Club NDSS also provides a tutorial for using the web. The three online lessons teach new users how to use web links, how to use pull down menus and how to use the back and forward buttons on web browsers.

Type of Material: Website
numbers or symbols from a grid or series of grids that appear on-screen and may be linked to each other. This is a time saving way of producing written documents with a minimum of key strokes. Clicker 5 also enables the user to insert pictures, and to use video, audio and animation.

If one is already using Clicker 4, all materials developed in 4 will transfer to Clicker 5. Clicker 5 may be programmed for individual use; other grids are available to users at www.learninggrids.com, a web site where one can search for and download pre-made grids. This can be a very helpful resource, especially for teachers. Multiple grids in the content areas have been submitted by teachers and this resource is updated every two weeks. Registration is free to registered Clicker owners.

System requirements are given for Windows and Mac OS X, and prices range from $99.00 for an upgrade to $199.00 for a single user license. Multiple copies and site licenses are also available. Clicker 5 is available for Windows now, and will be available for Mac OS X in January 2006.

**Type of Material:** Website  
**Audience:** Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Download order form from web site  
**Cost (As of Date Entered):** $99.00 - $999.00  

### 198. Closed Circuit Television

**Author(s):** Adaptive Technology Resource Center  
**Publisher:** Adaptive Technology Resource Center  
**Publication Date:** January 2002  
**Review:** This fact sheet gives a list of products to consider when making a decision about closed circuit television. It describes briefly the two ways in which magnification is achieved and then addresses the several different types. Users are given specific questions to consider when shopping for a closed circuit television and help in identifying the vendor that can meet those needs. This article is complete and accurate to this date.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** People with Disabilities  
**Target Disability:** Deaf / Blind, Visual Impairment / Blind  
**Alternate Formats:** Electronic, Large Print, Electronic, Large Print  
**Ordering Information:** Adaptive Technology Resource Center  
J.P. Roberts Library, First Floor  
University of Toronto  
130 St. George Street  
Toronto, Ontario, Canada  
M5S1 A5  
(416)978-4360  
**Website:** [http://www.utoronto.ca/atrc/reference/tech/cctv.html](http://www.utoronto.ca/atrc/reference/tech/cctv.html)

### 199. Closed Circuit Television (CCTV)

**Author(s):** Adaptive Technology Resource Centre, University of Toronto  
**Publisher:** Adaptive Technology Resource Centre, University of Toronto  
**Publication Date:** January 2000
**196. Cleverkeys**

**Author(s):** John R. Chang from Fornada Software  
**Publisher:** Lexico Publishing Group, LLC  
**Publication Date:** January 2006  
**Review:** Cleverkeys is a free software program developed by Fornada Software. This software enables a user to look up any word within most software applications including e-mail, web browsers, and word processors. It provides a direct link to a dictionary, thesaurus, or reference material as long as the user is online. It is quick and easy to use.

It is possible to configure hot keys for personal preference although the ‘Control-Q’ key provides a direct link to the tools. Users can identify preferred URL’s for access to alternate dictionary or thesaurus websites and it is as simple as highlighting the url and pushing Control plus the hot key.

This is a great way for struggling readers to have direct access to dictionaries and for struggling writers to have direct access to references, including a thesaurus.

**Type of Material:** Software  
**Audience:** People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** free download at www.cleverkeys.com  
**Cost (As of Date Entered):** No charge  

**197. Clicker 5**

**Author(s):** Crick Software  
**Publisher:** Crick Software  
**Publication Date:** January 2005  
**Review:** Clicker 5, from Crick Software, is the latest version of Clicker, an easy-to-use writing support tool. Any word, phrase or even sentence can be accessed with a pre-selected set of letters,
193. Choosing the Most Appropriate Switch

Author(s): Angle, T.
Publisher: Severe Disability Technical Assistance Center at Virginia Commonwealth University Vol. 10(3)
Publication Date: April 2004
Review: When providing an assistive technology evaluation, it may be necessary to choose a switch for an individual with a disability. There are many types of switches available with a wide variety of features. This article outlines those types of features and when it might be appropriate or not for different persons.

Type of Material: Article
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific, Mobility Impaired
Cost (As of Date Entered): Free as of May 2000

194. CLD Infosheet: Assistive Technology

Author(s): Raskind, Marshall
Publisher: Council for Learning Disabilities
Publication Date: January 1998
Review: This well written infosheet addresses the types of assistive technology devices and services that could be helpful to individuals with specific learning disabilities. The sheet begins with a short definition of assistive technology, as determined by IDEA, and includes a more focused definition by learning disability professionals.

The second section focuses on the different areas in which AT can make a difference. Areas covered include: Writing Difficulties, Reading Difficulties, Math Difficulties, Listening Difficulties, Organizational and Memory Difficulties. Each section lists assistive technologies that can be used to address those specific problems.

The last section focuses on the selection and costs of AT and AT services, and on whom one can turn for assistance in the purchase or provision of such devices.

There is a good bibliography with additional sources of information on this subject.

Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: Learning Disabilities, ADHD/ADD
Alternate Formats: Electronic, Electronic
Ordering Information: Download or print from web site or contact:

Council for Learning Disabilities, PO Box 40303, Overland Park, KS 66204; 913/492-8755.

Cost (As of Date Entered): Free on web site
Website: http://www.cldinternational.org/Infosheets/assistive.asp

195. Cleanliness is Next to...
191. Children Help Design Accessible Playground

**Author(s):** Katie Burns  
**Publisher:** North County Times  
**Publication Date:** January 2002

**Review:** This article is about children helping design an accessible playground. The article describes the process in designing a playground that would include access for children with special needs. The planners in the city's recreation division noted that many playgrounds simply provide access to the playgrounds for children without planning for how the children might use the equipment, and what games could actually be played.

In the early stages of planning, groups of children from an elementary school met with a group of adults in the city of Escondido, near San Diego, after school. They participated in the planning of the playground. The children did activities in wheelchairs to better know the play opportunities. Children with disabilities planned for accommodations for their needs.

Money to finance the playground is being pledged, and it is calculated that it will take four to six months from the time the funds are available before the playground is completed.

The article would be of interest to any person, or group, involved in planning a playground for children with disabilities. It is the story of how one community enlisted broad support for their program. More information can be obtained from staff writer Katie Burns at (760) 740-5420 or kburns@nctimes.com

**Type of Material:** Article  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Health Impairments, Mobility Impaired, Multiple Disabilities, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.nctimes.com/articles/2002/02/08/export2610.txt](http://www.nctimes.com/articles/2002/02/08/export2610.txt)

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**Author(s):** Karp, G.  
**Publisher:** O'Reilly and Associates  
**Publication Date:** January 1998

**Review:** This book is written by a long-time wheelchair user and provides a wealth of information to someone new to wheelchairs or someone unhappy with the quality/function of their current chair. He addresses the history of wheelchair use and manufacturing in the U.S., the emotional impact of accepting a wheelchair, the factors to consider, the order in which to consider them when initiating selection of a wheelchair, qualities to look for in a salesman, self-advocacy and involvement in the selection and purchase phase, and specifics of the physical qualities of the chair and available options/accessories. In addition, he includes quotations from "real" people, comparison charts, and illustrations with clear details. He concludes with information on proper maintenance and tips for becoming an efficient and experienced "wheeler."

**Type of Material:** Book  
**Audience:** Service Providers  
**Target Disability:** Mobility Impaired, Multiple Disabilities, Orthopedically Impaired  
**Cost (As of Date Entered):** $9.95 for paperback edition  
**Website:** [http://www.specialneeds.com/books.asp?id=8592](http://www.specialneeds.com/books.asp?id=8592)
189. Centre for Assistive Technology Newsletters

Author(s): Lynne Silcock  
Publisher: Center for Assistive Technology, New Zealand  
Publication Date: January 2005  
Review: The Centre for Assistive Technology, part of the New Zealand Ministry of Education, publishes a quarterly newsletter rich in current resources. Although based in New Zealand, most of the assistive technology reviews are pertinent to the U.S. as well, with the exception of software or hardware dealing with money, and some vocabulary differences; certain nouns will be different such as 'maths' rather than 'math.' Very few of the programs mentioned are unavailable in the United States.

The newsletter focuses on physical access to curriculum areas through technology rather than on curriculum itself. The most recent newsletter, for example, describes math programs that can be used with switches and gives a comprehensive list of software including freeware and commercial products. It also outlines ways to manipulate software to customize it for users.

Readers of these newsletters will find high quality, short descriptions of resources with links to vendor sites, if applicable. This could be a useful site for those who are looking for quick access to information regarding helpful tools.

Type of Material: Newsletter  
Audience: Parents / Family  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): No charge  

190. ChildNet.tv

Author(s): Dan Marino Foundation  
Publisher: ChildNet.tv and Dan Marino Foundation  
Publication Date: January 2004  
Review: Originally created in 2003, ChildNet.tv is a 24/7, interactive, Internet channel focusing on autism and neurological disorders. The site is relatively simple to navigate and also benefits from a WebTV guide as well as stacked-menu viewing that keeps navigational controls in one place while visitors explore the website. ChildNet.tv is parent-, educator-, and provider-friendly and specializes in on-demand video including new releases, lectures, family stories, and therapy presentations.

The downfall of the website is that the on-demand video is not open captioned and not accessible in text format elsewhere on the site.

Type of Material: Website  
Audience: Service Providers  
Target Disability: Autism, Neurological Disorders  
Alternate Formats: Electronic, Electronic  
Cost (As of Date Entered): no charge  
Website: http://childnet.tv/
187. CEC Public Policy Legislative Update: Spelling Announces Proposed Regulations on

**Author(s):** Council for Exceptional Children  
**Publisher:** Council for Exceptional Children  
**Publication Date:** January 2005  
**Review:** In response to Secretary of Education Spelling's formal announcement of proposed regulations to the NCLB 2 percent subgroup Modified Assessment Protocol, the Council for Exceptional Children released a legislative update in mid-December 2005 that explains several key elements of the regulation. For readers who have not seen the original announcement, the CEC update offers access to the original Dept. of Education press release, the text of the unofficial proposed regulations, and other related links to keep readers informed. Readers who are specifically interested in the Council's reaction to the proposed regulations can glean several elements of the Council's position from this online fact sheet.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  

188. CEC Submits Comments to Department of Education on NCLB 2 Percent Assessment Option

**Author(s):** Council for Exceptional Children  
**Publisher:** Council for Exceptional Children  
**Publication Date:** January 2005  
**Review:** This article explains and summarizes the Council for Exceptional Children’s response to proposed regulations by the Department of Education for a 2% flexibility option in testing students with disabilities. The proposed regulations for the 2% flexibility option gives states and districts the ability to modify assessments for 2% of their students with disabilities who do not meet grade level standards. The modified assessments must be aligned with grade level standards. The option to modify assessments can be determined by the IEP team but in no way excuses educational settings from providing students who take the exams with grade level instruction and a regular diploma. Hopefully this option can “quell some of the criticism of teachers and others that No Child Left Behind (NCLB) assessment requirements do not meet the needs of all students.” Comments on the proposed regulations were due to the DOE by February 28, 2006. CEC’s comments and concerns are outlined in the article.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.cec.sped.org/AM/Template.cfm?Section=Home&CONTENTID=5472&TEMPLATE](http://www.cec.sped.org/AM/Template.cfm?Section=Home&CONTENTID=5472&TEMPLATE)
The goal of the Can Do website is to help people, especially kids, develop a more positive attitude and perspective about themselves and the people in the world around them by focusing on what you can do rather than what you can’t do. There are all sorts of activities and materials on the site which facilitate this goal. For example there are: Can Do mini-posters such as ‘I can draw with my feet.’

There are surveys to take which highlight abilities such as ‘I can eat’ or ‘I can be a friend’. The results of the surveys are posted when possible to make a ‘Can Do’ statement.

Similar to the survey are other activities such as word puzzles and crossword puzzles that all support the mission of the site. There are testimonials by people of all ages who tell their “Can Do” stories. The entries are international and from people of all ages.

**Type of Material:** Website  
**Audience:** Educators, Parents / Family, People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.ucando.org/](http://www.ucando.org/)

### 185. Captions for Deaf and Hard of Hearing Viewers

**Author(s):** National Institute on Deafness and other Communication Disorders  
**Publisher:** National Institutes of Health (NIH)  
**Publication Date:** January 2000  
**Review:** Excellent article describing where and when captions originated, caption types, and current research. Information is included pertaining to the law, the ADA (Americans with Disabilities Act), and FCC coverage captioning for hard of hearing and deaf populations.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Communication and Speech, Hearing Impairments / Deaf  
**Ordering Information:** NIDCD at NIH  
31 Center Dr., MSC 2320  
Bethesda, MD 20892-2320  
301-402-0252 TTY:301-496-7243  
**Cost (As of Date Entered):** free  

### 186. Case Story: Reading Challenges in Social Studies

**Publisher:** CAST  
**Publication Date:** January 2004  
**Review:** CAST offers teachers in-depth, topic-based resources in the Teaching Every Student Case Story. This particular example deals with reading difficulties for students learning Social Studies. Like many CAST resources, the selling point of Case Stories is the emphasis on Universally Designed Learning (UDL). Educators will enjoy the progression from problem to solution and the model lesson plan that allows teachers to compare traditional teaching methods with UDL methods. For further discussion of CAST TES Case Stories, consider the CAST.org MY TES (registered users gain access to discussion groups, lesson/project resources, and other tools).
182. CAMA: Communication Aid Manufacturers Association Website

Publisher: Synapse Adaptive  
Publication Date: April 2004  
Review: CAMA site is a nonprofit organization that includes the world’s leading manufacturers of augmentative and alternative communication (AAC) software and hardware products along with assistive technology for physical disabilities. Workshops are provided throughout the United States to provide functional applications and identify how clients might benefit from the devices. The workshops are appropriate for consumers and their families, as well as professionals interested in AAC.

Type of Material: Website  
Audience: Service Providers  
Target Disability: Communication and Speech, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired  
Website: http://www.mainlineinc.com/d_cama.lasso

183. Cando!

Author(s): Maribeth Bush  
Publisher: Ucando.org  
Publication Date: January 2002  
Review: This is an empowering website for children with different abilities. It was designed to help develop a more positive attitude and perspective in school age children who learn differently or are struggling. There is an ability survey, which helps kids from ages 5-19 to focus in on their strengths and develop a more "Cando" attitude. There are puzzles, games, and links to other cool websites. A positive and challenging website for any student!

Type of Material: Website  
Audience: People with Disabilities  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): no charge  
Website: http://www.ucando.org/kids.html

184. Can Do Website

Author(s): Maribeth Bush  
Publisher: Maribeth Bush  
Publication Date: January 2005  
Review: Ability awareness educator and school counselor, Maribeth Bush, founded The Can Do website in 1997. The website reaches out to a wide variety of people including students, teachers, school counselors, and members of other diverse organizations and businesses.
180. Brillsoft: Switch Games and Programs for Users with Special Needs

Author(s): Roy Simmons
Publisher: Brillsoft
Publication Date: January 2005
Review: This website is a source of games and programs for users with special needs. There are four programs available: Fab Four (cause and effect), Rockets! (switch and intro scanning), Jetstream Trader (single switch game) and Randomiser (a free talking number selector). Each of the programs can be downloaded and has a fully functioning demo. There are links to three other sites related to other games and general information for individuals with disabilities. The software can be downloaded from the site and used for a limited period of time, after which registration is required. Costs are given in British Pounds. This site appears to be useful for those beginning to use switches to run software, and for initial training for games. There is no indication that the products are compatible with the Macintosh and Apple family of computers.

Type of Material: Website
Audience: Parents / Family, People with Disabilities, Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): 10 - 15 British Pounds
Website: http://www.brillsoft.com

181. CADRE: Consortium for Appropriate Dispute Resolution in Special Education

Publication Date: January 2002
Review: Under the Individuals with Disabilities Education Act, state departments of education are required to implement mediation guidelines. The National Center on Dispute Resolution (CADRE) is funded by the U.S. Department of Education, Office of Special Education Programs. The CADRE website offers many resources and links to assist parents, LEA’s, administrators, coordinators, and any person or professional who is looking for another step before due process. There is a searchable database that contains important information on many issues related to special education services. There are resources for each state, allowing users to identify local mediation resources. Step-by-step instructions are given for accessing a particular state’s mediation process, not only for school-age children but for birth to 3 as well. This is a comprehensive site containing support details, links, and other pertinent resources and may be the best place to begin to navigate conflict resolution in special education.

Type of Material: Website
178. Breaking Down Barriers: K-12 and Beyond.

Author(s): PACER  
Publisher: Meeting the Challenge Inc  
Publication Date: January 2004  
Review: This training packet contains a booklet, poster, and CD-ROM providing information for parents, students, and educational staff about accessible electronic and information technology. The materials may be ordered as a Parent Guide or as a K-12 Guide.

The brochure contains definitions of electronic and information technology, as well as statements from users about the importance of these. The attractive poster depicts accessible educational information technology. The interactive CD provides a wealth of resources. Basic definitions are given in the introduction. The main content of the CD contains a lot of video examples of accessible educational technology and resource links. Numerous examples of accessibility options for both the physical and electronic environments are given. The importance of accessible websites is highlighted and the suggestion to teachers, to consider website accessibility in making their assignments, is one this reviewer found valuable. The benefits of universal design are highlighted. The CD is easy to navigate and has open captioning.

Parents will find the Parent Guide easily navigable, with strategies for working within school districts to create accessible classrooms and technologies for their children.

This is a valuable and useful resource as a tool to educate students, faculty and staff about the importance of accessibility for all.  
Type of Material: Training Material  
Audience: Educators, Parents / Family, People with Disabilities  
Target Disability: General / Non-disability Specific  
Alternate Formats: Video - Open Captioned, Video - Open Captioned  
Ordering Information: PACER Simon Technology Center 952-838-9000  
http://www.pacer.org/stc/eud.htm  
Cost (As of Date Entered): No charge  
Website: http://www.pacer.org/stc/eud.htm

179. Bridging the Digital Divide in Postsecondary Education: Technology Access for Youth with Disabilities

Author(s): Sheryl Burgstahler  
Publisher: National Center on Secondary Education and Transition  
Publication Date: January 2002  
Review: This article examines issues related to the technology needs of people with disabilities after they complete their high school education. The need for technology to succeed in college, vocational training, or the workforce is significant for people with disabilities but, as a group, they are least likely to own a computer or to use the Internet because of accessibility barriers.

The article cites case studies that showed students in post secondary coursework were more successful when appropriate Assistive Technology was introduced and the barriers to using the computer were eliminated. The article also points out the need for students with disabilities to have access to information and training about their legal rights and be able to advocate for themselves after completing high school.
176. Braille Monitor

Author(s): Multiple
Publisher: National Federation of the Blind
Publication Date: January 2003
Review: The Braille Monitor is a monthly publication of the National Federation of the Blind. It is presented as an online magazine and is available in large print, Braille, cassette tape or in email format. It is published by people who are blind for all audiences including parents, teachers, rehab personnel, legislators, individuals who are blind and others interested in learning more about blindness.

This publication includes events and activities of the National Federation of the Blind and addresses social issues, advocacy, awareness, technology reviews, legislation, employment and education. Many articles related to technology appear, in particular focusing on accessible websites and OCR (Optical Character Recognition).

177. Braille Technology

Publisher: American Foundation for the Blind
Publication Date: January 2000
Review: An excellent fact sheet regarding Braille technology for accessing the computer screen, printing hard copy information from computer devices, and portable electronic Braille notetakers.

212-502-7642 800-AFB-LINE (800-232-5463)
Cost (As of Date Entered): Free
Website: http://www.afb.org/info_document_view.asp?documentid=1282
173. Bookholders and Page Turners

**Publisher:** Rehabilitation Engineering Research Center  
**Publication Date:** January 2001  
**Review:** This article provides information on ways to enable people with upper-body physical limitations to resume reading independently. It identifies ways to help with the physical manipulation related to reading materials. This includes devices to hold books, magazines, and newspapers, as well as devices to turn pages. The article examines the benefits and drawbacks of each device and gives information about acquiring them.  
**Type of Material:** Article  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Health Impairments, Mobility Impaired, Orthopedically Impaired  
**Cost (As of Date Entered):** free to read on the website  

174. Braille

**Author(s):** American Foundation for the Blind  
**Publisher:** American Foundation for the Blind  
**Publication Date:** April 2004  
**Review:** This fact sheet is an introductory explanation of what Braille is. It includes a description and historical information on Braille. In addition, the fact sheet explains the methods of creating Braille, including labeling units and Braille writers.  
**Type of Material:** Infosheet / Fact sheet  
**Audience:** Service Providers  
**Target Disability:** Deaf / Blind, Visual Impairment / Blind  
**Alternate Formats:** Audio Tape, Braille, Large Print, Audio Tape, Braille, Large Print  
**Ordering Information:** American Foundation for the Blind 212-502-7642 800-AFB-LINE (800-232-5463)  
**Cost (As of Date Entered):** Free  

175. Braille Bug Site

**Author(s):** American Foundation for the Blind  
**Publisher:** American Foundation for the Blind  
**Publication Date:** January 2003  
**Review:** The Braille Bug site is an educational website that teaches Braille through the use of fun activities and reading clubs. It was developed by the American Foundation for the Blind and is accurate and accessible. It is possible to change the color and font for those with low vision and is easily read by a screen reader. This is a good site for those who are just learning about Braille and for those teachers looking for ideas and fun activities to support Braille reading. It also has great links to other information that is pertinent to individuals with vision loss or blindness.  
The site is easily navigated and there were no difficulties with buttons, links, or activities that were displayed on the site. It also gives information on how to download and print the material and information in Braille form.
171. Blue Rose Videos

**Author(s):** Shoshana Brand  
**Publisher:** Blue Rose Videos  
**Publication Date:** January 2003  
**Review:** This is a described video rental website. Throughout each video, a narrator carefully describes the visual elements of the movie -- the action, characters, locations, costumes, and sets -- without interfering with dialogue or sound effects, so that the user can follow all the action.

After a one-time membership fee of $20, the cost of rental is $3.22 per title. At this time, the catalog contains about 150 movies. There are popular movies listed, such as Finding Nemo and the Star Trek movies, but Blue Rose will need to increase their video library. This rental operation is run like other video rental sites such as Netflix and is a great recreational resource for individuals with visual impairments.

**Type of Material:** Website  
**Audience:** People with Disabilities  
**Target Disability:** Deaf / Blind, Visual Impairment / Blind  
**Ordering Information:** Downloadable application and one-time membership fee of $20. Video rental is $3.22 per title. Shipping and handling may be free if applicant is certified to receive Free Matter for the Blind or Handicapped.  
**Cost (As of Date Entered):** $20 membership, $3.22 per title  
**Website:** [http://bluerosevideos.com](http://bluerosevideos.com)

172. Boardmaker vs. Writing with Symbols 2000: Which One is Best for Me?

**Author(s):** Spectronics  
**Publisher:** Spectronics  
**Publication Date:** January 2004  
**Review:** With so many pieces of software out today geared for students with disabilities, it is hard to decide which one is the best for a particular situation. The software titles reviewed in this fact sheet are both symbolic writing programs. Users create sentences and paragraphs through the use of picture symbols.

Good feature matrixes are difficult to find but this one is thorough and complete. It compares the differences between Boardmaker and Writing With Symbols. It is specific and accurate and is beneficial to anyone looking to purchase one of these two pieces of software.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** AT Professionals, Educators  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Learning Disabilities  
**Ordering Information:** PO Box 88  
Rochedale  
QLD 4123  
Australia 07 3808 6833  
mail@spectronicsinoz.com  
**Cost (As of Date Entered):** no charge
169. Beyond the Accessibility Wizard: MS Office Provides More Flexible Low Vision Access

Author(s): Deborah Gilden, PhD  
Publisher: CSUN  
Publication Date: January 2002  
Review: The author, Dr. Gilden, presented this information at the 2002 CSUN conference. Microsoft includes what they call an "accessibility wizard" in their Windows operating system. The wizard prompts guides the computer user through a step by step process that will make their computers more accessible.

In this report, Dr. Gilden describes the features of Microsoft Office (Word, Excel & PowerPoint) that offer even more usability for a person with a disability or functional limitation. These features include the ability to enlarge font, graphics, cursor, text, and line thickness. A user can also adjust the contrast, brightness, and colors on the screen. Sound and animation are also available. All of these changes can be customized by the individual to meet their needs.

Type of Material: Conference Handout  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Visual Impairment / Blind  
Alternate Formats: Electronic, Electronic  
Ordering Information: Download from web site.  
Cost (As of Date Entered): Free on web site.

Website: http://www.csun.edu/cod/conf/2002/proceedings/206.htm

170. Biofeedback: The Cutting Edge of Assistive Technology

Author(s): Kari Jaehnert  
Publisher: United Cerebral Palsy  
Publication Date: January 2003  
Review: This article describes biofeedback as a way to retrain one's body in order to achieve voluntary control, utilizing brain power rather than physical control.

The author describes the relatively new field of biosignals. This process uses the technique of biofeedback to control adaptive devices through the uses of InfraRed technologies. The ability to control one’s environment, make music, and use a computer without using one’s hands are all possible through the use of InfraRed technology and the biosignal technique.

Type of Material: Article  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: General / Non-disability Specific, Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Health Impairments, Learning Disabilities, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired, Cystic Fibrosis, ADHD/ADD  
Ordering Information: Download from web site  
Cost (As of Date Entered): Free on web site
167. Beyond Access Website

**Author(s):** Beyond Access  
**Publisher:** Utah State University  
**Publication Date:** January 2006  
**Review:** Beyond Access is a website devoted to truly accessible and inclusive playground design that encourages free play and social interaction. The website’s resources foster interest for a broad group of users including playground developers, parents, equipment designers and community advocates. Popular pages on the website are the "Design Tutorial" section (four Flash player tutorials), the "Links" page (divided into eight separate interest sections), and a "Resources" database.

The best traits of this site (aside from the fact that anyone can benefit from it) are the Beyond Access tutorials and links lists to help people discover playground design resources that suit their needs (no matter how unique). The site seems small, but once a user begins to explore, the horizon widens and offers hundreds of opportunities to delve into the work it takes to craft, and nurture, free play.

**Type of Material:** Website  
**Audience:** Parents / Family, People with Disabilities, Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.beyondaccess.org/index.htm](http://www.beyondaccess.org/index.htm)

168. Beyond Summer: Conducting Internet Activities at Camp

**Author(s):** Sheryl Burgstahler, PhD.  
**Publisher:** DO-IT, University of Washington  
**Publication Date:** January 2006  
**Review:** This short video shows Camp Wascowitz, near North Bend, Washington, as the site of a summer camp used by many different organizations for their summer programs for children. This video was made during the camp sponsored by the Muscular Dystrophy Association and features campers doing many activities, including learning how to access the Internet on camp computers.

Learning and playing through the medium of computers is often offered at summer camp and the inclusion of learning to access the internet can be of great importance for all young people. This can be done in the relaxed and supportive environment of the summer camp, and can enrich the whole program through its integration into the many aspects of camp life.

This is a model program designed by the DO-IT program at the University of Washington in Seattle, established to help other organizations to offer internet access to campers with disabilities in community settings other than schools. The video and an accompanying four-page article describe how this access might be developed.

This video and article would be of interest to those working on programming for summer camps to increase successful participation of individuals with disabilities.

**Type of Material:** Video  
**Audience:** AT Professionals, Educators, Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge
165. Best Practices: Merging Developmentally Appropriate Practices with Early Childhood Special Education

**Author(s):** Norris, D.
**Publisher:** Western Oregon University, Early Childhood and Training Department
**Publication Date:** April 2004
**Review:** This paper gives some (1) strategies that facilitate inclusion of special education students into regular classrooms; (2) ideas using activity-based interaction; and (3) suggestions of physical arrangement of classrooms to aid in student learning. It appears that what is shared in this paper could be used in any classroom environment.
**Type of Material:** Research Paper
**Audience:** AT Professionals, Educators, Parents / Family, Service Providers
**Target Disability:** Autism, Learning Disabilities, Mental Retardation
**Ordering Information:** Dawn Norris
Early Childhood and Training Dept.
Teaching Dept. Western Oregon Univ
Monmouth, OR 97361
503-838-8771
503-838-8150 fax
**Website:** [http://www.tr.wou.edu/train/](http://www.tr.wou.edu/train/)

166. Better Living Through Technology

**Author(s):** Charlie Danger
**Publisher:** Better Living Through Technology
**Publication Date:** January 2006
**Review:** It is rare to find an AT site that is both highly useful and exceptionally welcoming and user-friendly. Charlie Danger has rebuilt and revamped this once secondary British site (from 1996 as part of Thomas Wolsey's website, to Senit.org) into the fully formed Better Living Through Technology website.

Danger avoids the highly technical and somewhat intimidating language and concepts that can bog down most AT sites—without falling into the black hole of patronizing his readers. Visitors to Better Living Through Technology may feel as if they are talking to an old friend; especially as Charlie Danger happily encourages email and feedback. Using the gentle, neighborly approach that is characteristic of this site, the tutorial articles and resource discussions are loaded with information. The site is full of useful information about hardware and software options to ease computer use for people with a wide range of physical, visual, or cognitive disabilities; visitors can also subscribe to the Better Living Through Technology newsletter for periodic updates and news, or tour links to other resource sites.

**Type of Material:** Website
**Audience:** AT Professionals, People with Disabilities, Rehabilitation Professionals, Service Providers
**Target Disability:** General / Non-disability Specific
**Cost (As of Date Entered):** No charge

**Author(s):** Pierce, P., Edmondson, R., Aterneier, S., Reinhart  
**Publisher:** The Center for Literacy and Disabilities Studies, University of North Carolina at Chapel Hill  
**Publication Date:** January 1998  
**Review:** This book consists of nine short chapters that addresses a wealth of information on how to use assistive technology in a variety of ways with young children with developmental and physical disabilities. Chapters include: Assistive Technology and Infants and Toddlers, Parent-Professional Partnerships in Early Intervention, Positioning and Mobility, Developing Communication Abilities, Emergent Literacy: What Young Children Can Learn About Reading and Writing Before They Go to School, and Computers and Software. Each chapter gives good information about how infants learn, examples of how to increase the learning opportunities for small children with disabilities, and sample goals for the IFSP (Individual Family Service Plan) and the IEP (Individual Education Program).  
**Type of Material:** Book  
**Audience:** AT Professionals, Educators, Parents / Family, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** Free  
**Website:** [http://www2.edc.org/NCIP/library/ec/Power.htm](http://www2.edc.org/NCIP/library/ec/Power.htm)

164. Begin with Me

**Author(s):** S. Hardin, F. Miracola  
**Publisher:** MISD  
**Review:** This language arts project from the state of Michigan is directed to teaching teams to assist learning for all students but especially for those struggling with writing at the fifth grade level. The website describes a well thought-out program with outcomes, applicable to many students, with an emphasis on technology and training. While it is directed at teachers and classroom activities, parents may find it useful when helping their children use certain software programs.  
Training manuals have been developed and sample pages can be downloaded. The manuals appear to be laid out well for ease of use.  
**Type of Material:** Training Material  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Learning Disabilities, Mental Retardation, Multiple Disabilities, ADHD/ADD, Apraxia of Speech, Dyslexia
161. Awesome Talking Library

Publisher: Awesome Library  
Publication Date: January 2005  
Review: Awesome Library is an ambitious project to organize the Web into 26,000 carefully reviewed resources for parents, kids, teachers, librarians and college students. Awesome Talking Library offers a downloadable application (Awesome Talkster) that acts as an online narrator for many of these selections. Selecting online text, whole web pages or books allows the user to hear them read out loud. Talkster may appear as an animated character. The website promotes this as a feature that will help children to read and pronounce words as well as being accessible to those with visual impairments. Talkster is Windows compatible, from Windows 95 through XP.

Literary resources have been gleaned from many of the free digital text sites such as Project Guttenberg and all sources are referenced.

This resource is free to individual users, and is available to schools for a nominal, one-time fee. The resources are updated regularly. It could be very useful for those who have difficulty reading.

Type of Material: Website  
Audience: AT Professionals, Educators, Parents / Family  
Target Disability: General / Non-disability Specific  
Cost (As of Date Entered): No charge  
Website: http://www.awesomelibrary.org/Awesome_Talking_Library.html

162. Babycare Assistive Technology for Parents with Physical Disabilities, Relational, Systems, and Cultural Perspectives

Author(s): Kirshbaum, M.  
Publisher: Through the Looking Glass  
Publication Date: January 1997  
Review: This article is the description of the work of Through the Looking Glass in Berkeley, CA. It focuses on how service providers can work with families with a parent with a disability to help that parent be more involved with the care and nurturing of infants and toddlers. The article gives good information on types of adaptations needed by parents, and discusses the problems involved with both finding or fabricating adaptive equipment in a timely manner, and training individuals to use the equipment. It stresses the importance of having a provider who is interested, involved, caring, and able to commit to an ongoing relationship with the family in order to meet the rapidly changing needs of a growing infant. The also points out the many ways that cultural perspectives influence the decisions made concerning babycare.

Type of Material: Article  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation
Modeling in Natural and Functional Contexts, and Multiple Approaches.

Each of these points would apply to children with many different types of disabilities, including Rett Syndrome. However no attempt is made to connect any particular symptom of this disability with a particular communication strategy.

The information is presented in outline style with several 'bullets' under each heading, and while appropriate for parents may be intended more for professionals working with children in the area of Augmentative Communication.

Type of Material: Conference Handout
Audience: AT Professionals, Educators, Parents / Family
Target Disability: Autism, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Multiple Disabilities, Neurological Disorders
Alternate Formats: Electronic, Electronic
Ordering Information: free online
Cost (As of Date Entered): free
Website: http://www.lburkhart.com/haacrett.html

159. Autism Guidelines

Author(s): Daniel Hawthorne
Publication Date: January 2004
Review: This website is one man’s personal journey through the world of autism. He writes of his own experiences and insights into how he sees the world and the world sees him. He shares his father’s descent into mental illness and how that impacted him while he was growing up. The website contains historical information on autism and treatments throughout that time period. He shares his writings, his humor, answers questions about autism, and gives visitors an opportunity to purchase his new book about autism. This is a very personal but very readable account of growing up with autism.

Family members would benefit from reading the information offered and anyone with a diagnosis who wants to know more and find help in dealing with issues and should explore this website.

Type of Material: Website
Audience: Parents / Family, People with Disabilities
Target Disability: Autism
Cost (As of Date Entered): no charge
Website: http://www.autismguidelines.com/index.html

160. A Visit to the Virtual World: Computer Adaptations for Disabled People

Author(s): Petra Jorissen
Publisher: Disability World
Publication Date: January 2004
Review: This is a brief overview for individuals looking for information on assistive devices for people with disabilities. The article has a strong focus on one-handed keyboards and on technology for persons with vision impairments. Specific examples of technology are used including eyegaze, virtual reality, and screen readers. The information is general in nature but gives website links to the technology mentioned in the article.

Type of Material: Article
**Review:** This report is a brief but comprehensive informational guide for individuals with communication impairments. The report contains definitions of key Augmentative and Alternative Communication (AAC) terms, describes the features of various AAC devices and provides contact information for assistive technology/AAC vendors and funding sources.

**Type of Material:** Resource Guide  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Communication and Speech  
**Ordering Information:** WYNOT Main Office  
307-766-2084  
800-861-4312

**Cost (As of Date Entered):** Free

**157. Augmentative Communication: A Glossary**

**Author(s):** ASHA  
**Publisher:** ASHA  
**Publication Date:** January 2000  
**Review:** This article, from the American Speech-Language-Hearing Association, is a listing of terms and definitions associated with augmentative communication. These terms include common communication symbols as well as transmission and selection techniques.

This article clarifies some often confusing terminology. An understanding of these terms will assist readers in their search for an appropriate communication system.

**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Communication and Speech  
**Ordering Information:** Download from the ASHA web site or call  
1-800-498-2071 (professionals/students)  
public: 1-800-638-8255  
**Cost (As of Date Entered):** Free on web site.  
**Website:** [http://www.asha.org/public/speech/disorders/acc_primer.htm](http://www.asha.org/public/speech/disorders/acc_primer.htm)

**158. Augmentative Communication: Applications and Practical Strategies for Children who have Rett Syndrome**

**Author(s):** Linda J. Burkhart  
**Publisher:** Simplified Technology  
**Publication Date:** January 2003  
**Review:** While the Title of this site is ‘Augmentative Communication for Children with Rett Syndrome’, there is a great deal of information presented about the indications and uses of Augmentative Communication but the subject of Rett Syndrome is never mentioned in this handout.

Linda Burkhart presents here a well thought-out strategy for implementing Augmentative Communication for children who lack this ability. She presents several specific points about communication under the headings of Expressive and Receptive Language, Active Learning,
154. Augmentative and Alternative Communication Centers Website

**Publisher:** Hattie B. Munroe Barkley Memorial  
**Publication Date:** April 2004  
**Review:** This site links individuals to an array of websites to assist those with communication disabilities and augmentative and alternative communication (AAC). There is also an update on the Medicare notice covering AAC. Areas covered include education, literacy, vendors, academic resources, early intervention, and other AAC links. There is a connection to the American Speech-Language and Hearing Association for service providers and users of AAC.  
**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Autism, Communication and Speech, Deaf / Blind, Developmental Disabilities, Visual Impairment / Blind  
**Website:** [http://aac.unl.edu/yaack/](http://aac.unl.edu/yaack/)

155. Augmentative and Alternative Communication Decisions

**Author(s):** ASHA  
**Publication Date:** January 1999  
**Review:** This article looks at how people communicate and examines different ways to approximate those communications using augmentative and alternative communication (AAC) devices. The article explains different methods to represent language in AAC systems such as: single meaning pictures, alphabet based systems, semantic compaction and a combination of all three. It examines the importance of establishing clear communication goals before deciding upon an AAC system and collecting data to confirm that the system is working for the user.  
While this article was written for speech and language professionals, the information it contains is very useful for teachers or parents of children who have a communication impairment.  
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, Rehabilitation Professionals, Service Providers  
**Target Disability:** Communication and Speech, Hearing Impairments / Deaf, Visual Impairment / Blind  
**Ordering Information:** Download from public section of the ASHA web site  
**Cost (As of Date Entered):** Free on ASHA web site  

156. Augmentative and Alternative Communications and AAC Devices

**Publisher:** WYNOT (Wyoming New Options in Technology)  
**Publication Date:** April 2004
**Author(s):** Arizona Technology Access Program (AzTAP)  
**Publisher:** AzTAP/Institute for Human Development, Northern Arizona University  
**Publication Date:** January 2002  
**Review:** This simple, well-written article is valuable to anyone who wants to learn more about augmentative and alternative communication (AAC). The article begins by defining augmentative communication and discussing assessment. Next, the article discusses low-tech AAC methods such as communication boards or wallets and eye gaze boards, and then proceeds to high-tech devices and their characteristics (selection methods, overlays, symbols, digitized and synthesized speech, and levels). The article continues with considerations for choosing an AAC device (the team should consider portability, durability, who fixes the device when it breaks down, battery life of the device, does the system "grow" with the individual if their communication needs change?) This excellent article concludes with dozens of sources of information that range from ASHA (American Speech Language Hearing Association) and CAMA (Communication Aids Manufacturer’s Association) to vendors of assistive technology.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Communication and Speech  
**Ordering Information:** Download from the web site or order from:  
Institute for Human Development  
Northern Arizona University  
4105 N. 20th Street, Suite 260  
Phoenix, AZ 85016  
(602) 728-9534 Voice  
(602) 728-9536 TTY  
(602) 728-9353 FAX  

**Cost (As of Date Entered):** No Charge  
**Website:** [http://www.nau.edu/ihd/aztap/aac.html](http://www.nau.edu/ihd/aztap/aac.html)

**153. Augmentative and Alternative Communication (AAC): Connecting Young Kids (YAACK) Website**  
**Author(s):** Ballinger, R.  
**Publication Date:** January 1999  
**Review:** YAACK is a site that provides information and guidance to families, teachers, speech/language pathologists and anyone else who is involved with a child with special communication needs. The site is easy to understand and covers a wide range of topics dealing with AAC (Augmentative and Alternative Communication) for children. The basic goal is to assist the child in attaining the quality of life that approaches the level of satisfaction and meaningfulness as compared to normal developing peers. An easy to follow Table of Contents is provided in a systematic and organized fashion.  
**Type of Material:** Website
150. AT Terminology

Author(s): ATSTAR Assistive Technology Strategies, Tools, Accommodations and Resources
Publisher: ATSTAR Assistive Technology Strategies, Tools, Accommodations and Resources
Publication Date: January 1998
Review: This article is a glossary of terms related to special education and assistive technology. There are more than 85 items listed alphabetically with short, to the point, definitions and explanations. Items range from acronyms, such as IDEA, to GEM teacher (general education math teacher) to explanations of a high tech communication device. For individuals who are seeking assistance in reading reports or IEP’s, or those who find acronyms and AT specific terminology confusing, this list would be of great benefit.

The article also has links to additional websites that host other terminology sites.

151. Audio Books and Playback Units

Author(s): Raskind, Marshall
Publisher: Schwab Learning
Publication Date: January 2002
Review: This quick info sheet gives the reader most information that one would need to find books on tape for a variety of individual needs. It has hyperlinks to the organizations that provide the books and/or the players for such books.

The article gives information about the types of recordings, the costs associated with them, and sources for purchase, rental, and for books available at no charge.

152. Augmentative and Alternative Communication
other resources that offer more information on this subject.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** available online  
**Cost (As of Date Entered):** free from website  
**Website:** [http://www.atstar.org/info_funding.html](http://www.atstar.org/info_funding.html)

### 148. AT Journal

**Author(s):** Multiple  
**Publisher:** AT Network and California Assistive Technology Systems  
**Publication Date:** January 2003  
**Review:** This Journal is a monthly resource and information guide related to assistive technology. The issues are small but each contains a success story of an individual who is using assistive technology to attain a goal in employment or education. Advocacy articles are also a monthly feature. Assistive Technology products are reviewed intermittently. It also includes Shades, a comic strip written by Mark Carlson detailing the everyday adventures of a guide dog, his owner and daily AT devices they use.

As a general guide, while not as comprehensive as some resources, it has some valuable information. A constant on this site is a list of links on assistive technology and related services in California.

**Type of Material:** Journal / Magazine  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** [http://www.atnet.org](http://www.atnet.org)  
**Cost (As of Date Entered):** free  
**Website:** [http://www.atnet.org](http://www.atnet.org)

### 149. AT Makes the Difference for Inclusion

**Author(s):** Stu Teffeteller  
**Publisher:** South Carolina Assistive Technology Project  
**Publication Date:** January 2000  
**Review:** The author is the parent of a child with cerebral palsy. He writes about discovering assistive technology and the positive impact AT has had on his child's development and educational experience. He describes some of his child's medical needs and how they have impacted his ability to learn in a traditional manner and illustrates how different types of adaptive devices have enabled his son to participate in his education within the neighborhood school. This article is a very positive essay on parent advocacy and the power of assistive technology in the lives of people with disabilities. Great reading for any parent feeling overwhelmed with finding the "right" way to help their child or for teachers/technology staff/administrators to assess how they are doing in delivering education to students with disabilities.

**Type of Material:** Article  
**Audience:** Service Providers
145. AT for Blind Students

Author(s): Katie Beaver and Gail Vaughan
Publisher: Assistive Technology Training Online Project
Publication Date: January 2000
Review: This material is intended to provide information to anyone needing to learn about assistive technology for vision impaired students. It presents detailed information on different low and high tech products that can be used for everything from reading and math to computer access. Each product is described and has a link for more information. Well-written, comprehensive, and not overwhelming.
Type of Material: Training Material
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Deaf / Blind, Visual Impairment / Blind
Ordering Information: Available via the website.
Website: http://atto.buffalo.edu/registered/ATBasics/Populations/Blind/index.php

146. AT Funding Issues

Author(s): Assistive Technology Strategies, Tools, Accommodations, and Resources (ATSTAR)
Publisher: Assistive Technology Strategies, Tools, Accommodations, and Resources (ATSTAR)
Publication Date: January 2002
Review: This is a good article for anyone interested in the assistive technology funding process for school age children. The information is presented in a question and answer format that is easy to follow and understand.
In addition to addressing frequently asked funding questions, this article provides links to other websites that provide information about AT funding issues, including sites with information about government funding, private foundations and grants.
Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Ordering Information: Download from web site
Cost (As of Date Entered): Free
Website: http://www.atstar.org/info_funding.html

147. AT Funding Issues, Frequently Asked Questions

Author(s): ATSTAR, Assistive Technology Strategies, Tools, Accommodations and Resources
Publisher: same
Publication Date: January 1999
Review: This info sheet gives short and to the point answers to funding questions as covered by the law. It covers who is responsible for paying for assistive technology in the school system, who is responsible for repairs to AT, and identifies other sources of funding. There are additional links to
143. AT Acquisition

Author(s): Lynette Hiebert, B.A., M.L.S.
Publisher: Frostig Center
Publication Date: January 2001
Review: This article is extremely valuable to families looking, for the first time, to acquire assistive technology equipment. The text covers the full gamut of the acquisition process, ranging from inexpensive low-tech equipment to state-of-the-art innovations that are far more expensive and sophisticated. The writers urge those acquiring equipment to test it first and to learn as much as possible about it. The article is excerpted from the Assistive Technology Guide, which was originated in 1996 by Marshall Raskind, Ph.D., at the Frostig Center and updated in 2001 by Lynette Hiebert, B.A., M.L.S.
Type of Material: Article
Audience: Educators, Parents / Family, People with Disabilities
Target Disability: General / Non-disability Specific
Ordering Information: Available on the website.
Cost (As of Date Entered): Free
Website: http://www.schwablearning.org/articles.asp?r=480&g=2

144. AT Boogie

Author(s): Jim Tobias, Jeff Moyer, Haik Hoisington
Publisher: Inclusive Technologies and Music From the Heart
Publication Date: January 1993
Review: Originally written and animated in 1993, the "Assistive Technology Boogie" is exactly what it sounds like—an animated, short song about the diverse nature of assistive technology and the importance of feedback from people who use it.

The tune plays from Inclusive Technologies' website (www.inclusive.com) and is characterized by simple animation, line by line lyric strings, and an option for blind/low vision listeners to hear descriptions of the animated scenes in addition to the lyrics.

This simple song is great tool for teachers, parents, kids, and providers who need a basic understanding of the value of assistive technology without the burden of statistics, complex guides, or intensive workshops. It is not a substitute for thorough training, and the song could be seen by some as oversimplified.

"Assistive Technology Boogie" gives listeners a fresh, simple approach to introducing AT into home, work, or school environments—you might even dance.
Type of Material: Video
Audience: Service Providers
141. A Standard Tactile Symbol System: Graphic Language For Individuals Who are Blind and Unable to use Braille

Author(s): Linda Hagood
Publisher: Texas School for the Blind and Visually Impaired
Publication Date: January 2000
Review: This article describes a new model for augmentative and alternative communication for blind or severely impaired individuals who can not use Braille. This system could also be useful to individuals who are deaf/blind. The system requires individuals to have communicative intent and symbolic development. They need to be able to use real objects, gestures, or signs in order to have maximum success.

The article describes indicators that help decide if an individual can be successful with the system. The system is based on a series of backgrounds and objects attached to the categorized backgrounds. At this time only 300 symbols have been designed, but as an individual experiences success in communication, a personalized communication system can be created following the ‘rules’ of the Tacticle Symbol System. A link to the complete list of 300 symbols is available on the website.

Type of Material: Article
Audience: AT Professionals
Target Disability: Deaf / Blind, Visual Impairment / Blind
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge
Website: http://www.tsbvi.edu/Outreach/seehear/archive/tactile.html

142. A Student's Guide to the IEP

Author(s): Marcy McGahee
Publisher: National Dissemination Center for Children with Disabilities (NICHY)
Publication Date: January 2002
Review: This Student's Guide package includes an online booklet for students; a technical assistance guide for parents, transition specialists, and others interested in helping students get involved in developing their IEPs; and an audiotaped program. This is a simple ‘road map’ for students to follow in participating in developing their own IEP. It explains what an IEP is, steps in preparation, defines vocabulary, such as ‘accommodations’, and gives suggestions about how to participate during the IEP meeting itself. The accommodations section lists examples of assistive technology that a student might use.

Accompanying materials will be helpful for educators and parents who are helping students beginning the process of advocating for themselves. Special attention should be given to examples of how technology might be written into the IEP as educational tools. This is a simple, well defined outline of a complicated process.

Type of Material: Training Material
Audience: People with Disabilities
Target Disability: General / Non-disability Specific
Alternate Formats: Audio Tape, Electronic, Audio Tape, Electronic
Ordering Information: If you are interested in obtaining the technical assistance guide and tape, contact NICHCY. NICHCY P.O. Box 1492 Washington, DC 20013
139. Assistive Technology...Where Do I Go? What Do I Do?

**Author(s):** Smith, G. & Chapman Smith, S.

**Publisher:** Increasing Capabilities Access Network (ICAN)

**Publication Date:** April 2004

**Review:** This is a four page fact sheet with general information regarding what kind of questions you might ask of an agency that is going to provide a technology assessment. There are resources listed on the last page that are specific to Arkansas.

**Type of Material:** Infosheet / Fact sheet

**Audience:** Parents / Family, People with Disabilities

**Target Disability:** General / Non-disability Specific

**Ordering Information:** ICAN, 2201 Brookwood Dr. Suite 117, Little Rock, AR 72202, 1-800-828-2799

**Cost (As of Date Entered):** free

140. Association on Higher Education and Disability (AHEAD)

**Author(s):** AHEAD

**Publisher:** AHEAD

**Publication Date:** January 2004

**Review:** The Association on Higher Education and Disability (AHEAD) has offered training and resources to higher education personnel worldwide for nearly 30 years. AHEAD specializes in maintaining a membership network "of professionals who actively address disability issues on their campuses and in the field of higher education" and who advocate and collaborate for universal access through the AHEAD core values.

According to AHEAD, all members (numbering more than 2,000):

- value diversity, personal growth and development, and creativity
- promote leadership and exemplary practices
- provide professional development and disseminate information
- orchestrate resources through partnership and collaboration.

The AHEAD website is a gold mine for professionals; it offers dozens of trainings and publication resources, provides links to affiliate AHEAD groups in the U.S., and presents details for service professionals who are interested in becoming members.

**Type of Material:** Website

**Audience:** Educators, Service Providers

**Target Disability:** General / Non-disability Specific

**Cost (As of Date Entered):** No charge

**Website:** [http://www.ahead.org/index.htm](http://www.ahead.org/index.htm)
Review: This web site, funded by a grant from the US Department of Education, Office of Special Education and Rehabilitation Services, gives information on Assistive Technology Basics, Tutorials, Assistive Technology Decision Making, Resources and Project Information. This site is easy to navigate, print is large, and the amount of information available is substantial, yet not overwhelming on each screen.

AT Basics has four categories: Foundations, Adapting Computers, Curriculum, and Technology for Special Populations (FACT), with each subject having three to seven links to other sites. The Tutorials Section lists many types of tools, software and hardware under Reading & Writing Tools, Tools for Visually Impaired, Creating Talking Books, and Other Tutorial Sites. Requirements are given for each tutorial and make use of Acrobat Reader, as well as viewer programs for Macintosh and Windows.

A Decision Making, Resources and Project Info, all follow the same format, with a new screen, description of that area and links to appropriate sites. This would be a good site for parents, caregivers and teachers, starting out to learn how to use technology for individuals with special needs. The screens have large print, are uncluttered, and links are clearly marked. Pages are easy to print, and a printer friendly choice is offered.

138. Assistive Technology Viewer

Review: This Web-based video resource is provided on the University of Kentucky's ATP website (see below for URL.) It describes fundamental concepts of technology and uses video and real people to demonstrate and use the equipment. It covers input devices, communication aids, mobility, switches, alternative keyboard, visual aids, and workplace technology. Although not inclusive, this resource provides enough information to be very valuable.

Type of Material: Infosheet / Fact sheet

Audience: Service Providers

Target Disability: General / Non-disability Specific

Alternate Formats: Electronic, Video, Electronic, Video

For more information, please visit http://atto.buffalo.edu
135. Assistive Technology Supports for Early Childhood Literacy

Author(s): Debbie Spring, OTR, AT Consultant
Publisher: Michigan Department of Education
Publication Date: January 2004

Review: This article discusses adaptations needed for children with motor, cognitive, communication, hearing, and vision impairments in order to help them achieve communication, movement, independence for self-care, and manipulation of books and toys. Finding ways to boost independence benefits the child’s self esteem and gives them a feeling of power over their environment. It also benefits the family who is trying to help their child achieve his or her potential. The article discusses ways to utilize low- and no-cost technology such as slant boards and book supports to aid reading and props or photos to make stories that the children want to read. Mid-tech options such as single message communication devices or switches are described as ways to make reading accessible and fun for children. High tech options such as Power Point, IntelliTools software, and online stories are also described. There are links to resources to strengthen literacy among early childhood students. This article contains lots of good information for parents, teachers, and AT providers to help create a positive environment for reading that focuses on independence and fun.

Type of Material: Article
Audience: Parents / Family
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge


Author(s): Janet Hopkins
Publisher: Curriculum Services Canada
Publication Date: January 2004

Review: This downloadable PDF manual was designed to prepare Canadian educators and schools to deliver assistive technology and services to students with special needs so that all students are able to access the curriculum. It begins with a summary of U.S., Australian, United Nations and UK definitions and trends which underlie the mandate to provide AT devices and services. Links to AT-related information are provided. The steps for providing AT are outlined along with suggestions for how to acquire, implement, and consider outcomes for AT. Numerous links are used to support suggestions. This excellent resource is presented in an easy to digest and use format.

This is a PDF manual. Those who use screen readers may have difficulty with files of this type as not all read the PDF format.

Type of Material: Training Material
Audience: Service Providers
Target Disability: General / Non-disability Specific
Ordering Information: Free on website.
Cost (As of Date Entered): no charge
Website: http://www.curriculum.org/tcf/teachers/projects/AssistiveTechnology.pdf

137. Assistive Technology Training Online Project
133. Assistive Technology Services for Students: What Are These?

**Author(s):** Margolis, L. & Goodman, S.
**Publisher:** United Cerebral Palsy Associations (UCPA)
**Publication Date:** January 1999
**Review:** This is a paper developed to assist schools in complying with the requirements in the 1997 IDEA. It is a series of questions that should be addressed when considering assistive technology for individual students.

**Type of Material:** Research Paper
**Audience:** AT Professionals, Educators, Parents / Family
**Target Disability:** General / Non-disability Specific

**Ordering Information:**
UCPA
1660 L. St. NW, Suite 700
Washington, DC 20036
(800) 872-5827

**Cost (As of Date Entered):** free
**Website:** [http://www.ucp.org/ucp_channeldoc.cfm/1/12/69/69-69/979](http://www.ucp.org/ucp_channeldoc.cfm/1/12/69/69-69/979)

134. Assistive Technology Solutions In Minutes: Make A Difference Today

**Author(s):** Dr. Therese Willkomm
**Publisher:** ATECH Services
**Publication Date:** January 2005
**Review:** Dr. Therese Willkomm is an expert in rapid prototyping. All of Dr. Willkomm's current work and tips are available in this 2005 publication, including how to make a switch out of a business card, wire and copper tape; how to use pink board and PVC pipe, acrylic, various tapes, putties and the invaluable rug grip to make quick and usable grips, locators, nonskid pads and many other adaptive, low-tech devices out of materials easily found in most home, school or work environments.

The book, which was developed as a fund raising project to purchase AT solutions for individuals with disabilities in New Hampshire, is a 'must have'. The pictures and step-by-step instructions are easy to follow and a toolkit with all of the tools and many of the materials presented in the book may be purchased for $125. The kit comes with an instructional video too.

**Type of Material:** Book
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities
**Target Disability:** General / Non-disability Specific
**Cost (As of Date Entered):** $35.00 + S&H
**Website:** [http://www.nhassistivetechnology.org/products_purchase_atminpc.pdf](http://www.nhassistivetechnology.org/products_purchase_atminpc.pdf)
been developed and studied for children with severe disabilities it is only recently that attention has been directed to the high incidence group of those with mild disabilities.

The background for this study is explained, and a plan of action is outlined for parents. It includes (1) getting an assistive technology evaluation, (2) free online training, (3) remediation vs compensation, (4) exploring web sites for information on assistive technology, (5) acquiring appropriate pieces of technology, and (6) collecting data on the outcomes of technology use, which can be anecdotal or quantifiable. At the end of the article several web sites are listed for ‘locating information about mild disabilities’ and other sites listed ‘that support the use of assistive technology by students with mild disabilities’.

This is a clear and informative article that should assist all who work with children with mild disabilities.

**Type of Material:** Parent Guide  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  
**Website:** [http://www.eparent.com/technology/tech03_08.htm](http://www.eparent.com/technology/tech03_08.htm)

### 132. Assistive technology service delivery models: Scalable to meet the needs of students with high incidence disabilities?

**Author(s):** Edyburn, Dave L. Ph.D.  
**Publisher:** ConnSENSE  
**Publication Date:** January 2002  
**Review:** This thought-provoking article questions the efficiency and effectiveness of our current systems of assessing a student with mild or high-incidence disabilities for assistive technologies.

The author questions the amount of time, energy, and money spent on the evaluation and referral process, and laments the lack of funding and time spent on implementation, training, and follow-up for these students.

He compares the current efforts to assess students with high incidence disabilities with the beginning efforts to assess and evaluate students for placement in special education services. He suggests that the overall process would be better served if the technologies that are most frequently used for students with these disabilities (word prediction software, organization software, talking word processors) were available routinely in classrooms, so that the students who need these interventions would have access to them without the need for long and costly evaluations, in an evaluation process that was created for students with more severe disabilities.

He also points out the lack of training and preparation available to staff members who provide these evaluations and follow-up, and seems to believe that types of assistive technology that would be provide cognitive and behavioral supports are not even available at this point.

He concludes that we must develop new and better methods of providing assistive technology services to students with high incidence disabilities, and lists 5 suggestions.

**Type of Material:** Article
This form includes names of all the people on the IEP team, the person ultimately responsible for implementation, the equipment and how it relates to the IEP outcomes, a list of tasks for the AT, training needed (what’s available and who will attend), and sections for implementing use of the AT at home as well as at school.

The teacher and administrator books both contain information of AT products and vendors, legislation, organizations and other resources to support the use of AT, a searchable database, and good information about IDEA and how AT aids a student in the classroom.

The parent book discusses what AT is and how it can be used, gives information on IDEA, and discusses the functional approach of AT use for children with disabilities. There is an illustration of how the process works. Information for Spanish speaking families is included in the book, but this section is not available on the web site. The information in this book is also valuable for adults who need AT to be successful at work or in adult education environments or even to communicate and participate in activities at home.

**Type of Material:** Book  
**Audience:** Educators, Parents / Family, People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Planner is available for purchase at The Council for Exceptional Children - Technology and Media Division

**Cost (As of Date Entered):** planner is $35.00 plus S/H or $12 for indiv books  
**Website:** [http://www.tamcec.org/products.htm](http://www.tamcec.org/products.htm)

### 130. Assistive Technology Pointers for Parents

**Author(s):** Reed, P. and Bowser, G.  
**Publication Date:** January 2000  
**Review:** Assistive Technology Pointers for Parents focuses on specific questions that parents can use to help them advocate for assistive technology devices and services for their child in the schools. This easy-to-follow workbook clearly illustrates the process of assistive technology decision-making through the use of several realistic case study examples. It also provides excellent suggestions for parents to become active members of their child's assistive technology team to work effectively with school personnel.

**Type of Material:** Training Material  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** CATO  
541-440-4791  
**Cost (As of Date Entered):** $12/packet

### 131. Assistive Technology Resources for Students with Mild Disabilities

**Author(s):** Dave L. Edyburn, PhD  
**Publisher:** Psy-Ed Corp 2003-2004  
**Publication Date:** January 2003  
**Review:** This short but highly informative article is directed to parents, but could also be helpful to educators, who work with and advocate for children with mild disabilities. While much technology has
reaching devices. Contact information is provided for vendors and funding sources.

| **Type of Material**: Resource Guide |
| **Audience**: AT Professionals, Educators, Parents/Family, People with Disabilities, Rehabilitation Professionals, Service Providers |
| **Target Disability**: Brain Injury and Stroke, Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired |
| **Ordering Information**: WYNOT Main Office  
1465 N. 4th St., Ste. 111  
Laramie, WY 82072  
307-766-2084 800-861-4312 (Wyoming residents only) |
| **Cost (As of Date Entered)**: free |
| **Website**: [http://www.cybercil.com/library/at_mobile2.pdf](http://www.cybercil.com/library/at_mobile2.pdf) |

128. Assistive Technology Outcomes and Benefits Journal

| **Author(s)**: Phil Parette, Editor, David Diketer, Assoc. Editor |
| **Publisher**: Assistive Technology Industry Association (ATIA), Special Education Assistive Technology (SEAT) |
| **Publication Date**: January 2004 |
| **Review**: In the autumn of 2004, ATIA published the first issue of a new AT journal entitled "Assistive Technology Outcomes and Benefits." This peer-reviewed, cross-disability, multidisciplinary journal focused on articles exclusively "related to the outcomes and benefits of assistive technology (AT) across the lifespan." Submissions were designed to cater to several audiences and were broken into two categories; Voices from the Field (professionals involved in AT service delivery, family members and/or consumers with disabilities), and Voices from the Industry (AT development and marketing professionals).

This first issue discussed several topics: the federally funded ATOMS project; Dynavox 3100; the AAC Olympics program (Florida); an AT pre-service model (Illinois State University, 2003); a study of mentorship training to support AT integration in the classroom; and an AAC process using a meaning-based approach for "more fluid, expressive, and efficient communication."

This journal might best be used by those who are experienced AT providers. It is anticipated that it will be published on an annual basis.

| **Type of Material**: Journal/Magazine |
| **Audience**: Service Providers |
| **Target Disability**: General/Non-disability Specific |
| **Cost (As of Date Entered)**: no charge |
| **Website**: [http://www.atia.org/atob/ATOBWeb/ATOBV1N1/index.htm](http://www.atia.org/atob/ATOBWeb/ATOBV1N1/index.htm) |

129. Assistive Technology Planner: From IEP consideration to Classroom Implementation

| **Author(s)**: National Assistive Technology Research Institute |
| **Publisher**: National Assistive Technology Research Institute |
| **Publication Date**: January 2005 |
| **Review**: The Assistive Technology Planner is a book containing all the tools one needs to design and implement use of assistive technology in an IEP. The planner contains separate books for teachers, administrators, and families. A user guide includes a reproducible AT implementation form. |
This information is a good starting point for someone who wants to initiate comprehensive research into the federal laws that protect people with disabilities. However, this report does not provide any links or resources for more in-depth research.

**Type of Material:** Report  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Hearing Impairments / Deaf, Mobility Impaired, Multiple Disabilities, Visual Impairment / Blind, Orthopedically Impaired  
**Ordering Information:** Available on web site  
**Cost (As of Date Entered):** Free  
**Website:** [http://natri.uky.edu/resources/fundamentals/laws.html](http://natri.uky.edu/resources/fundamentals/laws.html)

### 126. Assistive Technology: Matching Device and Consumer for Successful Rehabilitation

**Author(s):** Marcia J. Scherer  
**Publisher:** American Psychological Association  
**Publication Date:** January 2002  
**Review:** The process of matching technology to consumers is as individual as personalities. Scherer has designed a book that assembles a broad range of ideas to consider when recommending and supporting people and clients with disabilities. This book emphasizes the need to consider psychological aspects of the AT user as well as their specific abilities and disabilities. This is sometimes overlooked in the rehabilitation field. Case studies are inspiring, but sometimes leave out names of specific equipment or software that would be beneficial. In short, this book helps bring the perspective of the consumer closer to the AT consultant. It encourages the AT consultant to make recommendations based on a broad range of factors.  
**Type of Material:** Book  
**Audience:** AT Professionals, Parents / Family, Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Health Impairments, Mobility Impaired, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired, Cystic Fibrosis  
**Alternate Formats:** Audio Tape, Large Print, Audio Tape, Large Print  
**Ordering Information:** APA Order Department  
P.O. Box 92984  
Washington, DC 20090-2984  
Tel # (800)374-2721  
FAX (202)336-5502  
**Cost (As of Date Entered):** $49.95  
**Website:** [http://www.apa.org/books/431667A.html](http://www.apa.org/books/431667A.html)

### 127. Assistive Technology Options for Mobility Impairments

**Publisher:** Wyoming New Options in Technology (WYNOT)  
**Publication Date:** April 2004  
**Review:** This resource guide is a brief, but comprehensive informational guide for individuals with mobility impairments. The guide offers some basic information about mobility devices such as walkers, canes, etc., as well as other devices that can improve independence in the home such as
124. Assistive Technology: Legal Issues for Students with Disabilities and Their Schools

Author(s): Janice Neibaur Day and Dixie Snow Huefner  
Publisher: Journal of Special Education Technology  
Publication Date: January 2003  
Review: This article provides a current, detailed and thorough analysis of federal policy, legislation and adjudication related to assistive technology (AT) for students with disabilities. Since the 1990’s, as technology has increasingly made its way into the classroom, it is becoming more and more critical that AT solutions are considered as options for students with disabilities. The article reviews IDEA, Section 504, Section 508, the ADA and the AT Act of 1998 in the section that describes federal legislation that relates to AT for students with disabilities. Detailed descriptions of the laws are presented and the definition of "AT devices and services" in each law is discussed. There is a detailed explanation of how the laws are interpreted to provide a free and appropriate education (FAPE). Procedures for evaluating the need for AT, training on equipment and use are made clear. Funding issues are addressed.

The AT practitioner who reviewed this article found it to be a useful resource to support some of the ongoing issues that arise during the evaluation process. There is much useful information in this article, which reflects best practices along with barriers to best practice. Court decisions and hearings related to AT evaluations and devices are presented and summarized in both tables and text at the end of the article. This information my be useful for parents and care givers who would like to advocate for AT evaluations and services for their students with disabilities. The article includes the disturbing observation that in some cases AT is still not being adequately considered for students with disabilities in schools, that funding is often inadequate and that delays in getting needed AT to students still persists.

Type of Material: Article  
Audience: Service Providers  
Target Disability: General / Non-disability Specific, Learning Disabilities  
Alternate Formats: Electronic, Electronic  
Website: http://jset.unlv.edu/18.2/day/first.html

125. Assistive Technology Legal Mandate

Author(s): A. Edward Blackhurst  
Publisher: National Assistive Technology Research Institute  
Publication Date: January 2001  
Review: This report is an overview of federal laws that are in place to mandate accessibility for people with disabilities in the workplace, in educational institutions, and in other public venues. It also briefly outlines the history of the various discriminations being addressed by federal laws and describes the laws that have been put into effect. These laws include ADA, IDEA, the Tech Act, and Section 504 of the Rehabilitation Act.

While the information in the report is brief, it is a good introduction to families of or people who work with people with disabilities. It is written in language that is pretty easy to understand given that very complex laws are being described in a few paragraphs.
122. Assistive Technology in the Individual Education Plan Outline

Author(s): Dubbles, K.
Publisher: Neighborhood Legal Services (NLS)
Publication Date: January 1999
Review: This is a long and information-rich article, that provides a detailed outline of the process of the Individualized Education Program (IEP) development and how to successfully integrate the use of assistive technology into the IEP. It is recommended for parents, educators, and all potential members of an IEP team.
Type of Material: Article
Audience: Parents / Family
Target Disability: General / Non-disability Specific
Ordering Information: National AT Advocacy Project
Neighborhood Legal Services
295 Main St., Suite 495
Buffalo, NY 14203
Voice: (716) 847-0650 TDD: (716-847-1322)
Cost (As of Date Entered): free
Website: http://www.nls.org/atiep.htm

123. Assistive Technology Laws

Author(s): Assistive Technology Training Online Project
Publisher: Center for Assistive Technology-University of Buffalo
Publication Date: January 2000
Review: This helpful website is a training module developed as part of a federal grant by the Assistive Technology Training Online Project. The site provides a simple, easy to read summary of federal laws that impact the educational services of children with disabilities. The laws are categorized into three areas: civil rights, special education and assistive technology. They are also listed chronologically. The most helpful feature of this website is the link that the authors paired with each law to provide more in-depth information. For example, clicking the button next to IDEA provides the user with information from ideapractices.org (where you can search and read the actual law) and the button next to the Tech Act provides the user with information from the Association of Tech Act Projects.
Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family
Target Disability: General / Non-disability Specific
Ordering Information: Assistive Technology Training Online Project
University at Buffalo
Center for Assistive Technology
515 Kimball Tower
Buffalo, New York 14214
Telephone:(716) 829-3141
Fax: (716) 829-3217
Email: atto-webmaster@buffalo.edu
Website: http://atto.buffalo.edu
There is a step-by-step explanation of how this district implemented its comprehensive staff development program. A listing of resources for conducting thorough assessments is included as is a listing of resources to be used for staff/parent training purposes. This article provides a lot of good, useful information in clear and direct language.

**Type of Material:** Article

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities

**Target Disability:** General / Non-disability Specific, Developmental Disabilities, Learning Disabilities

**Ordering Information:** Can be downloaded from the web site.

**Cost (As of Date Entered):** Free

**Website:** [http://www.ataccess.org/resources/atk12/default.html](http://www.ataccess.org/resources/atk12/default.html)

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### 120. Assistive Technology in Regular Education!

**Author(s):** Kathleen M. Witbread, Ph.D.

**Publisher:** ConnSENSE

**Publication Date:** January 2002

**Review:** This article describes a growing number of students in need of help in our school systems - children who have the cognitive ability to complete the curriculum but who encounter stumbling blocks in the learning process. The article describes a student leaving elementary school and entering middle school with disabilities that require a great deal of accommodations in writing, organization, and reading. With technology, it was possible for this student to succeed with minimal interference from adults and teachers - thus allowing the child to succeed on his own.

**Type of Material:** Article

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** Learning Disabilities, ADHD/ADD

**Alternate Formats:** Large Print, Large Print

**Ordering Information:** Available via the Website address below.

**Cost (As of Date Entered):** none

**Website:** [http://www.connsensebulletin.com/whitart.html](http://www.connsensebulletin.com/whitart.html)

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### 121. Assistive Technology in the Classroom

**Author(s):** South Carolina Assistive Technology Project

**Publisher:** South Carolina Assistive Technology Project

**Publication Date:** January 2000

**Review:** This is a basic fact sheet that describes the necessity of assistive technology in the classroom for students with disabilities. The potential for modifying and accommodating is as diverse as the disability. Accommodating can be as simple as using a stander to access learning material to using listening devices or screen readers. This article gives a brief overview of the possible alternatives for those who are beginning to look at modifications for a child who has a disability.

**Type of Material:** Infosheet / Fact sheet

**Audience:** Parents / Family

**Target Disability:** General / Non-disability Specific

**Alternate Formats:** Electronic, Large Print, Electronic, Large Print

**Ordering Information:** Download from the web site or by contacting South Carolina Assistive Technology Project via e-mail: jjendron@usit.net

**Cost (As of Date Entered):** Free on web site
117. Assistive Technology Funding Search Tips

Publisher: Assistive Technology Project of United Cerebral Palsy of Chicago, IL
Publication Date: January 2005
Review: This two-page article is clearly written for the individual technology user or the family of an individual with disabilities, professionals and caregivers. It is a more concise, edited version of a longer article entitled, "Finding the Money" by Infinitec, Inc. which has been reviewed previously at the FCTD website.

This article gives a broad approach to the subject of searching for funding, with some specific ideas and examples included. It is aimed at the beginning fundraiser as a plan, and could be used by those more experienced with fundraising as a checklist.

Type of Material: Article
Audience: Educators, Parents / Family, Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://www.ucp.org/ucp_channeldoc.cfm/1/14/86/86-86/2938

118. Assistive Technology in Education

Author(s): South Carolina Assistive Technology Project
Publisher: South Carolina Assistive Technology Project
Publication Date: January 2000
Review: Developing an IEP (Individualized Education Plan) that includes assistive technology can be a daunting experience for parents and those involved in the IEP process. This fact sheet succinctly explains in eight parts the development and implementation of an IEP. It also identifies the possible types of technology used in the IEP and the funding process. When all parties involved do not agree upon an IEP, an appeal process is briefly described. However, all states handle this differently and individuals should check their copies of parental rights.

Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Large Print, Electronic, Large Print
Ordering Information: Download from web site
Cost (As of Date Entered): Free on web site
Website: http://www.sc.edu/scatp/educationfact.htm

119. Assistive Technology in K-12 Schools

Author(s): Lisa Wahl
Publisher: Alliance for Technology Access
Publication Date: January 2001
Review: This is one in a series of articles about using assistive technology in the classroom to help all students achieve. A comprehensive definition of assistive technology is included and clear examples are provided. This article looks at the classroom as a place with many diverse learners and highlights the ways the teacher could present information to a variety of students and ways for the students to participate within their unique abilities. There is also a story of a school district taking proactive measures to be ready to provide appropriate services to its special education population.
start looking for additional information.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** People with Disabilities  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Developmental Disabilities, Learning Disabilities, Mental Retardation, Multiple Sclerosis, ADHD/ADD  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Available on the website  
**Cost (As of Date Entered):** Free to download and/or print from web site  
**Website:** [http://www.atstar.org/at_writing.htm](http://www.atstar.org/at_writing.htm)

### 115. Assistive Technology: Frequently Asked Questions

**Author(s):** South Carolina Assistive Technology Project  
**Publisher:** South Carolina Assistive Technology Project  
**Publication Date:** January 2000  
**Review:** This fact sheet is a brief overview of some of the language used in the field of assistive technology. It describes what assistive technology is, how a person can find out what they need and gives examples of low tech and high tech equipment. In general, it is a good starting place for those who are just beginning the assistive technology process.  
**Type of Material:** Infosheet / Fact sheet  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Large Print, Electronic, Large Print  
**Ordering Information:** Download from the web site or by contacting South Carolina Assistive Technology Project via e-mail- jjendron@usit.net  
**Cost (As of Date Entered):** Free on web site  
**Website:** [http://www.sc.edu/scatp/FAQ.htm](http://www.sc.edu/scatp/FAQ.htm)

### 116. Assistive Technology Funding Search Tips

**Publisher:** AT Project, UCP-Chicago, Infinitec, Inc.  
**Publication Date:** January 2003  
**Review:** This report refers to the Job Accommodation Network (JAN) in endeavoring to search for funds for assistive technology. It offers practical and systematic tips including: know your rights under disability and education laws; become your own best advocate; know your needs specific to the technology you are looking to purchase; ask for a loaner to trial; document how the device works, who you spoke to, etc.; learn the rules of funding sources and follow them; find an advocate to help you and obtain legal counsel if you need it; and look for more than one funding source. The report defines some of the places that may offer funding including: Veterans Administration, Social Security Administration, Workers Compensation department, non-profit disability organizations, civic and service organizations.  
**Type of Material:** Infosheet / Fact sheet  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Available via the Website.  
**Website:** [http://www.ucp.org/ucp_channelsdoc.cfm/1/14/86/86-86/2938](http://www.ucp.org/ucp_channelsdoc.cfm/1/14/86/86-86/2938)
112. Assistive Technology for Public Facilities for People who are Deaf or Hearing Impaired

**Author(s):** Lorrie A. Buddenberg, OTR and Louise W. Cremeen  
**Publisher:** ICAN  
**Publication Date:** January 2000  
**Review:** This is a basic overview of types of devices that might assist a deaf individual in the community or home. It provides lists of a variety of equipment that would be useful for people with hearing impairments in different environments.

The article does not tell the reader where the equipment can be purchased, but does provide the names of a few organizations where more information about hearing impairments can be found.

**Type of Material:** Resource Guide  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Hearing Impairments / Deaf  
**Alternate Formats:** Braille, Braille  
**Ordering Information:** Download from the Arkansas ICAN web site.  
**Cost (As of Date Entered):** Free on Arkansas ICAN web site  
**Website:** [http://www.arsinfo.net/ican/fs_at_pub.html](http://www.arsinfo.net/ican/fs_at_pub.html)

113. Assistive Technology for Reading

**Publisher:** ATSTAR, Assistive Technology, Strategies, Tools, Accommodations and Resources  
**Publication Date:** January 1999  
**Review:** This short information sheet covers the basics of assistive technology for reading. It begins with a list of types of assistive technology available, from types of books (repeated text) to complex computer and scanner options. There is a short discussion of who would benefit from assistive technology for reading, and then a list of other Internet-based sources of information.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** Educators, Parents / Family, People with Disabilities  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Learning Disabilities, Mental Retardation, Multiple Disabilities, Visual Impairment / Blind, ADHD/ADD  
**Ordering Information:** Available on the organization's website.  
**Cost (As of Date Entered):** free  
**Website:** [http://www.atstar.org/at_reading.htm](http://www.atstar.org/at_reading.htm)

114. Assistive Technology for Writing

**Author(s):** ATSTAR, Assistive Technology, Strategies, Tools, Accommodations and Resources  
**Publisher:** ATSTAR, Assistive Technology, Strategies, Tools, Accommodations and Resources  
**Publication Date:** January 1999  
**Review:** This short, to the point, info sheet gives Assistive technology solutions to problems concerning both the physical/mechanical and the expression/composition components of writing. It offers basic suggestions of items/solutions that should be considered when working with a student who needs assistance with the writing process. The suggestions are general, with no specific information about particular products, but would give an individual looking for ideas a good place to
**Review:** This short, basic infosheet defines the types of assistive technology that can be used in studying and organizing for learning. While the list is general, it presents a good overview of types of equipment. There are additional links to other learning disability-related websites that would offer more information about LD in general, and assistive technology solutions for LD.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Available on the website.  
**Cost (As of Date Entered):** Free to download/print  
**Website:** [http://www.atstar.org/at_studying_learning.htm](http://www.atstar.org/at_studying_learning.htm)

### 110. Assistive Technology for Math

**Publisher:** ATSTAR, Assistive Technology, Strategies, Tools, Accommodations and Resources  
**Publication Date:** January 1999  
**Review:** This infosheet gives basic information about possible assistive technology devices and strategies to help address: (1) a student’s inability to write or manipulate numbers accurately and (2) difficulty in computation skills. The list ranges from an abacus to talking calculators to computer software. There are additional links to the web sites of three major learning disability groups, where one can find additional information about assistive technology for learning disabilities.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Available on the organization’s website.  
**Cost (As of Date Entered):** Free from website  
**Website:** [http://www.atstar.org/at_math.htm](http://www.atstar.org/at_math.htm)

### 111. Assistive Technology for People with Mental Retardation

**Author(s):** The ARC  
**Publisher:** The ARC  
**Publication Date:** January 2000  
**Review:** The ARC has compiled a short fact sheet on how individuals with mental retardation might use assistive technology. The fact sheet begins with a very short description of assistive technology in general, and then moves to the different areas in which AT might be used by individuals with mental retardation. It lists the ways that AT might assist during recreation, communication, employment, school, home, in communication and mobility. The next 2 sections cover the ways that assistive technology can make a difference, and the areas one should consider as they look for appropriate assistive technology.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Mental Retardation  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Available from the website [http://www.sc.edu/scatp/mr.htm](http://www.sc.edu/scatp/mr.htm) or via email.  
**Cost (As of Date Entered):** Free on web site
107. Assistive Technology for Computer Access

**Author(s):** ATSTAR Assistive Technology, Strategies, Tools, Accommodations, Resources  
**Publisher:** ATSTAR Assistive Technology, Strategies, Tools, Accommodations, Resources  
**Publication Date:** January 2000  
**Review:** This short info sheet gives a very basic, simplistic overview of computer access for individuals with varying disabilities. It lists the basic types of assistive technology available for computer access, while not listing any particular brand names. The online info sheet contains links to both Apple and Microsoft sites that present information about accessibility options built into their operating systems, as well as a link to the TRACE Center. The link to Typing Injury FAQ is invalid as of 2/11/03.  
**Type of Material:** Infosheet / Fact sheet  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Available from the website  
**Cost (As of Date Entered):** Free on website  
**Website:** [http://www.atstar.org/at_computer_access.htm](http://www.atstar.org/at_computer_access.htm)

108. Assistive Technology for Infants and Toddlers

**Publisher:** Families and Advocates Partnership for Education  
**Publication Date:** January 2000  
**Review:** This article focuses on the needs of small children in early intervention programs and the benefits of introducing assistive technology at this early stage in their "education."  

The article points out how important the contributions of assistive technologies are to social interactions and the self-confidence that arises from a child’s being able to communicate effectively within his/her environment. The discussion ranges from what kind of technology is available and how to access it, to funding and training.

Additional discussion focuses on AT evaluation and on the IDEA definition of assistive technology goods and services. Organizations that can provide information are listed along with their phone numbers.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** Free  

109. Assistive Technology for Learning and Studying

**Publisher:** ATSTAR Assistive Technology, Strategies, Tools, Accommodations, Resources  
**Publication Date:** January 1999
problems using low technology, mid tech, and finally higher-level technology strategies. The suggestions are solidly based on research, practical, and "do-able". It definitely addresses the special concerns that are evident in a child with a diagnosis of PDD.

This is a "must-read" article for teachers, parents, or therapists of a child diagnosed with PDD or related diagnosis.

**Type of Material**: Article  
**Audience**: AT Professionals, Educators, Parents / Family  
**Target Disability**: Autism  
**Alternate Formats**: Electronic, Electronic  
**Ordering Information**: Cooperative Educational Service Agency No. 7  
595 Baeten Road  
Green Bay, WI 54304  
Phone: 920/492-5960  
Fax: 920/492-5965  
**Cost (As of Date Entered)**: Free  

**105. Assistive Technology for Children with Learning Difficulties**

**Author(s)**: Raskind, M.  
**Publisher**: Schwab Foundation for Learning  
**Publication Date**: January 2000  
**Review**: This is a guide that is part of "Bridges to Reading" that contains step-by-step strategies to identify, understand, and address children's reading problems.  
**Type of Material**: Resource Guide  
**Audience**: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability**: Learning Disabilities  
**Ordering Information**: Schwab Foundation for Learning  
1650 South Amphlett Blvd. #300  
San Mateo, CA 94402  
800-230-0988  
**Cost (As of Date Entered)**: Free  

**106. Assistive Technology for Communication**

**Publisher**: ATSTAR, Assistive Technology, Strategies, Tools, Accommodations and Resources  
**Publication Date**: January 1999  
**Review**: This very short information sheet covers the basic information about what augmented communication means and who could benefit from it. While it does not mention any specific device, it does list types of devices. It has three good links to other sites that offer assistance with augmented communication.  
**Type of Material**: Infosheet / Fact sheet  
**Audience**: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
The article does not address in detail specific AT products for students with hearing impairments. This information is contained in a companion fact sheet, "Assistive Technology Fact Sheet #2: Assistive Listening Devices for Children With Hearing Impairments".

**Type of Material**: Infosheet / Fact sheet

**Audience**: Parents / Family

**Target Disability**: Hearing Impairments / Deaf, Multiple Disabilities

**Ordering Information**: Free on the WATI web site.

**Cost (As of Date Entered)**: Free

**Website**: [http://www.wati.org/at_services/pdf/hearingfactsheet1.pdf](http://www.wati.org/at_services/pdf/hearingfactsheet1.pdf)

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103. Assistive Technology Fact Sheet #2: Assistive Listening Devices for Children with Hearing Impairments

**Author(s)**: Wisconsin Dept. of Public Instruction and Wisconsin Assistive Technology Initiative (WATI)

**Publisher**: Wisconsin Assistive Technology Initiative (WATI)

**Publication Date**: January 2002

**Review**: This fact sheet is an easy to understand and informative source of information about assistive listening devices (ALDs) and how they can be obtained and used in school situations.

Two major categories of ALDs are identified and defined along with examples of why they would be used in a classroom setting.

There is also a lot of excellent information about how a hearing impairment is defined, what a parent should do if they think their child has a hearing impairment and how it is decided whether or not a student needs an ALD. Some of this information is specific to Wisconsin residents and Wisconsin state law. However, much of the information, especially that pertaining to federal law, would apply no matter where the reader lives.

**Type of Material**: Infosheet / Fact sheet

**Audience**: Parents / Family

**Target Disability**: Hearing Impairments / Deaf, Multiple Disabilities

**Ordering Information**: Free on the WATI web site.

**Cost (As of Date Entered)**: Free on WATI web site

**Website**: [http://www.wati.org/at_services/pdf/hearingfactsheet2.pdf](http://www.wati.org/at_services/pdf/hearingfactsheet2.pdf)

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104. Assistive Technology for Children with Autism

**Author(s)**: Susan Stokes

**Publisher**: CESA 7

**Publication Date**: January 2003

**Review**: There are few articles written that truly answer the needs of those individuals that fall under the Pervasive Developmental Disorder, or specifically Autism Disorder. This article not only gives practical suggestions or answers, but also describes the learning process in terms that anybody can understand. Examples are given and you don't have to be highly trained to understand the information.

This article describes the difficulty that children have who are diagnosed with autism or other PDD diagnoses, communication being the biggest difficulty. The author then describes how to handle the
101. Assistive Technology Enhances Learning for All

Author(s): Lisa Wahl
Publisher: edutopia online
Review: Education for students with disabilities now takes place in a range of settings, from inclusion in mainstream classes to special classes that provide more intensive support for particular skills. It is a time when expectations and educational options are often made possible by assistive technology tools that enable students with disabilities to more fully participate in classroom activities.

In this article, the reader is taken through a day in an elementary school in which assistive technology is used extensively by students. The article lists not only different types of assistive technology devices, both high and low tech, but also gives scenarios in which they are used effectively by learners. Teachers and parents may be particularly interested to read the brief accounts of how multiple tools and learning styles are accommodated in these lesson scenarios. Links to specific products are provided at the conclusion of the article.

Type of Material: Article
Audience: Parents / Family
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge

102. Assistive Technology Fact Sheet #1: Assistive Technology for Children with Hearing Impairments

Author(s): Wisconsin Dept. of Public Instruction and Wisconsin Assistive Technology Initiative (WATI)
Publisher: Wisconsin Assistive Technology Initiative (WATI)
Publication Date: January 2002
Review: This fact sheet is directed toward parents of children with hearing impairments who reside in Wisconsin. However, most of the information it contains would be helpful to similar parents in any state.

The article defines the term "assistive technology" (AT), identifies the categories of AT that are appropriate for students with hearing impairments, and addresses why these products may be needed in a school setting.

There is quite a bit of content dedicated to helping Wisconsin parents find out about AT and where the products can be obtained in their state. While this information is strictly for Wisconsin residents, people in other states can get some good ideas about where they might be able to look in their community.

This easy to understand fact sheet concludes with information about how the IEP team and process can be the guiding force in determining the need for AT and who is responsible for providing products and services.
The article also includes links to web sites where more detailed information can be found.

**Type of Material:** Article  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Download from homemods.org web site  
**Cost (As of Date Entered):** Free on homemods.org web site  
**Website:** [http://www.homemods.org/library/pages/ATAssess.htm](http://www.homemods.org/library/pages/ATAssess.htm)

99. Assistive Technology at Home and in the Community for People who are Deaf and Hard of Hearing

**Author(s):** Arizona Technology Access Program  
**Publisher:** Arizona Technology Access Program  
**Publication Date:** April 2004  
**Review:** This is a short overview of devices for the deaf or hard of hearing. It provides examples of devices and their use. Some of the devices included are: devices for alerting or signaling (i.e., doorbells, alarm clocks, smoke alarms), telecommunications (i.e., modified telephones), assistive listening devices such as FM systems, induction loop and infrared transmitters, and telecaption decoders.  
**Type of Material:** Article  
**Audience:** AT Professionals, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Deaf / Blind, Hearing Impairments / Deaf  
**Ordering Information:** Arizona Technology Access Program  
Institute for Human Development  
Northern Arizona University  
Box 5630  
Flagstaff, AZ 86011  
(520) 523-8141  
**Website:** [http://www.nau.edu/ihd/aztap/deaffact.shtml](http://www.nau.edu/ihd/aztap/deaffact.shtml)

100. Assistive Technology: Enabling Dreams

**Author(s):** Diane Curtis  
**Publisher:** Edutopia  
**Publication Date:** January 2005  
**Review:** This article explores the use of assistive technology, as it continues to grow and expand, in the lives of a variety of students. Four students of varying ages and varying disabilities/needs are highlighted. Each story illustrates how assistive technology is helping the student to be successful academically and to accomplish their dreams.  

The Do-It program from the University of Washington is also highlighted in the article for the advocacy work they do on behalf of students with disabilities. The article contains good illustrations of the power of assistive technology in the lives of people with disabilities.  
**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
The article begins by providing a definition of assistive technology and discussing the difference between AT devices and AT services. The author emphasizes the importance of beginning early with assistive technology to receive the maximum benefit as well as the need for a sound collaborative multidisciplinary assessment in the child’s natural environment (generally home and school) to determine the child’s abilities and limitations.

Additional helpful suggestions are included: to use low-tech devices when possible, to borrow the assistive technology to see if it works before buying it, to monitor progress and make sure that the device is functioning properly, and to find out about the warranty and determine who can repair the AT if necessary.

**Type of Material:** Article  
**Audience:** Parents / Family  
**Target Disability:** Health Impairments, Neurological Disorders, Huntington's Disease  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** This article can be found on the Huntington Disease web page or Kids Health webpage.  
http://www.kidshealth.org/parent/system/ill/assistive_tech.html

**Cost (As of Date Entered):** No charge  
**Website:** [http://endolifecare.tripod.com/juvenilehuntingtonsdisease/id37.html](http://endolifecare.tripod.com/juvenilehuntingtonsdisease/id37.html)

### 97. Assistive Technology Assessment

**Author(s):** South Carolina Assistive Technology Project  
**Publisher:** South Carolina Assistive Technology Project  
**Publication Date:** January 2000  
**Review:** Many consumers do not realize that to get the most out of technology assistance it is necessary to do either an informal or formal assistive technology assessment. This fact sheet gives information on different types of assessments, what to consider during the assessment process, and other steps to take in order to have a successful assessment. With a successful assessment, it is easier to develop a successful plan and have an outcome that is cost efficient for the provider and effective for the consumer.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Large Print, Electronic, Large Print  
**Ordering Information:** Download or print from web site or contact South Carolina Assistive Technology Project by e-mailing jjendron@usit.net  
**Cost (As of Date Entered):** Free on web site  
**Website:** [http://www.sc.edu/scatp/assessfact.htm](http://www.sc.edu/scatp/assessfact.htm)

### 98. Assistive Technology Assessment: A Comparative Analysis of Five Methods

**Author(s):** Barbara E Bromley, Ph. D  
**Publisher:** National Resource Center on Supportive Housing and Home Modification  
**Publication Date:** January 2000  
**Review:** This article gives the reader an overview of five different models commonly used to make assistive technology assessments. Each model is examined separately and the main part of each model is briefly discussed. This article makes no recommendation for one model over another, but gives the reader clear examples of the similarities and differences between the different approaches.
95. Assistive Technology and Transition

Author(s): T. Canfield and P. Reed
Publisher: Wisconsin Assistive Technology Initiative (WATI)
Publication Date: January 2001
Review: This article is a compilation of forms created by Canfield and Reed and forms created by Noll, Schwartz and Canfield that aid the IEP team in coordinating and planning for transition.

Use of the forms should begin at age 14 and end with graduation. The collection of forms create a portfolio that documents the student’s transition process. The portfolio will contain the recent IEP, assessment reports, documentation of successful assistive technology accommodations, documentation of self determination skills, record of eligibility for Vocational Rehabilitation and other relevant information.

This compilation can be used in its entirety or to supplement the tools that a school district is currently using.

Type of Material: Article
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Ordering Information: Wisconsin Assistive Technology Initiative (WATI)

Penny Reed,

Director info@wati.org

357 North Main Street

Amherst, WI 54406

715.824.6415

or 800.565.8135

Fax 715.824.5323

Cost (As of Date Entered): No charge
Website: http://www.wati.org/curriculum/pdf/attransitionpacket.pdf

96. Assistive Technology and Your Child

Author(s): Dr. Kim Rutherford
Publisher: Huntington's Disease Support Information
Publication Date: January 2003
Review: This article was designed for parents of a child with Huntington’s Disease and provides a great deal of information specific to HD. It also contains general assistive technology information and can be useful to many others.
team consider AT in the development of each IEP. The article emphasizes that there needs to be a mechanism to insure that AT is in fact raised for every student.

The author follows up with sample forms and practical suggestions to achieve the objective that AT considerations are part and parcel of the IEP process. Incorporated in the article is a thought-provoking quiz by Diane Golden.

**Type of Material:** Article  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** To request a free sample copy of SETP, send an email message with your mailing address to: setpinfo@setp.net

Subscribe to SETP online at: http://www.setp.net/Orders.html  
**Cost (As of Date Entered):** $9.75  
**Website:** http://www.setp.net

93. Assistive Technology and the IEP

**Author(s):** Vermont Parent Information Center  
**Publisher:** Vermont Parent Information Center  
**Publication Date:** January 2000  
**Review:** This very short article describes the function of assistive technology in the IEP process. It describes what assistive technology is, how to get assistive technology services, who pays for it, and what happens when a disagreement occurs. The article is not all-encompassing, but it is an easy-to-understand introduction for parents to the IEP process and their child’s rights to assistive technology under the law.

**Type of Material:** Article  
**Audience:** Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Free on the Vermont Parent Information Center website.  
**Cost (As of Date Entered):** Free on the Vermont Parent Information Ctr website  
**Website:** http://www.vtpic.com/downloads/at_iep_facts.pdf

94. Assistive Technology and the IFSP

**Author(s):** Vermont Parent Information Center  
**Publisher:** Vermont Parent Information Center  
**Publication Date:** January 2001  
**Review:** This article gives a brief description of the role of assistive technology (AT) in the early years, and in the Individualized Family Services Plan (IFSP). It includes information about the funding of AT as well as how AT can be helpful in many aspects of an infant’s or toddler’s life. There is also good information on transitioning to the child’s next placement and how to handle disagreements about assistive technology.

**Type of Material:** Infosheet / Fact sheet  
**Audience:** Parents / Family  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Download from Vermont Parent Information Center web site. You will need Adobe Acrobat Reader to read the PDF file.
**Review:** This brochure addresses the unique set of challenges faced by members of rural communities when accessing, selecting, funding, and maintaining assistive technology devices and services. A variety of assistive technology solutions that might help a person with a disability work and live more independently in a rural setting, such as hydraulic and computerized control systems, are briefly described. The brochure also provides a list of assistive technology services and resources for people with disabilities who live in rural settings, some specific to the State of Oklahoma.

**Type of Material:** Brochure  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Oklahoma ABLE Tech  
1514 West Hall of Fame  
Stillwater, OK 74078-2026  
800-257-1705  

**Website:** [http://www.ok.gov/abletech/Publications/Assistive_Technology_and_Rural_Life.html](http://www.ok.gov/abletech/Publications/Assistive_Technology_and_Rural_Life.html)

**91. Assistive Technology and Taxes: Not a Perfect Fit**

**Author(s):** Mitch Jeserich  
**Publisher:** AT Journal  
**Publication Date:** January 2003  
**Review:** A useful primer for those who purchase assistive technology equipment and are considering the tax implications of the equipment they have purchased. The article offers encouragement that AT equipment can indeed be tax deductible but that neither tax forms nor guidelines contain the words "assistive technology." To claim an AT device as deductible, the device must fit under an existing IRS category such as medical expenses, work expenses or miscellaneous work expenses. For an AT device to qualify as tax deductible, the purchaser must show that the equipment "extenuated" a disability or limitation.

**Type of Material:** Article  
**Audience:** Rehabilitation Professionals  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Available on the website.  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.atnet.org/news/2003/apr03/040101.htm](http://www.atnet.org/news/2003/apr03/040101.htm)

**92. Assistive Technology and the IEP**

**Author(s):** Dave L. Edyburn Phd  
**Publisher:** Special Education Technology Practice  
**Publication Date:** January 2002  
**Review:** Dave L. Edyburn, Ph.D, succeeds in articulating the current state of the Individual Education Plan (IEP) and assistive technology (AT). He addresses the importance of the IEP, its legal background, available resources and the realities of administrative support. The discussion is focused on the mandate that all IEP teams consider assistive technology when planning each disabled student’s IEP. The Individuals with Disabilities Education Act (IDEA) of 1997 requires that the IEP
Publication Date: January 2006
Review: ‘Affective communicating’ is the ability of an individual to express and interpret emotions between communication partners. ‘Affective mediation’ refers to computer based systems that enable users to communicate emotions back and forth. This article describes the main impairments and disorders that may involve affective communication deficits. Also presented are several affective mediation technologies that are being applied or may be integrated in assistive technologies in order to improve affective communication for a range of disabilities.

This document is a highly specialized and technical paper. The authors have structured their report to make it understandable across languages, cultures, and software platforms. The team presents definitions, showcases efforts to improve affective communication for affective computing and AT areas, then pinpoints the results.

Type of Material: Research Paper
Audience: AT Professionals
Target Disability: General / Non-disability Specific, Communication and Speech, Mobility Impaired
Cost (As of Date Entered): No charge

89. Assistive Technology and Peer Socialization in Early Childhood Special Education

Author(s): Phyllis Dinse
Publisher: California Foundation for Independent Living Centers
Publication Date: January 2006
Review: In this article, the importance of early access to assistive technology is stressed. Dinse explains the importance of assistive technology (AT) and how it affects socialization skills. According to the author, children who use AT are more independent and have an earlier understanding of cause and effect. They learn to communicate needs and wants, and are able to develop relationships at a younger age than peers with disabilities who have no access to AT.

The article is short and simple. It gives examples of modeling communication and ways for introducing the AT devices as tools rather than as toys.

Type of Material: Article
Audience: Educators, Parents / Family
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): No charge
Website: http://www.atnet.org/journal/040601.htm

90. Assistive Technology and Rural Life

Author(s): Oklahoma ABLE Tech
Publisher: Oklahoma ABLE Tech
Publication Date: April 2004
86. Assessment - Public or Private?

Author(s): Jan Baumel, M.S., Licensed Educational Psychologist
Publisher: SchwabLearning.org
Publication Date: January 2001
Review: This excellent article takes a comprehensive look at the assessment process to determine eligibility for special education services. While the article was written specifically for parents of students with learning disabilities, the information and advice is of value to parents regardless of their child's disability.

The article begins by describing reasons that an assessment should be considered and when a parent might want to consider a private assessment in addition to the one that the school provides.

In addition to addressing who assesses and where the assessment should take place, there is also good information about the components of an assessment and how a learning disability is identified.

Type of Material: Article
Audience: People with Disabilities
Target Disability: Learning Disabilities, ADHD/ADD
Ordering Information: Download from web site
Cost (As of Date Entered): Free on web site
Website: http://www.schwablearning.org/articles.asp?r=326&q=1

87. Assistive Listening Devices and Systems: Amplification Technology for Consumers with Hearing Loss

Author(s): Alice E. Holmes
Publisher: National Rehabilitation Association
Publication Date: January 2000
Review: This article is from a rehabilitation journal and was written with professionals in mind as the primary audience. However, it is a valuable article that provides background information about legislation and statistics on the prevalence of hearing impairments in addition to information about assistive listening devices that are available for individuals with hearing loss. The article provides the reader with descriptions of FM systems, audio loop systems, telephone listening devices, closed captioning, and alerts and alarms.

Type of Material: Article
Audience: Rehabilitation Professionals
Target Disability: Hearing Impairments / Deaf
Ordering Information: Download from the findarticles.com web site.
Cost (As of Date Entered): Free on the findarticles.com web site
Website: http://www.findarticles.com/p/articles/mi_m0825/is_3_66/ai_66032261/print

88. Assistive Technology and Affective Mediation

Author(s): N. Garay, I. Cearreta, J. Lopez, I. Fajardo
Publisher: Human Technology
background information from IDEA regarding the school district’s role in providing assistive
technology devices and services so that a student may receive a free and appropriate public
education (FAPE). Next, the authors discuss assistive technology considerations such as: what is the
student unable to do that they need to do?; is AT currently used? and if so, is it successful?; and
would AT help the student be more independent? Reed and Zabala provide the SETT Framework
(Student, Environment, Task and Tools) as a mechanism for gathering data to make effective
assistive technology decisions. Embedded within the SETT framework is a link to the Wisconsin
Assistive Technology Initiative or WATI. WATI provides helpful forms (which may be downloaded and
used) such as AT Assessment Procedure Guide, student information forms, Environmental
Observation Guide, Assistive Technology Checklist and others.

**Type of Material:** Website  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Assistive Technology Training Online Project  
University at Buffalo  
Center for Assistive Technology  
515 Kimball Tower  
Buffalo, New York 14214  
Telephone: (716) 829-3141  
Fax: (716) 829-3217  
Email: atto-webmaster@buffalo.edu  
Website: http://atto.buffalo.edu  
**Cost (As of Date Entered):** No charge  
**Website:** http://atto.buffalo.edu/registered/ATBasics/Foundation/Assessment/printmodule.php

### 85. Assessing AT Student Need

**Author(s):** Joy Zabala & Penny Reed  
**Publisher:** Assistive Technology Training Online Project  
**Publication Date:** January 2005  
**Review:** As more technology becomes available for a wider variety of individual needs, the
assessment process may also become more difficult. This well laid out website features the SETT
framework, (Student, Environment, Tasks and Tools). The first screen lists the seven steps,
Overview, AT in Schools, Considering AT, Assessment Process, SETT Framework, Integrating into
IEP and References. Each area is described on one page, all nicely integrated and easy to follow.
Some sections have additional links, and each has points clearly listed. While the approach may be
more applicable to those planning an overall assessment process, it would be useable by individual
educators, and parent or caregivers would learn from the many points made throughout the series of
windows. The ideas are carried through to the IEP, Support for School Personnel, References and
Tutorials. In fact one of the goals of the website is online training, while focusing initially on the
individual assessment process.

There is a great deal of information in the Tutorial section, with a short description of Reading &
Writing Tools, Tools for Visually Impaired, Creating Talking Books, and Other Tutorial Sites. This
website has been developing since 2000 by the Assistive Technology Training Online Project.

**Type of Material:** Evaluation Tool  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** No charge
relationship between reading skill development and technology-based approaches. A literature review was completed and twenty-nine articles met the criteria for inclusion in the matrix, which will be updated quarterly. The remainder of the paper discusses the purposes, instructional strategies, educational contexts and related research in each category.

The matrix outlining research related to six technological categories is available online at http://www.nationaltechcenter.org/. It is a searchable database that provides evidence based literature related to the six technological categories. A summary of each of the six categories is presented in the article. This ambitious report, which presents an evidence base supporting technology use for students with reading disabilities, also presents a summary of directions for further research based on what has emerged from the literature. An extensive reference list follows the report.

**Type of Material:** Article  
**Audience:** Educators  
**Target Disability:** General / Non-disability Specific, Learning Disabilities, ADHD/ADD  
**Cost (As of Date Entered):** no charge  
**Website:** http://www.nationaltechcenter.org/matrix/default.asp

83. Around the House

**Author(s):** WYNOT (Wyoming New Options in Technology) Project  
**Publisher:** WYNOT Project  
**Publication Date:** April 2004  
**Review:** Choosing the correct tool for a job or simple adaptations to standard equipment may allow an individual with a disability to be successful in tasks such as housecleaning. This article provides specific solutions to difficult tasks as well as some general suggestions. Most of the supplies are readily available and do not require a specialty catalog or store.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** Brain Injury and Stroke, Developmental Disabilities, Health Impairments, Mobility Impaired, Multiple Disabilities, Orthopedically Impaired  
**Alternate Formats:** Audio Tape, Braille, Large Print  
**Ordering Information:** WYNOT Main Office  
307-766-2761  
800-861-4312 (Wyoming only)  
e-mail: wind@uwyo.edu  
**Cost (As of Date Entered):** Free

84. Assessing AT Student Need

**Author(s):** Joy Zabala and Penny Reed  
**Publisher:** University of Buffalo Center for Assistive Technology  
**Publication Date:** January 2000  
**Review:** In this outstanding, highly recommended training module, Zabala and Reed state, "Assistive technology (AT) devices and strategies have proven successful in giving students with disabilities access to the general curriculum. Before AT can be used, a thorough review of the student needs, abilities, environmental factors and required tasks must take place. Identifying solutions that best address student outcomes is an ongoing process." Zabala and Reed provide the reader with
81. Are Personal Digital Assistants (PDAs) Accessible?

Author(s): National Center on Accessible Information Technology in Education
Publisher: University of Washington
Publication Date: January 2004
Review: PDA’s are becoming increasingly popular in education settings. Although PDA’s are used by some individuals with disabilities, such as those who have learning disabilities, cognitive disabilities and communication difficulties, these devices are not accessible to all users.

This fact sheet lists other devices and software that are available that can increase access to PDA types of devices. There is also a link to a database which reviews pros and cons of a variety of PDA’s for their use in education.

Type of Material: Infosheet / Fact sheet
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge
Website: http://www.washington.edu/accessit/articles?62

82. A Review of Technology-Based Approaches for Reading Instruction: Tools for Researchers and Vendors

Author(s): Silver-Pacuilla, H., Ruedel, K. & Mistrett, S.
Publisher: National Center for Technology Innovation
Publication Date: January 2004
Review: This paper describes the development of the Reading Matrix - a searchable database that presents evidence and products for the use of technologies that support the instruction of reading for students with reading disabilities. It explores the relationship between reading skills development and computer based technology approaches.

A multi-vocal synthesis approach was used to investigate this area, which is characterized as having “an abundance of diverse documents and a scarcity of systematic investigations.” The year-long project reported herein was supported by OSEP and a panel of experts was convened to explore the
Review: This short fact sheet is an excellent starting point for an individual who needs financial assistance from a non-medical or non-government source. The author offers short tips on how to begin to seek such funding from local service organizations and civic groups. The fact sheet covers the essentials, such as researching the group, presenting the needs, costs and facts, and following up with thank you notes and updated information on the impact the purchased equipment has made on the person’s life.

Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Ordering Information: Download or print from website
Cost (As of Date Entered): Free on web site
Website: http://www.ndipat.org/products/fact/fund/civic.htm

79. Appropriate Use of the Electronic Notetaker in School

Author(s): Curtis Chong
Publisher: Braille Monitor
Publication Date: January 2004
Review: This two page article, written by Curtis Chong, examines the practice of teaching children who are blind to use only a Braille note taker for taking notes and for completing school work assignments. He begins by noting that this method is of great importance to persons who are blind, and upon mastery of both reading and writing in Braille, allows users to quickly and efficiently take and review notes.

Having also acknowledged that this skill takes a great deal of practice, and is worth acquiring, he then goes on to caution against the use of Braille notetakers alone. Becoming proficient at using Braille does not prepare one to produce properly formatted papers to be read by the public at large. Braille formatting is different than print. He strongly suggests that blind students must be able to produce printed materials with a variety of tools.

The article would be useful to families and teachers as they plan ahead for young children who are blind to acquire the tools of written communication.

The author is Director of Field Operations for the Iowa Department for the Blind.

Type of Material: Article
Audience: People with Disabilities
Target Disability: Visual Impairment / Blind
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): no charge
Website: http://www.nfb.org/Images/nfb/Publications/bm/bm04/bm0401/bm040109.htm

80. Aquatic Sports and Recreation Equipment

Author(s): AbleData
Publisher: AbleData
Publication Date: January 1992
Review: This is a discussion of the many ways to include individuals with physical disabilities in water sports. It includes information relating to both physical benefits and personal safety. There are
77. Applying Principles of Universal Design to Test Delivery: The Effect of Computer-based Read-aloud on Test Performance of High School Students with Learning Disabilities

Author(s): Dolan R.P., Hall, T.E., Banargee, M., & Strangman, N
Publisher: The Technology and Assessment Study Collaborative at the Caroline & Peter Lynch School of Education
Publication Date: January 2005
Review: This article reports the findings of a pilot study investigating “whether computer–based testing with text-to–speech (CBT-TTS) is an effective approach for providing individualized support to students with learning disabilities.” The large-scale assessment mandated by federal initiatives such as IDEA of 1997 and NCLB 2001 remain inadequate to reliably and validly test students with disabilities. Instead they often measure the disability rather than ability of these students, a problem referred to in this article as “construct irrelevant testing”. In order to address the problem of construct irrelevant testing, IDEA requires that students with disabilities have testing accommodations in place. A familiar accommodation for students with learning disabilities is having the test read aloud to the student. The test is often read by a teacher or aide, or less frequently by a tape recorder or computer using text to speech (CBT-TTS) software.
Numerous problems related to read-aloud testing accommodations by humans have been reported in the literature. Some researchers, therefore, have applied Universal Design for Learning principles to the development of assessment approaches, using computer-administered testing as a valuable alternative to human read-aloud testing.
Participants in the study were 9th, 11th and 12th graders who were identified by resource room teachers. Students were tested on equivalent forms of a test using CBT-TTS technology and paper and pencil testing (PPT). The testing procedure, data collection and data analysis are described in detail in the article. Results indicated that students performed significantly higher when responding to items related to longer passages when using the CBT-TTS than PPT. Students also reported positive impressions of the CBT-TTS accommodations. Other findings reported are interesting but not significant. Overall the study indicates that "providing computer based read-aloud support to high school students with learning disabilities can improve their performance in a multiple choice United State history and civics test."

78. Approaching Civic Groups and Service Organizations

Author(s): IPAT, Interagency Program for Assistive Technology
Publisher: IPAT
Publication Date: January 1998
75. Apple Adds Spoken Interface to Mac Operating System

Publisher: California Foundation for Independent Living Centers
Publication Date: January 2004
Review: Macintosh users who used OutSpoken, a screen and text reader, were unable to upgrade their systems to OS X, as it was not compatible. This left many Mac users with the choice between switching to the PC platform or using older Macintosh operating systems.

The latest version of Macintosh OS X, called Aqua, will become the first system to feature a spoken interface built into the operating system. In the past these features have been add-ons and often became outdated as the systems were enhanced. In this case Apple has built an OS with an integrated, fully functionally spoken interface for those who are blind, have low vision, or have other difficulties with the printed word.

This Universal Access capability of the Macintosh includes reading aloud contents of all types of documents, describing the computer desk top, and other activities that occur while working on the computer. The feature will be accessed through keyboard commands.

Another feature of this interface will be the ability to assign different voices to different functions, as an added cue to what is occurring on the computer, i.e. one voice for email, and a different voice to describe navigating on the desk top. The voice rate can be adjusted for individual preferences.

The integrated spoken interface may also be used in conjunction with other Universal Access features such as high contrast display, zoom views, sticky keys, mouse keys and other computer commands.

Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Cost (As of Date Entered): no charge
Website: http://atnet.org/news/2004/apr04/040101.htm

76. Apple Computer: People With Special Needs

Publisher: Apple Computer, Inc
Publication Date: January 2003
Review: The Apple webpage for people with special needs is a Bobby-Approved source for computers and software that are specifically for people with disabilities. Apple provides specific options to aid the computer usage of people who are vision impaired, hearing impaired, mobility impaired, literacy and learning disabled, as well as communication and language impaired. Apple’s resource has some guidelines to help determine if an individual could benefit from the specific type of software, and provides purchasing information from Apple, as well as other sources that provide the same materials.
Review: The National Federation of The Blind has played a pivotal role in bringing access issues for the blind into the public eye. This article includes interviews with top companies that produce products to support blind or visually impaired individuals to access print for work, leisure, or communication. The interviewees were asked about their funding of research and development, new products, and where the future is going in regards to accessible technology. Each company had unique responses but many responses reflected a common thought. Although assistive technology can be expensive and compounded by the growth of technology in the mainstream, the future is promising, as larger corporations are recognizing the need for accessible technology. For example, Microsoft, the company that provides the leading operating system on PC's, is working with these companies to make the software compatible and easier to use. This article summarizes currently accessible technology and notes AT developers’ goals for the future.

Type of Material: Article
Audience: People with Disabilities
Target Disability: Visual Impairment / Blind
Alternate Formats: Large Print, Large Print


Review: This newly revised web site gives a very broad overview of the field of learning difficulties as it pertains to parents and children. The Home Page features free registration, a search tool, links to message boards and a Spanish version.

The first section, Identifying, has links to LD & AD/HD Basics, Home and Family, Kids & Learning, and Schools & Other Resources. Each of these areas has links to an additional two or three sites.

The Managing Section includes Assistive Technology, Behavior, Communication, Emotions/Self-Esteem and Learning Strategies, and other areas as well.

The Connecting section tells about people with learning difficulties who have been successful artists, business leaders, scientists and writers. The Resources section lists publications, events, services, summer camps and a newsletter.

The site has a large amount of information which is presented in small pieces. It appears to cover, and helps to organize, the great quantity of knowledge that is being gathered to assist families and their children with learning difficulties. It would be helpful to novices as well as those with more experience.

Type of Material: Parent Guide
71. American Speech-Language and Hearing Association Web Site

Author(s): American Speech-Language and Hearing Association
Publisher: ASHA
Publication Date: January 2004
Review: This Web site mirrors ASHA's mission statement by providing quality services and information for professionals in audiology, speech-language pathology, speech and hearing science, as well as advocating for people with communication disabilities.

ASHA targets professionals, students, consumers, and family members. It is more useful to professionals and students than to consumers and family members. ASHA did make an effort to include primary and secondary consumers. There are over 1,000 files on this site.

Type of Material: Website

Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Communication and Speech, Deaf / Blind, Hearing Impairments / Deaf
Website: http://www.asha.org/default.htm

72. Animal Assisted Therapy: One Family's Experience

Author(s): Ann Killion
Publisher: The Autism/Asperger's Digest Magazine
Review: While not strictly 'Assistive Technology' in the usual context, the therapy dog in this article has become the link to the world for one child. Dogs have been traditionally used as guide dogs for the blind and more recently as service animals. Therapy dogs for individuals are becoming increasingly popular.

This article portrays one family's journey to acquire a 'Facilitated Assistance Dog' from NEADS for their son who has Asperger's Syndrome. The dog has become a tool in helping to foster increased socialization, task adherence, sensory regulation for this boy, with tremendous success.

NEADS and other organizations train various service animals. Some specialize in guide dogs, some in service animals, some in hearing dogs, but all require a lengthy approval and training process. The article addresses only the NEADS organization, but is illustrative of how a therapy animal can assist in an individual's life.

Type of Material: Article
Target Disability: General / Non-disability Specific, Autism
Cost (As of Date Entered): no charge
Website: http://home.comcast.net/%7Eakillio1/AMK_Files/Autism_Aspergers_Digest_2004.htm

73. An Overview of Accessible Technology: Where Are We Now, and What Does the Future Hold?
laboratory research have "real world" validity and benefit, but also provide information needed to focus user education, research and design efforts in the field."

Type of Material: Article
Audience: AT Professionals
Target Disability: Orthopedically Impaired
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): available online only
Website: http://www.tifaq.com/articles/alternative_keyboard_survey-feb98-scott_wright.html

69. Alternative Mouse Access

Author(s): Special Needs Opportunity Windows
Publication Date: January 1999
Review: This article gives a good, concise overview of what would be considered an alternative to a standard mouse. Then it breaks down devices by platform and identifies which devices are compatible with the Windows and Macintosh operating systems. The article lists the various devices, provides bulleted information about each one and a link to the manufacturer's web site.

This article is an excellent starting point for someone who needs to find what is available for alternative mouse access, and is a good place for others to quickly find links to information about specific products.

Type of Material: Article
Audience: Service Providers
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Mobility Impaired, Muscular Dystrophy, Neurological Disorders, Orthopedically Impaired
Ordering Information: View online
Cost (As of Date Entered): No cost
Website: http://snow.utoronto.ca/technology/products/alternate-mouse.html

70. American Printing House for the Blind Website

Publisher: American Printing House for the Blind, Inc.
Publication Date: January 1998
Review: This website is an online version of the American Printing House for the Blind's (APH) catalog. It lists devices, books, software, and equipment available from APH, which one can order online. It also has an online art gallery featuring art from all ages of individuals with visual impairments. The section called Fred's Head Database is an extensive collection of tips that address issues of daily living faced by individuals with visual impairments, from individuals with visual impairments, ranging from how to leave notes for friends, how to diaper a baby, to how to select a computer and change its settings. There are links to many other organizations for the blind, and for parents who are caring for children with vision impairments.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Visual Impairment / Blind
Ordering Information: http://www.aph.org
67. Alternative Computer Input Devices: Options to Consider

**Author(s):** Beth Loy, Ph. D and Linda Carter Batiste, MS  
**Publisher:** Job Accommodation Network  
**Publication Date:** January 2000  
**Review:** This well-written article from the Job Accommodation Network discusses alternate means of assessing a computer by individuals with no hand or finger movement, tremors, spasticity, lack of coordination, loss of vision, paralysis or numbness, and/or a decline in cognitive function. Alternative computer input devices which are discussed in this article accommodate a variety of limitations and replace the traditional keyboard and mouse. The article categorizes, describes, and provides vendor information for the following assistive technology: software (sticky keys, on-screen keyboards, and word prediction software); use of hands and fingers (alternative mice, expanded keyboards, switches, one-handed keyboards); use of speech (voice recognition); use of head (mouse emulators); use of breath and mouth (joystick-operated mouse controlled by mouth or chin, sip-n-puff); use of eyes (eyeglaze and environmental control); use of feet (no-hands mouse and foot pedals). There are also photos of many of the products that are described.  
**Type of Material:** Article  
**Audience:** Service Providers

68. Alternative Keyboards: A User Survey

**Author(s):** Wright, Kenneth Scott; Andre, Anthony D.  
**Publisher:** Typing Injuries FAQ  
**Publication Date:** January 1998  
**Review:** This article describes the results of an alternative keyboard user survey of individuals with or at risk for repetitive stress injuries of the wrist and hand. "The questionnaire covered why alternative keyboards are acquired, setup and use patterns, benefits, and recommendations for improvement." The article discusses the different types of alternative keyboards, focusing on the types of keyboards that are considered more "ergonomic" than the typical flat, standard QWERTY design, including fixed split, adjustable split, and sculpted. Each type keyboard is described, and there is an illustration of each type. The survey then questioned individuals and collated results of each brand keyboard, listing responses on the keyboard's worth, best and worst features, and how to improve. "Results from this study not only show that keyboard configurations and benefits as described in
training videos that show how people with disabilities can access computers for education, employment, and communication. The module provides an overview of alternate access technology options for students with disabilities. The presentation highlights important considerations for planning and matching technology to student needs, abilities, goals, and expectations. The features of different categories of access technologies, including software and operating system adaptations, keyboard and mouse alternatives, and switches and scanning are described. The webcasts and videos are accompanied by a thorough resource guide entitled "Alternate Access Technologies: A Guide for School-Based Teams". There is a great deal of educational information on this site and it is easy to access and view the demos and webcasts.

**Type of Material:** Training Material  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.setbc.org/setbc/access/access_roadshow.html](http://www.setbc.org/setbc/access/access_roadshow.html)

### 65. Alternate Access Technology Overview

**Author(s):** SET-BC  
**Publisher:** SET-BC  
**Publication Date:** January 2005  
**Review:** This is a website devoted to teaching about various assistive technology devices. There are demos for alternate keyboards, switches and scanning, pointers, software, and onscreen accessibility features. There is a resource guide which can be downloaded. The demos provide an overview of alternate access technology for students with disabilities. Considerations for matching technology to student needs, abilities, goals, and expectations are discussed. Webcasts allow the viewer to hear from professionals in the field of assistive technology. Parents, educators, and disability professionals can all benefit from the information included on this website.  
**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities  
**Target Disability:** Autism, Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Deaf / Blind, Developmental Disabilities, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Visual Impairment / Blind, Orthopedically Impaired, Apraxia of Speech, Dyslexia  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.setbc.org/setbc/access/access_roadshow.html](http://www.setbc.org/setbc/access/access_roadshow.html)

### 66. Alternate Keyboards

**Author(s):** Special Needs Opportunity Windows  
**Publication Date:** January 2002  
**Review:** Alternative Keyboards are an option for people who experience problems using a conventional keyboard. This short article gives the reader several key points to consider when looking for an alternative keyboard. It also provides information about how a standard keyboard can be modified from within the computer's operating system. There is also information about on-screen keyboards and various specialized keyboards.  

The majority of this resource guide is an extensive vendor list with short descriptions of alternative keyboards. It is a valuable resource when researching and comparing products for a particular need.  
**Type of Material:** Resource Guide
resources such as the ATA centers around the country, and many vendors of assistive technology products. It also provides funding information, discussion sections and more. It is a wonderful resource for anyone who is or works with people with disabilities.

**Type of Material:** Website

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** General / Non-disability Specific

**Cost (As of Date Entered):** free

**Website:** [http://www.ataccess.org](http://www.ataccess.org)

### 63. AlphaBaby

**Author(s):** Laura Dickey

**Publisher:** Laura Dickey

**Publication Date:** January 2004

**Review:** AlphaBaby is a software program that allows young children, or those new to the computer to experiment using the keyboard and mouse without disabling or affecting the integrity of the computer or its programs and documents.

The program is free, although a small donation is suggested, and is so far only available for the Macintosh.

When the program is activated it allows a letter, number or shape to appear on the screen. These letters, numbers and shapes are large, portrayed in solid color and outlined in white. One key stroke gives one letter, but holding the key down does not continue with repeated letters. A user can place letters anywhere on the screen and repeated activation of keys moves the letters about the screen. The screen can be refreshed after it gets any number of letters, numbers or shapes. This means a new slate can be available as often as needed or desired. There are other choices in the preference box to include sounds and to allow letters or numbers to be spoken out loud.

The screen is uncluttered, and the cause and effect relationship is strong with the letters and numbers appearing clearly and distinctly. There is a five page manual which explains the program in more detail.

While the program was developed for young children, it could be used by anyone as a first introduction to the keyboard and the mouse as well as for letter, shape and number identification in exploration mode or as an instructional tool.

**Type of Material:** Software

**Audience:** People with Disabilities

**Target Disability:** General / Non-disability Specific

**Cost (As of Date Entered):** No charge

**Website:** [http://www.kldickey.addr.com/alphababy/](http://www.kldickey.addr.com/alphababy/)

### 64. Alternate Access Technology Overview

**Author(s):** Special Education Technology-British Columbia (SET-BC)

**Publisher:** Special Education Technology-British Columbia (SET-BC)

**Publication Date:** January 2005

**Review:** This website features a training module including a series of webcasts and demonstration
61. Aids for Daily Living

Author(s): South Carolina Assistive Technology Project
Publisher: South Carolina Assistive Technology Project
Publication Date: January 2000
Review: This fact sheet provides examples of some of the many aids for daily living that can help people become or remain more independent. It lists simple devices that are easily found and/or made that make daily tasks easier to accomplish. It lists ideas and information in the following categories: Food Preparation and Eating Aids, Personal Care and Grooming Aids, Clothing Adaptations and Dressing Aids, Reaching and Mobility Aids, Personal and Home Safety Aids. While the information is general, it does give very good ideas for individuals looking for information on such devices.

Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific, Mobility Impaired, Orthopedically Impaired
Ordering Information: Download from web site or request by email
Cost (As of Date Entered): Free on web site
Website: http://www.sc.edu/scatp/aidsdaily.htm

62. Alliance for Technology Access - Web Site

Author(s): Alliance for Technology Access (ATA)
Publisher: Alliance for Technology Access
Publication Date: April 2004
Review: This Web site describes the Alliance for Technology Access and provides numerous links to
environments that are being created for children for their entertainment and learning.

**Type of Material:** Article
**Audience:** Parents / Family, Rehabilitation Professionals
**Target Disability:** General / Non-disability Specific
**Cost (As of Date Entered):** no charge
**Website:** http://whitehutchinson.com/children/articles/earthmoon.shtml

### 58. A Family Centered Approach to AAC

**Author(s):** Bilodeau, C.
**Publisher:** University of Maine, Center for Community Inclusion
**Publication Date:** January 1998
**Review:** This article reminds professionals to take a family-centered approach when implementing an Augmentative and Alternative Communication (AAC) system. Family-centered refers to recognizing, respecting, and supporting the key roles family members have in their child’s life. It also emphasizes the importance of looking at family cultures and beliefs when making decisions and developing a plan for implementing an AAC system. Although this article specifically discusses implementing an AAC system, the family-centered service delivery model can be used in many processes.

**Type of Material:** Article
**Audience:** Service Providers
**Target Disability:** Communication and Speech
**Ordering Information:** Available via the website
**Cost (As of Date Entered):** free
**Website:** http://www.ccids.umaine.edu/FACTSFC/articles/family.html

### 59. A Functional Approach to the Delivery of Assistive Technology Services

**Author(s):** A. Edward Blackhurst, Professor Emeritus, Department of Special Education and Rehabilitation Counsel
**Publisher:** University of Kentucky
**Publication Date:** January 2001
**Review:** This article discusses a model or method of evaluating an individual for assistive technology, focusing specifically on the way the person currently functions and would ideally function. The author gives specifics about the way the model can be used, using a case study approach. The model provides direction to those making referrals of children for assistive technology services. Those individuals are encouraged to obtain as much information as possible about the various evaluation factors and provide data about them as part of the referral process. The model can also guide instructional planning activities.

**Type of Material:** Report
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
**Target Disability:** General / Non-disability Specific
**Ordering Information:** http://natri.uky.edu/resources/fundamentals/function.html
**Cost (As of Date Entered):** free to print from web site
**Website:** http://natri.uky.edu/resources/fundamentals/function.html

### 60. A Great Advance in Adaptive Technology
individual needs. A chart from the Georgia Learning Connection website is helpful in directing the reader's attention to possible adaptations that could suit learning differences.

Although poorly edited for spelling and grammatical mistakes, the content of the article may be helpful for those beginning the quest for information about assistive technology.

**Type of Material:** Article  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Cost (As of Date Entered):** no charge  

### 56. Adobe Digital Kids Club

**Author(s):** Adobe Systems Inc.  
**Publisher:** Adobe Systems Inc.  
**Publication Date:** January 2006  
**Review:** Since the beginning of digital picture sharing, digital photo editing, and digital photo albums—the potential for "digital storytelling" has been on the minds of software developers, and the minds behind Adobe Systems Inc. are no exception.

Although The Digital Kids Club website is an advertising platform for Adobe's Photoshop and Premiere Elements, educators will enjoy the tutorials and the classroom guides that demonstrate the length and breadth of digital storytelling options for students.

**Type of Material:** Website  
**Audience:** Educators  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  

### 57. Adults are from Earth; Children are from the Moon, Designing for Children: A complex challenge

**Author(s):** Randy White  
**Publisher:** White Hutchinson Leisure & Learning Group, Inc  
**Publication Date:** January 2004  
**Review:** Randy White describes designing environments for all children, including those with special needs. The five-page article is well written, and describes the unique experience of planning accessible spaces for children, including those with special needs. His article describes with humor and astute observation the differences in how adults and children perceive and use space.

All children are described as having four basic environmental needs: (1) movement, (2) comfort, (3) competence and (4) control, which are addressed in the article. Attention is drawn to changing skill levels and developmental tasks, ‘wayfinding’, and an interesting concept labeled ‘differences-within-sameness’.

The report finishes with some well-considered thoughts on safety, durability, and finally accessibility, incorporating universal design. This article is quite readable by parents and caregivers of children with special needs and introduces several ideas that may be new to many in relation to the
54. Addressing Technology Pros and Cons

Author(s): Miriam Struck, OTR/L, ATP  
Publisher: Advance for Occupational Therapy Practitioners  
Publication Date: January 2003  
Review: The article begins by addressing the role of the occupational therapist in the school system. The author, Miriam Struck, says that OTs are needed in school systems because they contribute to the learning and development of children by addressing motor needs. They help students function in inclusive settings and support their participation in required activities, such as standardized testing. The article ends by calling for occupational therapists to do more than examine motor access when working in the schools. Ms. Struck says OTs should think of ways that technology can be used to meet the needs of students with disabilities.

The article also discusses and provides a web link to an online journal called The Future of Children. This journal examines the effect of computer technology on the development and learning of typically-developing young children. Computer technology "holds promise for positive outcomes in learning and development" for children. However, it can serve as an even greater challenge for students with disabilities who are often "playing catch-up with their non-disabled peers" and it does not always provide a successful accommodation to allow them to "show what they know."

Type of Material: Article  
Audience: Rehabilitation Professionals  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Ordering Information: Advance for Occupational Therapy Practitioners

55. Addressing the Special Needs Student Through Technology

Author(s): Diane Forte Barfield  
Publisher: techLEARNING.com  
Publication Date: January 2003  
Review: Assistive technology can go far beyond reaching just the students who have identified learning difficulties. It can reach all learners and learning styles. Teachers who investigate the options of assistive technology through professional development or individual study and make the effort to adapt for a few have found greater participation, involvement, and success for all of their students and a renewed feeling of power and possibilities for those who struggle.

While this article seemingly addresses the potential of the computer as a tool for all learners, it focuses on those with special needs and gives examples of how technology can be modified to meet
52. A Day in the Life of Richard

Author(s): Richard Devylder  
Publisher: State of California, Employment Development Department  
Publication Date: January 2005  
Review: For people with mobility issues, navigating any environment can be a daunting task. This short video shows a whole day in the life of an individual who was born without legs or arms. He grew up with a foster family that not only gave him the gift of acceptance but the power to live, work and play as any typical child and now adult. Although challenged physically, he and his family have developed alternative methods for him to live independently, be gainfully employed, and lead a fulfilling life. The creativity used to problem solve daily hurdles is astounding. The short video is a must-see for persons in the vocational rehabilitation field as well as a motivator for others with disabilities. The video is described and includes subtitles.  
Type of Material: Video  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Mobility Impaired  
Alternate Formats: Video, Video  
Cost (As of Date Entered): No charge  
Website: http://www.edd.ca.gov/ndeam/ndeam05-1.htm

53. ADDed Reality

Author(s): Evelyn Azbell  
Publisher: Wisconsin Parent Educator Connection  
Publication Date: January 2003  
Review: This website was designed for parents, students and educators and provides information, agency contacts, pamphlets and tapes on issues regarding special education, parenting, disabilities and general education. The site began in 1998 and currently includes information on Asperger Syndrome, Tourette Syndrome, Dysgraphia, Gifted and Talented/Learning Disabled, Section 504 of the Rehabilitation Act, and grant resources. Further sections on Attention Deficit Disorder and Technology appear to be under construction. It provides the reader with internet links to several excellent websites such as LD Online, Wisconsin Assistive Technology Initiative, and International Dyslexia Association. The website also provides contact information for Dragon Club, an advocacy and disability awareness resource for regular education students. It also provides various miscellaneous links to other disability related sites.  
This website is not accessible to people using screen readers.  
Type of Material: Website  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities  
Target Disability: Learning Disabilities, ADHD/ADD  
Alternate Formats: Electronic, Electronic  
Ordering Information: www.addedreality.com/

Some components, for example, videos, carry a fee.
Infinitec, Inc. is a combined effort of the United Cerebral Palsy Associations of Chicago and Washington DC. Their web page on adaptive toys is an extensive compilation of websites for various vendors of toys designed for kids with disabilities. The reader should be aware that not all of the links are still current, however, this is still a valuable resource because it links to Enabling Devices, Dragonfly Toys, Come Play With Me, and others. Some sites are specific to certain groups such as Down Syndrome, and some are much more general, such as the National Lekotek Center, which provides information on borrowing as well as purchasing accessible toys. There is also a link to an engineer’s page who provides instructions on how to adapt toys that you already have (he will also respond to e-mail requests regarding specific toys).

51. Adapt My World: Home Made Adaptations for People with Disabilities

This book is written by Joyce Plaxen who came up with the simple home-made adaptations included in the book to improve her daughter’s independence at home, school and play. The simple, clever solutions presented in the book may leave the reader thinking “Why didn’t I think of that?”

Included in the suggestions are the one-handed milk pouring solution – put the milk into a pump dispenser, and flattening crayons to prevent them from rolling off the table-melt one side. Many of the solutions are accompanied by pictures and there are pages in which to write notes and ideas in the book. The items needed for adapting, such as velcro and duct tape are off-the-shelf items at any hardware or general goods store, easy to find and very inexpensive.

This book would be an excellent resource for parents, teachers and OTs.
"additional or secondary injury to the parent's body" while engaging in the baby's care. The adaptive equipment enables the parent/caregiver to make choices caring for the child as the "able-bodied" parent/caregiver does and is ergonomically friendly. The adaptive baby care equipment enables the parent/caregiver to gain or regain the confidence and the role of caring parent/caregiver.

**Type of Material:** Book  
**Audience:** Service Providers  
**Target Disability:** Brain Injury and Stroke, Health Impairments, Mobility Impaired, Multiple Disabilities  
**Ordering Information:** Through the Looking Glass

2198 Sixth St. #100
Berkeley, CA 94710
510-848-1112
510-848-4445
800-644-2666
800-804-1616  
**Cost (As of Date Entered):** $30
**Website:** [http://www.lookingglass.org/publications/pubdetails.php#ABCE](http://www.lookingglass.org/publications/pubdetails.php#ABCE)

49. Adaptive Driving: Vehicle Modifications

**Author(s):** Infinitec.org  
**Publisher:** Infinitec.org  
**Publication Date:** January 1998  
**Review:** This well written article discusses the basic types of adaptations an individual can have made to a vehicle to enable a differently abled person to drive. It gives information on hand control, different types of steering adaptations, wheelchair or scooters lifts, physical modifications to the vehicle body, adaptations for individuals with vision problems, and adaptations for individuals with hearing impairments. While it is not an in-depth discussion, it is a good starting point for individuals who are unsure what might be available to adapt a vehicle.

Included in the article are links to information about Driving Assessments, Car Modifications, Equipment Dealers and Funding For Car Modifications.  
**Type of Material:** Article  
**Audience:** Rehabilitation Professionals  
**Target Disability:** Health Impairments, Hearing Impairments / Deaf, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Spina Bifida, Orthopedically Impaired  
**Ordering Information:** Download from the web site.  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.infinitec.org/live/driving/carmods.htm](http://www.infinitec.org/live/driving/carmods.htm)

50. Adaptive Toys
not effective for many children. This short, well written article describes ways to adapt three stories so that augmentative communication users and students with other disabilities experience the curriculum as well as increase skills in academic areas. These adapted activities help teach vocabulary, body parts, receptive and expressive language, simple sentence structure, listening and following directions. The authors caution that the communication devices used in these activities are examples and that the AAC (Augmentative and Alternative Communication) device must be selected according to a student's needs.

**Type of Material:** Article  
**Audience:** AT Professionals, Educators, Parents / Family, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** CSUN  
18111 Nordhoff St.  
Northridge, CA 91330-8340  
818-677-2578  
**Cost (As of Date Entered):** Free  
**Website:** [http://www.csun.edu/cod/conf/1997/proceedings/087.htm](http://www.csun.edu/cod/conf/1997/proceedings/087.htm)

47. Adaptive and Assistive Technologies

**Author(s):** Tabachnick  
**Publisher:** Adulted,about.com  
**Publication Date:** January 2003  
**Review:** This very short article describes two individuals' experiences with providing assistive technology to their students. Both individuals work with students with vision impairments, so the only assistive technologies discussed are the types that would be of benefit to individuals with vision impairments.

The article includes some links for assistive technology products for individuals with vision impairments. There is also a link to a second part of the article that discusses shortcomings and limitations of AT, and hopes for the future.

Overall this article offers some real world examples, but gives little real information about AT.  
**Type of Material:** Article  
**Audience:** Service Providers  
**Target Disability:** Brain Injury and Stroke, Deaf / Blind, Visual Impairment / Blind  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Available online, only for individual use  
**Cost (As of Date Entered):** free from website  
**Website:** [http://adulted.about.com/cs/adaptivetech/a/aa_technologies.htm](http://adulted.about.com/cs/adaptivetech/a/aa_technologies.htm)

48. Adaptive Baby Care Equipment: Guidelines, Prototypes & Resources

**Author(s):** Vensand, D., Rogers, J., Tuleja, C., and DeMoss, A  
**Publisher:** Through the Looking Glass  
**Publication Date:** January 2000  
**Review:** Adaptive Baby Care Equipment is a collaborative effort among parents with two goals in mind. The first goal is to create and offer options to parents/caregivers with disabilities through the training and use of adaptive baby care equipment. The second goal is to reduce the possibility of
to promote independence. It weighs the pros and cons of using public transportation versus adapting a private vehicle. For those choosing to own, recommendations on training, adaptations, and funding are provided and mistakes to avoid are clearly listed as well. It concludes with a listing of mobility programs and manufacturers of adaptive equipment.

**Type of Material:** Article

**Audience:** Service Providers

**Target Disability:** General / Non-disability Specific

**Cost (As of Date Entered):** Free on the website

**Website:** [http://www.mdausa.org/publications/Quest/q41vehicle.html](http://www.mdausa.org/publications/Quest/q41vehicle.html)

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### 45. Adapters Used for Connecting to Ports

**Author(s):** Ability Hub

**Publisher:** Ability Hub

**Publication Date:** January 2003

**Review:** This is a very short article which can help readers determine what type of adapter might be used to connect assistive technology equipment to the ports of their computers. Additionally, it provides illustrations of the different kinds of ports (USB, ADB, etc.) used on computers. It also provides links to the vendors' website for three products, the Y-Mouse, the iMate and a simple four port hub, which can help connect peripherals to the computer.

This article is especially helpful if a reader has upgraded computers and their adaptive equipment (such as an adapted keyboard, mouse or touchscreen) requires a different port than their new computer has.

**Type of Material:** Article

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** General / Non-disability Specific

**Alternate Formats:** Electronic

**Ordering Information:** Download from web site or contact:

AbilityHub
c/o The Gilman Group, L.L.C.
P.O. Box 6356
Rutland, VT 05702-6356

Telephone: (802) 775 1993
Fax: (802) 773 1604
Email: info@abilityhub.com

**Cost (As of Date Entered):** No charge

**Website:** [http://www.abilityhub.com/information/adapters.htm](http://www.abilityhub.com/information/adapters.htm)

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### 46. Adapting Curriculum for Augmentative Communication

**Author(s):** Moos, K. L., and Hartwig, S. K.

**Publisher:** California State University at Northridge (CSUN)

**Publication Date:** April 2004

**Review:** So many children are now being fully included and traditional "pull-out" speech therapy is
43. Adaptations Across the Curriculum

**Author(s):** Cormier, Carolann MS, CCC-SLP, ATP

**Publisher:** Connsense

**Publication Date:** January 2002

**Review:** This article holds a wealth of information, in the form of tips, about how to use simple and not so simple adaptations of a wide variety of materials to make adaptations across the curriculum. Items are organized in categories, including: general, writing, reading, art, music, leisure and gym. The author gives simple, to-the-point suggestions about ways to use different, easy-to-find materials to make classroom and home activities accessible. She offers suggestions about everything from velcro to color coding parts of speech in communication devices.

The article covers a gamut of ideas from simple page fluffers, to the more complex, such as using Discover:Switch setups for creating art with KidPix. There are suggestions for use with individuals with physical and cognitive disabilities, with some specific ideas for the adult population.

Collections of tips, such as this one, often give parents and educators the "ah-ha" moment that allows them to create adaptations to include children and adults with more significant disabilities in more activities.

**Type of Material:** Article

**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers

**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Mental Retardation, Multiple Disabilities, Neurological Disorders, Orthopedically Impaired

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** Available from the Connsense website.

**Cost (As of Date Entered):** no charge to print from website

**Website:** [http://www.connsensebulletin.com/cor80202.html](http://www.connsensebulletin.com/cor80202.html)

44. Adapted Vehicles: Paving the Road to Independence

**Author(s):** Hungate, L.

**Publisher:** Muscular Dystrophy Association (MDA)

**Publication Date:** January 1997

**Review:** This article provides a comprehensive discussion of transportation for the disabled in order
40. Accommodations for Students with Disabilities in High School

Author(s): Martha Thurlow  
Publisher: National Center on Secondary Education and Transition  
Publication Date: January 2002  
Review: This article addresses the difficulties in implementing assistive technology and other accommodations for high school students with disabilities. Legal considerations are examined and there are tables that give examples of instructional and assessment accommodations.

There are some national accommodation research statistics cited in the article, but the author also addresses issues that are not readily apparent by merely looking at statistics. She makes some recommendations such as including accommodations in the IEP and transition plan so students will have a voice in choosing what accommodations will be used and be more invested in the plan.

Type of Material: Article  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Ordering Information: Download from web site

This publication is available in an alternate format upon request. To request an alternate format or additional copies, contact NCSET at 612.624.2097.

Cost (As of Date Entered): Free on web site  
Website: http://www.ncset.org/publications/viewdesc.asp?id=247

41. Accommodations: The Good, The Bad and The Ugly

Author(s): Judy Elliott and Judy Schrag  
Publisher: International Dyslexia Association  
Publication Date: January 2001  
Review: This is a very informative article written by two women who served on the Blue Ribbon Panel. They discuss the downfalls of some evaluations, saying that evaluations can "invalidate" the child's learning disability rather than focusing on methods to make education easier. The authors also site cases in Oregon where steps were taken to guarantee the procedures to be followed in an evaluation.

Type of Material: Article  
Audience: Service Providers  
Target Disability: Learning Disabilities  
Cost (As of Date Entered): free  
Website: http://dyslexia.mtsu.edu/modules/articles/displayarticle.jsp?id=64

42. A Checklist for Environmental Safety and Access

Author(s): AFB Aging Program  
Publisher: American Foundation for the Blind (AFB)  
Publication Date: January 1998
38. Access Transition

Author(s): Tom Morales, Russ Holland, Sue Brown
Publisher: Alliance for Technology Access
Publication Date: January 2001
Review: This is a guide for students with disabilities as they prepare to leave high school. It defines transition and briefly looks at some of the issues involved, such as rights under the law, and person-centered planning. This guide mainly focuses on the role of assistive technology in the transition process. A long list of resources is provided via links to other websites and within the ATA website as well. Unfortunately, some of the links did not work or brought up messages detailing errors; in one case, the website was no longer active because funding for the project had ceased and activities had been transferred to another program. There is lots of good information for students who want a hand in their own destiny, but the resources may not be as reliable as the authors intended. The guide also provides a question-and-answer worksheet for students to complete in order to be active participants in their transition meetings. The worksheet is designed to make students contemplate what they want for their future and the transition process is designed to help them achieve their goals.

Type of Material: Resource Guide
Audience: Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals
Target Disability: General / Non-disability Specific
Ordering Information: Download from the web site.
Cost (As of Date Entered): Free
Website: http://www.ataccess.org/resources/fpic/transition.html

39. Accommodations and Modifications: Adjusting the Classroom Experience

Author(s): Jan Baumel, MS
Publisher: Schwab Learning
Publication Date: January 2001
Review: This information sheet explains the difference between accommodation and modification in the classroom for students with special education eligibilities. The sheet defines both terms. Accommodation means that a student is allowed a different way to access material and produce material in order to participate in the classroom. Modification means that the curriculum is adjusted, often with lowered expectations and academic standards, so that the student is exposed to the material. The sheet also gives examples of how accommodations and modifications affect students and the classroom experience. A discussion of the use of each in high stakes testing is also presented. This is excellent information for all parents with children under the umbrella of special education. Teachers in cross-categorical classrooms or mainstream classes with special education students and teachers-in-training would benefit from the simple descriptions and comprehensive discussion.

Type of Material: Infosheet / Fact sheet
Audience: Educators, Parents / Family
Target Disability: General / Non-disability Specific, Learning Disabilities
Alternate Formats: Foreign Language - Spanish, Foreign Language - Spanish
Ordering Information: Available via the web site.
Cost (As of Date Entered): Free on web site
36. Access to Alternate Format

Author(s): Craig Spooner and Cath Stager-Kilcommons
Publisher: Assistive Technology Resource Center CSU
Publication Date: January 2006
Review: Access to Alternate Format has a wide variety of resources available for those who are interested in alternative formats for written materials in a higher education setting. The website was created as a presentation for the Colorado Wyoming Consortium of Support Programs for Students with Disabilities by Craig Spooner and Cath Stager-Kilcommons who work for Assistive Technology Resource Center there.

On the website, there are links to websites that have books and other written materials available in alternate formats such as Bookshare.org and Recording for the Blind & Dyslexic. There is also information on how to make alternative format materials using scanning and other software. Step by step directions are available regarding how to scan a book. There is also information on software that helps make written materials accessible including options available in the Microsoft operating system and in Adobe software. This reviewer tried to view the site first in Fire Fox and it was very jumbled at the bottom, but using Internet Explorer worked well. Time is needed to explore some of the links because there is a lot of useful information.

Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: General / Non-disability Specific, Multiple Disabilities, Visual Impairment / Blind
Cost (As of Date Entered): No charge
Website: http://www.colostate.edu/Dept/ATRC/alttext/alt_textbooks.htm

37. Access to Voice Over Internet Protocol

Author(s): Dr. Gregg Vanderheiden
Publisher: Trace R&D Center
Publication Date: January 2003
Review: This article, written by Dr. Gregg Vanderheiden, highlights the concerns that the author has about voice-over IP (digital phone) services. Disability access is a concern as telephone services transition from PSTN to voice-over IP delivery. The author reminds us that it is important to address access issues during the development phase of this technology. Consideration of access is important even though there are regulations which mandate its consideration. A good example is cell phone technology, which, despite regulations requiring accessibility, was, until quite recently, inaccessible to those who are blind or have low vision, are hearing impaired, have physical disabilities or who are elderly.

The importance of advocating for accessibility during technology design is presented. Dr. Vanderheiden describes examples of the work that the Trace Center is doing with two companies to assure access in their VOIP products.

Type of Material: Article
Audience: AT Professionals, People with Disabilities
Target Disability: General / Non-disability Specific, Visual Impairment / Blind
Cost (As of Date Entered): no charge
34. AccessIT Website

**Publisher:** University of Washington  
**Publication Date:** January 2004  
**Review:** Based at the University of Washington in Seattle, AccessIT specializes in accessible information technology for education. Backed by a growing database and a mission to "increase the access of individuals with disabilities to information technology in educational institutions at all academic levels nationwide" AccessIT is a respected source for IT training (web courses, FAQs, best practices, national conferences, etc.), building proper IT through universal design, and supporting IT infrastructures. The site provides information about trainings and presentations in specific geographic areas.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  

35. Access Technology at Madison Park

**Author(s):** Kristen Eichleay, Erik Young, & Susan DuBuske  
**Publisher:** Office of Instructional Technology  
**Publication Date:** January 2002  
**Review:** The Boston Public School System is being proactive in addressing the diverse needs of learners through developing online access tools for their teachers to support diverse learners in accessing the Boston Public School Standards. This website has a host of tools that would be beneficial for every teacher to explore. The Access Tech Center has developed the Student Access Map (SAM), a dynamic, user-friendly tool designed to assist educators in aligning instructional supports with student needs. It is easy to use and is beneficial for both the regular and special education teacher. To access and use the tools, the free Acrobat Adobe 6.0 is needed. Although some of the information is several years old, the basic content is excellent and relevant to teachers and school districts. It is a model to copy and watch as they develop more tools and update their resources.

**Type of Material:** Website  
**Audience:** AT Professionals, Educators, Service Providers  
**Target Disability:** General / Non-disability Specific  
**Alternate Formats:** Electronic, Electronic  
**Ordering Information:** Madison Park Complex; 55 Malcolm X Blvd., Boston, MA 02120  
Phone: (617) 635-8882 x 411 Fax: (617) 635-8894 Email: atc@boston.k12.ma.us  
**Cost (As of Date Entered):** Must contact school system  
**Website:** [http://boston.k12.ma.us/teach/technology/access.asp](http://boston.k12.ma.us/teach/technology/access.asp)
Review: This fact sheet provides an introduction to the Internet for people who are blind or visually impaired. It covers the hardware and software needed to get online, and offers a description of how to get online for first-time users, and an introduction to what is available on the Internet. There is also a section concerning synthetic speech, Braille, and low vision access to the Internet.

Type of Material: Infosheet / Fact sheet
Audience: Service Providers
Target Disability: Visual Impairment / Blind
Ordering Information: AFB National Technology Center 212-502-7642

AFB Headquarters 212-502-7600
AFB Information Line 800-AFB-LINE (232-5463)

Cost (As of Date Entered): Free
Website: http://63.240.118.132/info_document_view.asp?documentid=222

33. Accessing the Mouse

Author(s): The CALL Centre
Publisher: University of Edinburgh
Publication Date: January 1998
Review: This chapter from the book, Special Access Technology, begins with an assessment guide which lists adaptations to consider if an individual has specific problems accessing the mouse. An example would be: if the user can move the mouse but can't see the pointer one should investigate a software utility to enlarge, change the color of or change the shape of the pointer. The next part of the chapter discusses specific hardware and software available to modify the mouse. It discusses utilities which slow the movement of the mouse or eliminate the need to double click. The chapter also provides information about and internet links to utilities which can increase the size of the cursor. Other adaptations covered by the chapter include replacing the mouse with other hardware such as the joystick, trackball, gamepad, touchpad, touch screen or alternate "pointers" such as the Headmaster. The reader should understand that this chapter is a downloadable PDF file from a book which is no longer in print. The content and internet links, however, are still current.

Type of Material: Article
Audience: Service Providers
Target Disability: Brain Injury and Stroke, Cerebral Palsy, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Neurological Disorders, Spina Bifida, Orthopedically Impaired
Alternate Formats: Electronic, Electronic
Ordering Information: The CALL Centre
University of Edinburgh
Paterson's Land
Holyrood Road
Edinburgh
EH8 8AQ
Scotland
Tel: 0131 651 6235/6236
(International: 44 131 651 6235/6236)
Fax: 0131 651 6234
(International: 44 131 651 6234)
30. Accessing Medicaid for Augmentative Communication Devices

Author(s): South Carolina Assistive Technology Project  
Publisher: South Carolina Assistive Technology Project  
Publication Date: January 2000  
Review: This fact sheet lists the very basic steps that one should take to secure funding from Medicaid for augmentative communication devices. While the steps are clear, it needs to be noted that in some states, there may be additional information that needs to be provided to Medicaid. The information about whom to contact in case of a denial is accurate only for residents of South Carolina. While this is specifically for SC residents, it gives others a good idea about whom to contact in their own states.  
Type of Material: Infosheet / Fact sheet  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Communication and Speech  
Ordering Information: Download from web site or request via e-mail  
Cost (As of Date Entered): Free on web site  
Website: http://www.sc.edu/scatp/factsheets.htm#medicaid

31. Accessing Medicare for Assistive Technology Devices

Author(s): South Carolina Assistive Technology Project  
Publisher: South Carolina Assistive Technology Project  
Publication Date: January 2000  
Review: This short fact sheet lists the ways in which an individual can access Medicare for funding for assistive technology devices. It discusses the way that Medicare looks at assistive technology as durable medical equipment.  
The first section has a step by step list of what needs to be done in preparation for submitting a request to Medicare. There is also information for South Carolina residents about whom to contact if funding is denied. While this is specifically for SC residents, it gives others a good idea about whom to contact in their own states.  
The second section lists how an individual would file a Medicare claim personally (not through a Durable Medical Equipment provider).  
Type of Material: Infosheet / Fact sheet  
Audience: Service Providers  
Target Disability: General / Non-disability Specific  
Ordering Information: Download from web site or request via email  
Cost (As of Date Entered): Free on web site  
Website: http://www.sc.edu/scatp/factsheets.htm#medicaid

32. Accessing the Internet

Publisher: American Foundation for the Blind (AFB)  
Publication Date: January 2000
28. Accessible Toys

Author(s): Carol Stanger  
Publisher: Alliance for Technology Access  
Publication Date: January 2003  
Review: This site is provided by The Alliance for Technology Access as part of their national program on technology for individuals with disabilities. For many years this organization has helped to make technology available to all persons, including children with special needs. The experience of the many centers nationwide has been brought together and a list of 9 toys and their adaptations are presented.

The toys and their adaptations range from the low tech uses of crayons to the very specific directions for adapting a Tonka truck into a single switch toy. The adapted toys would be appropriate for children with a wide range of ages and abilities. Many directions are short and simple while the longer instructions are clearly written and could be carried out by many parents and/or professionals. This site would be appropriate for those just becoming interested in the adaptation of simple toys as well as others who may desire to adapt Lego as a play toy for someone in their family.

There are links to other ATA sites, including the Toy Association, one of the sponsors of the site. The site is easy to read and navigate.

Type of Material: Article  
Audience: Rehabilitation Professionals  
Target Disability: General / Non-disability Specific  
Alternate Formats: Electronic, Electronic  
Ordering Information: Free online

http://www.ataccess.org/resources/fpic/accesstoys/  
Cost (As of Date Entered): free

Website: http://www.ataccess.org/resources/fpic/accesstoys/

29. Accessing Medicaid for Assistive Technology Devices

Author(s): South Carolina Assistive Technology Project  
Publisher: South Carolina Assistive Technology Project  
Publication Date: January 2000  
Review: This practical and easy to understand fact sheet outlines the process of obtaining assistive technology devices through the Medicaid system. It explains that Medicaid can be accessed with persistence and a thorough compilation of all necessary paperwork. It also gives a toll free number for Protection and Advocacy for People with Disabilities, for those who are having difficulties receiving the necessary funding.

Type of Material: Infosheet / Fact sheet  
Audience: Service Providers  
Target Disability: General / Non-disability Specific  
Alternate Formats: Large Print, Large Print  
Ordering Information: Download from web site or contact South Carolina Assistive Technology Project by e-mailing jjendron@usit.net

Cost (As of Date Entered): Free
27. Accessible Technology in Today's Business, Case Studies for Success

Author(s): Moulton, Gary; Huyler, LaDeana; Hertz, Janice; Leverson, Mark
Publisher: Microsoft Press
Publication Date: January 2002
Review: The real-life case studies presented in this book offer an overview of how businesses can successfully accommodate people with disabilities. The authors present information (including solid fiscal information) as to why it is in the interest of a business to become more accessible to both employees and customers. While parts of this book read like a commercial for Microsoft Windows XP, the case studies provide excellent information about different types of disabilities and the accommodations and adaptations that can be made to a) improve employee retention, b) hire qualified employees with disabilities, and c) attract customers with disabilities.

The case studies cover several areas of disabilities including severe physical disabilities, low vision and blindness, repetitive stress injuries and hearing impairments. In explaining what types of assistive technology can be used in these situations the book discusses screen readers, voice recognition, speech to text software, screen magnification, Braille embossers and refreshable Braille displays, large monitors, and changes to the font size and contrast on the screen.

Overall, this book offers readers usable information on the types of assistive technology that enable employees with disabilities to be productive and competitive in the workplace. The authors also point out that for many businesses, having this type of assistive technology available to their employees will also improve the customers’ accessibility to their businesses.

Type of Material: Book
Audience: Service Providers
Target Disability: General / Non-disability Specific, Cerebral Palsy, Health Impairments, Learning Disabilities, Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Visual Impairment / Blind, Orthopedically Impaired
Alternate Formats: CD-ROM, CD-ROM
Ordering Information: Available through booksellers
solutions when possible.” Mr. Gonzales then describes accessibility features of a variety of off-the-shelf cell phones which can be beneficial for people who have disabilities.

The company, ETO Engineering, is an authorized dealer of cell phones for people who live in North and South Carolina but the information included in this site would be beneficial to people with disabilities nationwide. The website is divided into sections and describes cell phone features and products for those who have Blind/Low Vision, Hearing/Speech, Mobility and Cognitive disabilities. There is also a section devoted to those who are elderly. Although the focus of this website is accessible cell phones, there are other services and resources that the company provides, including selling accessible switches, mounts, and computer access solutions, teaching special needs children math and science in North Carolina, distributing ECU products and adapting toys for children in certain locations near the company.

A resource section is included on the site which has links to a lot of interesting information about accessible cell phone services- for example some of the major cell phone providers waive the fees for Carrier Assisted Dialing Programs for people who have disabilities. There are also links to legislation (Section 508) which requires cell phones to be accessible. Visitors to this site may also receive a monthly newsletter which uses RSS (Really Simple Syndication) with updates in the world of accessible cell phones.

This site has a wealth of information and is well worth visiting.

**Type of Material:** Website  
**Audience:** People with Disabilities  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** No charge  
**Website:** [http://www.etoengineering.com/](http://www.etoengineering.com/)

### 25. Accessible Education Through Assistive Technology

**Author(s):** Elizabeth White, Shelley Wepner, Donna Wetzel  
**Publisher:** The Journal Online  
**Publication Date:** January 2003  
**Review:** Assistive technology in the education field continues to grow very quickly. The successful use of assistive technology is dependent on the knowledge, skill and inventiveness of the teachers who must implement it in schools, colleges and universities. The focus of this article is on providing pre-service and in-service trainings to teachers.  
This article gives many examples of teacher training programs that include courses on Assistive Technology. Online courses are discussed. A list of assistive technology devices, such as those that might be found on a college campus for students with learning disabilities, is given. Descriptions of how some colleges and universities have been able to acquire devices for hands-on training are included. Descriptions of field projects are given as models of successful training programs. This article is up-to-date with respect to information on college programs and current technology.  
**Type of Material:** Article  
**Audience:** Educators  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** none  
**Website:** [http://www.thejournal.com/magazine/vault/A4321C.cfm](http://www.thejournal.com/magazine/vault/A4321C.cfm)

### 26. Accessible Technologies: Ensuring that No Child with a Disability is Left Behind
22. Accessibility Metadata and Learning Objects

Author(s): Pete Rainger
Publisher: Skills For Access
Publication Date: January 2005
Review: The Metadata and Learning Objective model is a European methodology based on guidelines and specifications for intranet and e-learning materials. The theory is based on the needs of the learner and the accessibility features of the learning objective. The goal of the model is to discover the correct match for the learner. This particular model allows for the evaluation of multimedia resources used in higher education in Europe to meet the needs of students with particular disabilities; the goal is to decide which multimedia resources would be a good match.

The model could be used in the U.S. to evaluate the match or mismatch of multimedia resources to the needs of a particular individual.

Type of Material: Article
Audience: Educators
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): No charge
Website: http://www.skillsforaccess.org.uk/articles.php?id=153

23. Accessible Calculators

Author(s): Tech Connections AT Quick Reference Guides
Publisher: CATEA/Tech Connections
Publication Date: January 2001
Review: This article describes a range of available calculators and accessible options for people with physical or visual impairments. It gives vendor names and contact information to obtain the calculators and offers a software solution if the adapted calculators aren't sufficient.

The article uses a "frequently asked questions" format which makes the information easy to find and understand.

Type of Material: Resource Guide
Audience: Service Providers
Target Disability: Deaf / Blind, Mobility Impaired, Multiple Disabilities
Cost (As of Date Entered): Free on web site
Website: http://www.catea.org/quickrefguides/guides/Calculators.pdf

24. Accessible Cell Phones for People with Disabilities

Author(s): Ray Gonzales
Publisher: ETO Engineering
Publication Date: January 2005
Review: This website has information about accessible cell phones and related services. The site author, Ray Gonzales, P.E., states, "My philosophy is to try to avoid the high priced specialty AT solutions (there are really just a few anyway) and try to lead the consumer towards off-the-shelf
Publish: Synapse Adaptive
Publication Date: April 2004
Review: The Synapse Adaptive resource site contains information and links to speech recognition, compliance, resources, and vision products. Many products utilized in education for students who need AT (Assistive Technology) and/or AAC (Augmentative and Alternative Communication) are included (for example IntelliTools, IntelliKeys, Co:Writer, Write OutLoud, and Naturally Speaking). A catalog is available with free demo downloads plus ergonomic information.
Type of Material: Website
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers
Target Disability: Communication and Speech, Mobility Impaired, Visual Impairment / Blind
Cost (As of Date Entered): Free Web site
Website: http://www.synapseadaptive.com

20. accesselearning

Author(s): Georgia Tech Research on Accessible Distance Education Project (GRADE), IDET Communication Inc
Publisher: Georgia Tech Research on Accessible Distance Education Project (GRADE)
Publication Date: January 2003
Review: With the increase of distance learning and secondary schools offering online courses, the demand for creating these materials in an accessible format is growing. There is, however, a degree of awareness and training that needs to occur in order to make the materials accessible. Accesslearning is an online resource and training module that helps anyone interested in creating accessible formats. It is a ten-module tutorial that offers information, instructional techniques, and practice labs on how to make the most common needs in distance education accessible for individuals with disabilities, and enhance the usability of online materials for all students. All necessary downloads are embedded within the modules and it is possible to navigate freely and take only the lessons needed. This is a free resource. Users need only to create a login file.
Type of Material: Training Material
Audience: Educators
Target Disability: General / Non-disability Specific
Alternate Formats: Electronic, Electronic
Cost (As of Date Entered): No charge
Website: http://www.accesselearning.net/

21. Accessibility Features in Windows 98

Author(s): Barrett, S. and LeDuc, G.
Publisher: Washington Assistive Technology Alliance (WATA)
Publication Date: January 2000
Review: This fact sheet is an introductory explanation of the accessibility features which are built-into Windows 98. There is a brief description of the features included in the Windows operating system and what they do is given.
Type of Material: Infosheet / Fact sheet
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities
Target Disability: General / Non-disability Specific
Cost (As of Date Entered): Free
17. About Assistive Technology

Author(s): Vermont Parent Information Center  
Publisher: Vermont Parent Information Center  
Publication Date: January 2001  
Review: This short article gives a quick overview of assistive technology, with simple examples of a variety of AT devices used by individuals with varying levels of ability. It touches on the use of technology at school, who purchases the technology, and in what environments it may be used. Information about assistive technology resources is limited to organizations and agencies within Vermont. However, these lists would give families ideas about similar organizations that they could contact in their own state or region.  
Type of Material: Article  
Audience: Service Providers  
Target Disability: General / Non-disability Specific  
Ordering Information: 1-800-639-7170  
Cost (As of Date Entered): free  
Website: http://www.vtpic.com/downloads/at_facts.pdf

18. A Buyer's Checklist for Purchasing Battery Chargers

Author(s): IPAT, Interagency Project for Assistive Technology  
Publisher: IPAT, Interagency Project for Assistive Technology  
Publication Date: January 1998  
Review: This checklist provides the reader with advice on the key elements to consider when purchasing a battery charger to be used with a power wheelchair or scooter. The checklist was the collaborative effort of more than 100 individuals. The first section offers advice on choosing not only the charger, but the vendor of the equipment based on their attitude and the amount of service that they can offer.  
Type of Material: Infosheet / Fact sheet  
Audience: AT Professionals, Educators, Parents / Family, People with Disabilities, Rehabilitation Professionals, Service Providers  
Target Disability: Mobility Impaired, Multiple Disabilities, Multiple Sclerosis, Muscular Dystrophy, Spina Bifida, Orthopedically Impaired  
Alternate Formats: Electronic, Electronic  
Ordering Information: Download, or print from the web site  
Cost (As of Date Entered): Free  
Website: http://www.ndipat.org/products/fact/misc/batterychger.htm

19. Access and Productivity Tools Website
15. Ability Online Support Network

Author(s): Elizabeth O'Neil
Publisher: Ability Online Support Network
Publication Date: January 2005
Review: The Ability Online Support Network was first developed in 1991 as a local bulletin board, but has since grown to include members worldwide. It is a free Internet community where children and young people with disabilities, and their families, can exchange messages and participate in online activities in a safe environment. Registration is free although it takes a few days to receive the personal code needed to sign on. The site seems geared mostly to sending messages, and a chat room is advertised for one hour a week. Chat subjects are called ‘conferences’ and cover a wide range of subjects for the children, and their parents or caregivers. Games are available, and birthdays of members are noted.

The site has clear graphics and is very readable. There is also a text only option available. The site is easy to navigate and has many items of interest.


Author(s): National Lekotek Center
Publisher: National Lekotek Center
Publication Date: January 2005
Review: Buying toys for children should be an exciting and fun activity. However, for parents of children with disabilities, it can be frustrating and difficult at best. Navigating the toy stores and reading boxes to find out whether the toy will be accessible or meaningful to the child is daunting. AblePlay is a website that provides comprehensive information on the accessibility of these toys for children with special needs.

AblePlay breaks the information into categories, describes the product, defines skills needed and practiced, gives play ideas, and describes adaptation ideas. The website is detailed and a search for toys can be done by category, disability, interest, and educational purpose. This site is a great way to make a wish list or to find just the right toy match for a special child.

**Publisher:** Words+, Inc.

**Publication Date:** January 2005

**Review:** As a writer faced with hundreds of pages a week and few free hours to craft those pages, personal written shorthand and abbreviations are tools for my essential drafts and fleeting ideas. Microsoft Office abbreviation expansion is undesirable because it hijacks valuable CPU memory. Like many Microsoft elements (i.e. spell check, grammar, or readability stats) the expansion can also lock up a user's system. The Abbreviate! utility software runs in the background of Windows (3.1 or higher) and monitors keystrokes to help build and define abbreviations; as a perk, Abbreviate! also handles common misspellings (entered as abbreviations and defined with correct spelling). As a tool for a user with a disability, it is helpful for typists who rely on abbreviation expansion for easy and efficient typing.

Abbreviate! is recommended for anyone running Windows 2000 or XP who wants an affordable, well rounded, accessible abbreviation expansion program. The Abbreviate! breakdown:

- Excellent User Guide (with Install, Use, FAQs, and an abbreviation crib sheet, plus contact information and website address)
- Easy to edit or delete abbreviations.
- Simple to disable when not needed.
- Highly compatible with Windows 2000 and Windows XP
- Background-based, simple interface, non-intrusive software
- Works with email, web, and publishing programs in addition to word processing
- User friendly: Edit, Print, File, List Sharing, Alphabetized abbreviations glossary, Adjustable Expansion Rate (major plus)
- Free technical support

Auto Expand--A plus is the speed. A minus - the limited number of definitions provided unless special characters are used.

Expand on a Separator--My favorite feature, and less prone to assumptions-- A plus is the flexibility, accuracy, and provision of more definitions. A minus - the program requires a few more keystrokes (typical separators--a space, punctuation, parenthesis etc.).

**Type of Material:** Software

**Audience:** People with Disabilities

**Target Disability:** General / Non-disability Specific

**Alternate Formats:** CD-ROM, CD-ROM

**Ordering Information:** Call 661.723.6523 to order.

**Cost (As of Date Entered):** $49.95 plus Shipping. Will be $99

**Website:** [http://www.abbreviate.cc/](http://www.abbreviate.cc/)

14. Ability Hub - Assistive Technology Solutions Website

**Author(s):** Gilman, D.

**Publication Date:** January 2001

**Review:** This website will direct people with disabilities to adaptive equipment and alternative methods available for accessing computers.
11. AAC Strategies for Young Children with Vision Impairments and Multiple Disabilities

**Author(s):** Goldware, M. and Silver, M.  
**Publisher:** California State University Northridge Center on Disabilities  
**Publication Date:** April 2004  
**Review:** This short article explains to the reader that AAC strategies for young children with visual impairments must take into consideration the special challenges of learning without vision. The article provides information to assist the reader to select books and software for the child with a visual impairment. Additionally, the article states that children with a visual impairment must have a cue to signal transition from one activity to the next. The use of AAC as a part of the intervention can teach the child the power of communication as well as giving the child the ability to make choices, control the environment, and interact with peers.  
**Type of Material:** Article  
**Audience:** Parents / Family  
**Target Disability:** Communication and Speech, Multiple Disabilities, Visual Impairment / Blind  
**Ordering Information:** 1811 Nordhoff St. Northridge, CA 91330-8340  
818-677-2578  

12. AAC Terminology

**Author(s):** Cumley, G. D.  
**Publisher:** Hattie B. Munroe Barkley Memorial Augmentative and Alternative Communication Center  
**Publication Date:** January 1992  
**Review:** This glossary of Augmentative and Alternative Communication (AAC) terms was originally designed as a companion to the book, "Augmentative and Alternative Communication" by Dr. Beukelman & Mirenda. However, it stands alone effectively as a resource for educators or family members who find themselves dealing with the AAC field and the acronyms and jargon that come with it. The glossary organizes the terms in alphabetical order and to coincide with their appearance in certain chapters of "Augmentative and Alternative Communication". This can lead the reader of this glossary to have to scroll down the page in order to see all of the terms for any given letter. The glossary does well to define simple terms and concepts as well as sophisticated concepts and technical terms. The definitions themselves can sometimes contain terms that may be difficult for someone who does not have some previous knowledge of AAC to understand. This does not occur often however. This document can be easily printed out or copied and pasted into a word processing program for easy reference.  
**Type of Material:** Infosheet / Fact sheet  
**Audience:** AT Professionals, Educators, Parents / Family, Rehabilitation Professionals, Service Providers  
**Target Disability:** Brain Injury and Stroke, Cerebral Palsy, Communication and Speech, Health Impairments, Hearing Impairments / Deaf, Multiple Disabilities, Muscular Dystrophy, Neurological Disorders  
**Ordering Information:** View online for free.  
**Cost (As of Date Entered):** No cost
organizations such as Closing the Gap, ATA, CSUN, Trace, and LD Online; individuals who are leaders in the field such as Linda J. Burkhart and Gail VanTatenhove; as well as information from AAC vendors Adaptivation, IntelliTools, Toby Churchill, and Penny and Giles. The matrix is a PDF file only and features websites from the US as well as Australia, Scotland and England. This would be an excellent starting point for someone who is just learning about augmentative communication and a valuable resource for someone who knows a great deal about AAC because it is a single source for links to many outstanding resources.

**Type of Material:** Article

**Audience:** Service Providers

**Target Disability:** Communication and Speech

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** The CALL Centre

University of Edinburgh
Paterson’s Land
Holyrood Road
Edinburgh
EH8 8AQ
Scotland
Tel: 0131 651 6235/6236
(International: 44 131 651 6235/6236)
Email: call.centre@ed.ac.uk

**Cost (As of Date Entered):** No charge

**Website:** [http://callcentre.education.ed.ac.uk/downloads/quickguides/aac/aacresources.pdf](http://callcentre.education.ed.ac.uk/downloads/quickguides/aac/aacresources.pdf)

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### 10. AAC Small Talk

**Author(s):** List moderators: Jill E. Senner, Pam Harris, Shelley Stewart-Harris

**Publisher:** List moderators: Jill E. Senner, Pam Harris, Shelley Stewart-Harris

**Publication Date:** January 2005

**Review:** This is a listserv created for kids who use AAC and their friends. Touted as a ‘safe place for kids’, it is moderated by three adults who check the content of messages. Members are listed in a directory, can receive and post messages, and review message archives.

Potential members must go through a registration process and be accepted by the moderators before being accepted as members of the listserv. A responsible adult is also asked sign off on monitoring listserv use of the applicant. Response to applications from the moderators is slow; it took several weeks to receive a response to this reviewer’s initial application.

Postings are presented in text and Mayer-Johnson symbols.

Created in 2001, the listserv currently has 20 members. The concept of AAC users having a forum for communication is exciting, but perhaps this group would do well to inform the AAC community of its availability.

**Type of Material:** Website

**Audience:** People with Disabilities

**Target Disability:** Communication and Speech

**Alternate Formats:** Electronic, Electronic

**Cost (As of Date Entered):** no charge

**Website:** [http://groups.yahoo.com/group/aacsmalltalk/](http://groups.yahoo.com/group/aacsmalltalk/)
Research Centers.) The presentation is in video format with a text outline accompanying it. There are additional videos within the webcast demonstrating therapists’ work with children ages 16-36 months. The topic is how to enhance language and communication for young children with augmentative communication tools. The presentation is the primary result of an ongoing research project with children ages 0-3 with communication impairments.

The presentation material is easy to understand and the accompanying text highlights the key points made by the speaker. Lots of good information is available to parents or Early Intervention staff, but users would require a high-speed Internet connection to fully appreciate the webcast format.

**Type of Material:** Multimedia

**Target Disability:** Autism, Cerebral Palsy, Communication and Speech, Developmental Disabilities, Mental Health Impairments, Multiple Disabilities, Muscular Dystrophy, Neurological Disorders, Apraxia of Speech

**Cost (As of Date Entered):** No charge


### 8. AAC Resources for Families

**Author(s):** Pam Harris

**Publisher:** Connsense Bulletin

**Publication Date:** January 2005

**Review:** This 20-page document which downloads as a pdf file from the Connsense web site is extensive and includes a wide variety of information about assistive technology and AAC Resources for families. This may be overwhelming for a parent or other individual who is a newcomer to the field based on the sheer quantity of material. However, the down-to-earth commentary on each item in this resource list is right to the point.

Written by the parent of a child with multiple disabilities who uses AAC, each section contains a short overview and opinion along with references for books, magazines, and links to web sites. The author has also interspersed activities that promote reading skills, advocacy skills and much more. Contents include, but are not limited to assistive technology, planning for future needs, and how to find skilled professionals.

This is a resource list that will take many hours to investigate, and will probably begin to answer most questions of families and professionals, looking for different types of technology that can assist those with special needs. The many links to other web sites should facilitate the process. This is worth taking time to examine.

**Type of Material:** Resource Guide

**Audience:** Service Providers

**Target Disability:** General / Non-disability Specific

**Cost (As of Date Entered):** No charge

**Website:** [http://www.connsensebulletin.com/AACResources.pdf](http://www.connsensebulletin.com/AACResources.pdf)

### 9. AAC Resources on the Internet

**Author(s):** CALL Centre

**Publisher:** CALL Centre (University of Edinborough)

**Publication Date:** January 2003

**Review:** This valuable article is a matrix of Internet resources on augmentative communication (it provides some AT resources as well). It features web links and a small bit of information on
5. AAC Assessments Must Consider All of the Barriers to Successful Communication

**Author(s):** Mintz, B.

**Publisher:** University of Maine Center for Community Inclusion

**Publication Date:** January 1998

**Review:** This article defines and gives examples of opportunity and access barriers when using an Augmentative/Alternative Communication (AAC) device. Although limited in scope, it also lists items that may be barriers to consider when performing a communication assessment, such as environmental settings, equipment availability, and physical and cognitive ability. It is recommended that a team approach be used to identify and eliminate the suspected barriers.

**Type of Material:** Article

**Audience:** Service Providers

**Target Disability:** Communication and Speech

**Ordering Information:** Available on their website.

**Cost (As of Date Entered):** free

**Website:** [http://www.ccids.umaine.edu/FACTSFC/articles/Barrier.html](http://www.ccids.umaine.edu/FACTSFC/articles/Barrier.html)

6. AAC Glossary (from Second Edition of Augmentative and Alternative Communication)

**Author(s):** Buekelman and Mirenda

**Publisher:** Brookes Publishing

**Publication Date:** January 1998

**Review:** This online resource is the glossary of the book Augmentative and Alternative Communication (2nd edition) by Buekelman and Mirenda. The authors are considered leaders in the field of AAC. Some of the terms in the glossary (such as "zone of proximal development", "agglutination" and "level of cognitive functioning") would not be easily understood by the average reader. However, this is still a very valuable resource because it does define the more common AAC terms such as VOCA (voice output communication aid) and gives definitions for several acronyms and disabilities (TBI, ALS, autism and etc.)

**Type of Material:** Infosheet / Fact sheet

**Audience:** AT Professionals

**Target Disability:** Communication and Speech

**Alternate Formats:** Electronic, Electronic

**Ordering Information:** Download glossary from web site

**Cost (As of Date Entered):** Free online

**Website:** [http://textbooks.brookespublishing.com/beukelmanmirenda/glossary.htm](http://textbooks.brookespublishing.com/beukelmanmirenda/glossary.htm)

7. AAC Intervention to Maximize Language Development in Young Children

**Author(s):** Janice Light, PhD.

**Publisher:** Penn State University

**Publication Date:** January 2005

**Review:** The AAC-RERC website is host to a webcast given by the chief author of this report. (AAC stands for augmentative and alternative communication. RERC stands for Rehabilitation Engineering Research Centers)
3. 9 Steps to Funding

**Author(s):** South Carolina Assistive Technology Project  
**Publisher:** Adaptivemall.com  
**Publication Date:** January 2002  
**Review:** This is a quick and easy guide to the process of obtaining funding for assistive technology products. It does not provide funding resources, but rather provides common sense tips such as keeping complete and accurate written records of phone conversations and contacts.

This guide will be good for parents to refer to from time to time as they move through the process of obtaining funding for AT.  
**Type of Material:** Infosheet / Fact sheet  
**Audience:** Service Providers  
**Target Disability:** General / Non-disability Specific  
**Ordering Information:** Download from the web site.  
**Cost (As of Date Entered):** Free  
**Website:** [http://bergeron.stores.yahoo.net/9steptofun.html](http://bergeron.stores.yahoo.net/9steptofun.html)

4. "I've Got a Palm in My Pocket", Using Handheld Computers in an Inclusive Classroom

**Author(s):** Anne M. Bauer, Mary E. Urlich  
**Publisher:** Council For Exceptional Children  
**Publication Date:** January 2002  
**Review:** In a remarkable article, Bauer and Urlich describe the first phase of their program to introduce handheld computers into students' daily lives and then document the results. The authors were astounded, and at first skeptical, of the increased success that the 28 sixth graders experienced as the students soon outpaced the investigators and begin to use the handhelds to increase their efficiency, organize work, and to support each other in the true vein of an "inclusive" environment.

Bauer and Urlich discuss their results and the implications for practice in terms of the increasing support for handhelds as student tools, the need for teachers to monitor and manage their students’ use of the technology, and the difference between the educator’s handheld learning curve and the student’s handheld experience.  
**Type of Material:** Article  
**Audience:** Educators  
**Target Disability:** General / Non-disability Specific  
**Cost (As of Date Entered):** no charge  
**Website:** [http://journals.sped.org/EC/Archive_Articles/VOL.35NO.2NOVDEC2002_TEC_Article%202.pdf](http://journals.sped.org/EC/Archive_Articles/VOL.35NO.2NOVDEC2002_TEC_Article%202.pdf)
1. 101 ways to "Help-with-Ease" for Patients with Neuromuscular Disease

Author(s): Siegel, I. M., and Casey, P.
Publisher: Muscular Dystrophy Association (MDA)
Publication Date: January 1996
Review: This resource guide lists 101 practical ways for people with neuromuscular disabilities and their families/caregivers to manage the activities of daily living. Most of the hints were obtained from people with disabilities and their families so the reader knows the hints have been tested and really work. It is full of creative and helpful ideas in an easy-to-read format. It also includes names and contact information of organizations that provide aids to daily living.

Type of Material: Resource Guide
Audience: Service Providers
Target Disability: Communication and Speech, Health Impairments, Mobility Impaired, Muscular Dystrophy, Neurological Disorders, Orthopedically Impaired
Alternate Formats: Foreign Language - Spanish, Foreign Language - Spanish
Ordering Information: Access via the website identified below.
Cost (As of Date Entered): No cost
Website: http://www.mdausa.org/publications/101hints/

2. 39 Pounds of Love

Author(s): Ami Ankilewitz
Publisher: HBO/Cinemax
Publication Date: January 2006
Review: People with disabilities are often required to have an attitude and motivation that exceeds any typical person's realm of understanding. Rarely are these characteristics seen except by caregivers and those that work and live closely with a person with a disability. 39 Pounds of Love is a documentary that exemplifies these characteristics and demonstrates the hope and perseverance of an individual with severe physical impairments. It is a story of a man, Ami, and how he navigates through his world.

Although this documentary is not about the adaptations and the assistive technology that he uses, it is evident that technology enables Ami to work, play, and become a participant in this world. He is quoted as saying "Technology has had the most powerful effect on my life. Not only did it make my existence possible, but it also enhanced the quality of my life. As long as I can remember, I learned to use technology in order to normalize my life as much as possible. Slowly, I developed the technological skills which helped me create homemade gadgets that helped me overcome small challenges, which made a big difference in my life. My motto is: if it doesn't exist - create it!"

Audience: AT Professionals, Educators, Parents / Family, People with Disabilities
Target Disability: General / Non-disability Specific
The Family Center on Technology and Disability’s AT Specialists have reviewed hundreds of books, articles, research papers and other materials of interest to families and children with disabilities. Our reviews are organized alphabetically and each entry contains a summary of the resource, publishing information and information on how to access that particular resource.

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Chapter 1 - Assistive Technology Assessment

Additional Tools for the Team as They Select Appropriate Assistive Technology

Closing the Gap Resource Directory and Online Searchable Database
Once the common vendors are known, the next useful tool is the Closing the Gap Resource Directory. The Resource Directory is published each spring as the February/March issue of the Closing the Gap newsletter. It is an excellent tool for school teams. The first step in using the Directory is to go to the Producers Section, which is near the back of the directory. In the Producers Section, team members can look at each of the vendors obtained from the Product Description Section of Resource Directory.

In our example, Don Johnston Incorporated was one of the common vendors listed for talking word processors. Looking up Don Johnston Incorporated reveals a long list of products. Scanning that list reveals Write:OutLoud®, which sounds like it might be a talking word processing. Turning to the Software section of the Resource Directory provides a description of this talking word processing software, including price, type of computer it runs on, system requirements, and other valuable information.

Closing the Gap also has a searchable database on its website http://www.closingthegap.com/solutions/products/advanced_search.lasso. Annual subscriptions are required to use the online version but there is a free 14-day trial. The same type of information is included there; once the name of a product or the type of product is known, more information can be obtained from the website.

QIAT Listserv
Quality Indicators of Assistive Technology (QIAT) is a voluntary organization of AT professionals from around the world who share both ideas and questions. This group is a wonderful resource when looking at the needs of students with AT needs. They provide a collegial support network of some of the finest minds and pioneers in the field of assistive technology. Post questions to this listserv, or share ideas and resources. The site is hosted on the University of Kentucky website. Dr. Joy Zabala is the creator and moderator of the site. http://natri.uky.edu/assoc_projects/qiat/

AAC TechConnect
AAC TechConnect has created Device Assistant, a resource designed to provide information on nearly 100 AAC devices currently on the market from major manufacturers. (Information is provided in cooperation with all of the manufacturers.) You can use a feature-match tool to search for a device, and also do side-by-side comparisons. A subscription fee is required, but there is a 14-day free trial. The site was created by Debby McBride, MS, CCC-SLP. http://www.aactechconnect.com/da.cfm
Chapter 1 - Assistive Technology Assessment

ORGANIZATION (continued)
Information Management
- Tabs
- Sticky notes, index cards
- Highlighters
- Key words
- Study guide
- Task analysis
- Digital highlighters and sticky notes
- Handheld scanners/electronic extraction
- Electronic organization
- Study grid generators/grading rubric
- Online search tools
- Online web trackers
- Online sorting file tools
- Digital graphic organizers
- Online manipulatives, interactive, tutorials, animations

Time Management
- Checklists
- Paper planners/calendars
- Schedules (visual)
- Portable, adapted timekeepers
- Electronic reminders
- Digital planners (PDA) cell phones
- Web-based planning tools

Material Management
- Low-tech organizers
- Checklists
- Container system
- Coding system
- Electronic filing and storage
- Portable electronic storage
- Computer-based tools

RECREATION AND LEISURE
- Typical toys/puzzles/balls/utensils/instruments adapted; adjustable equipment; flexible rules; add visual/auditory clarity
- Specially designed utensils/equipment
- Electronically/mechanically adapted utensils and equipment
- Electronic aids – remote controls, timers, CD players, speech generating devices
- Computer-facilitated and computer-based activities
- Online and virtual recreational experiences

VISION (continued)
Reading
- Glasses
- Color Filter
- Slantboard
- Large print
- Optical Magnifier
- Electronic Magnifier
- CCTV
- Monocular
- CCTV with distance camera
- Audio text
- Computer-based reading software
- Electronic Braille notetaker

Writing
- High contrast pen
- Portable word processing device
- Typing with audio support
- Braillewriter
- Typing with Braille support
- Electronic Braille note taker
- Voice recognition

Mathematics
- Large print measuring tools
- Large key calculator
- Tactile measuring devices
- Abacus
- Talking calculator
- Models or 2D and 3D geometric shapes
- Tiger embossed, PIAF Tactile representation

Pictorial Information
- Enlarged format
- CCTV
- Models or objects
- Tactile graphics
- Tactile-audio graphics

Note taking
- Slate and stylus
- Tape or digital recording device
- Computer-based recording software
- Electronic Braille notetaker

Mobility
- Cane
- Monocular
- Braille/talking compass
- Electronic travel device
- GPS device

HEARING
Hearing Technology
- FM
- Infrared
- Induction Loop
- 1:1 Communicators
- Personal amplification

Alerting
- Visual or vibrating alerting devices

Communication
- Telecommunication supports
- Closed captioning
- Person to person
- Classroom/group activities
- Voice to text/sign
- Real-time captioning
### WATI Assistive Technology Assessment Checklist

#### SEATING, POSITIONING AND MOBILITY

**Seating and Positioning**
- Standard seat/workstation at correct height and depth
- Modifications to standard seat or desk
- Alternative chairs
- Adapted/alternate chair, sidelyer, stander
- Custom fitted wheelchair or insert

**Mobility**
- Walking devices - crutches/walker
- Grab bars and rails
- Manual wheelchair
- Powered scooter, toy car or cart
- Powered wheelchair w/ joystick or other control
- Adapted vehicle for driving

#### COMMUNICATION

- Concrete Representation
- Simple speech generating device
- Speech generating device with levels
- Speech generating device with icon sequencing
- Speech generating device with dynamic display
- Text based device with speech synthesis

#### COMPUTER ACCESS

- Positioning of student
- Standard Keyboard/Mouse with accessibility/access features built into the operating system
- Standard Keyboard/Mouse with Adaptations
- Rate Enhancement
- Alternate Keyboard/Mouse
- Onscreen keyboard
- Voice recognition software
- Eye Gaze
- Morse Code
- Switch Access
- Other: ________________________

#### MOTOR ASPECTS OF WRITING

- Environmental and seating adaptations
- Variety of pens/pencils
- Adapted pen/pencil
- Writing templates
- Prewritten words/phrases
- Label maker
- Portable word processor
- Computer with accessibility features
- Computer with word processing software
- Alternative keyboards
- Computer with scanner
- Computer with word prediction
- Computer with voice recognition software

#### COMPOSITION OF WRITTEN MATERIAL

- Picture Supports to write from/about
- Pictures with words
- Words Cards/Word Banks/Word Wall
- Pocket Dictionary/Thesaurus
- Written templates and Guides
- Portable, talking spellcheckers/dictionary/thesaurus
- Word processing software
- Word prediction software
- Digital templates
- Abbreviation expansion
- Word processing with digital supports
- Talking word processing
- Multimedia software with alternative expression of ideas
- Tools for citations and formats
- Voice recognition software

#### READING

- Standard Txt
- Book adapted for access
- Low-tech modifications to text
- Handheld device to read individual words
- Use of pictures/symbols with text
- Electronic text
- Modified electronic text
- Text reader
- Scanner with OCR and text reader
- Text reader with study skill support

#### MATHEMATICS

- Math manipulatives
- Low-tech physical access
- Abacus/mathline
- Adapted math paper
- Adapted math tools
- Math “smart chart’. math scripts
- Math tool bars
- On-screen calculator
- Alternative keyboards/portable math processors
- Virtual manipulatives
- Math software and web simulations
- Voice recognition math software

#### ORGANIZATION

**Self-Management**
- Sensory regulation tools
- Movement and deep pressure tools
- Fidgets
- Auditory
- Visuals

*(Organization continued in next page)*
Using the AT Checklist

In some cases team members are not fully aware of all the assistive technology that might be available to assist with the task that is of concern. In that case there are several tools and resources that can be used to assist them. One of those tools is the AT Checklist. The AT Checklist is a concise listing of assistive technology arranged by the task for which it would be utilized. Categories are: Seating, Positioning and Mobility; Communication; Computer Access; Motor Aspects of Writing, Composition of Written Material; Reading; Mathematics; Organization; Recreation & Leisure; Activities of Daily Living; Vision; Hearing; and Multiple Challenges.

Within each of these categories suggested assistive technology is arranged in a hierarchy from the simplest, low-tech alternatives to more complex or high-tech items. They are arranged this way because the developers shared a belief that we want to select the simplest alternative that successfully assists the student. Many years ago we had a number of experiences where service providers immediately jumped to the most complex solution without first trying other alternatives. The hierarchical arrangement of the items in the AT Checklist is in response to this type of thinking. For example, just because a student has difficulty with writing, does not mean that the first thing we try would be voice recognition. While voice recognition is exciting and very appealing, there are other, simpler tools that should be tried first to see if they work.

You will note that each section also includes a space to write in new assistive technology. Since many new products are introduced each year, it is important to be able to add new items. The final section of the AT Checklist is a place to write comments that the team has as they utilize the Checklist. These may include something that has been tried or a plan to try a sequence of items. It is always important to capture in writing the discussions that take place as team members works together to arrive at an assistive technology decision.
# WATI Assistive Technology Decision Making Guide

**Student:** ____________  **Date:** ____________  **Area of Concern:** ______________

**Attendees:** ________________________________________________________________

## Problem Identification

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td>(Location, technology, activities)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensory Considerations</th>
<th>Narrowing the Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Vision/Hearing/Tactile)</td>
<td>(Specific task for solution generation)</td>
</tr>
</tbody>
</table>

## Solution Generation Tools & Strategies

- (Brainstorming - No Decision)
- (Review AT Checklists)

## Solution Selection Tools & Strategies

- (Discuss & Select Solutions)

## Implementation Plan

- AT Trials/Services Needed:
  - **Item:**
  - **Date:**
  - **Length:**
  - **Person Responsible:**

## Follow-Up Plan

- **When/Date:**
- **With Whom:**
- **Contact info:**

---

*Important:* It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Mobility:

- Walker
- Grab bars and rails
- Manual wheelchair including sports chair
- Powered mobility toy
- Powered scooter
- Powered wheelchair
- Adapted vehicle for driving

Daily Living Skills:

- Non-slip materials
- Universal cuff/strap to hold items in hand
- Color coded items for easier locating
- Adaptive eating utensils
- Adaptive drinking devices
- Adaptive dressing equipment
- Adaptive devices for hygiene
- Adaptive bathing devices
- Adaptive equipment for cooking

Environmental Control:

- Light switch extension
- Interface and switch to activate battery operated devices
- Interface and switch to turn on electrical appliances
- Radio/ultra sound to remotely control appliances
- Electronic aide to daily living controlled through augmentative device

Positioning and Seating:

- Non-slip surface on chair
- Bolster, rolled towel, blocks for feet
- Adapted/alternate chair, sidelyer, stander
- Custom fitted wheelchair or insert

For more information or individual assistance, please contact:

**exceptional children's assistance center**

_North Carolina's Parent Center_

907 Barra Row, Suites 102/103
Davidson, NC 28036
800-962-6817 • www.ecac-parentcenter.org
Computer Access:

- Keyboard with accessibility options
- Word prediction, abbrev./expansion to reduce keystrokes
- Key guard
- Arm support
- Track ball/joystick with on-screen keyboard
- Alternate keyboard
- Pointing options/Head mice
- Switch with Morse code
- Switch with scanning
- Voice recognition software

Vision:

- Eye glasses
- Magnifier
- Large print books
- CCTV (closed circuit television)
- Screen magnifier (mounted over screen)
- Screen magnification software
- Screen color contrast
- Screen reader, text reader
- Braille materials
- Braille translation software
- Enlarged or Braille/tactile labels for keyboard
- Alternate keyboard with enlarged keys
- Braille keyboard and note taker

Hearing:

- Pen and paper
- Computer/portable word processor
- TTY/TDD with or without relay
- Signaling device
- Closed Captioning
- Real Time captioning
- Computer aided note taking
- Flash alert signal on computer
- Phone amplifier
- Personal amplification system/Hearing aid
- FM or Loop system
- Infrared system

Recreation:

- Toys adapted with Velcro, magnets, handles, etc.
- Toys adapted for single switch operation
- Adaptive sporting equipment
- Universal cuff to hold crayons, etc.
- Modified utensils
- Arm support for drawing/painting
- Electronic aids to operate TV, VCR, etc.
- Art software
- Games on the computer
Math:

• Abacus/Math Line
• Enlarged math worksheets
• Alternatives for answering, explaining or giving examples
• Math "Smart Chart"
• Money calculator/Coinulator
• Tactile/voice output measuring devices
• Talking watches/clocks
• Calculator with or without print out
• Calculator with large keys and/or display
• Talking calculator
• Calculator with special features
• On-screen/scanning calculator
• Alternative keyboard
• Math software
• Software for manipulation of objects
• Voice recognition software

Written Expression:

• Word cards/book/wall
• Pocket dictionary/thesaurus
• Writing templates
• Electronic/talking spell checker/dictionary
• Word processing with spell checker
• Talking word processing
• Abbreviation/expansion
• Word processing with writing supports
• Multimedia software
• Voice recognition software

Writing:

• Variety of pencils and pens
• Pencil/pen with adaptive grip
• Adapted paper (e.g. raised line or highlighted line)
• Slant board
• Prewritten words/phrases
• Templates
• Portable word processor
• Computer with word processing
• Voice recognition software
• Talking calculator

Taken from Assistive Technology Consideration Quick Reference Wheel   www.cec.org
Assistive Technology Examples

The following examples were taken from Assistive Technology Consideration Quick Reference Wheel developed for the Wisconsin Assistive Technology Initiative. This is not an exhaustive list. Technology can be *anything* used to support the student.

More information about the wheel can be found at: http://www.cec.org

Communication

- Communication board with pictures/words/objects
- Eye gaze frame
- Simple voice output device
- Voice output device with icon sequencing
- Voice output device with dynamic display
- Voice output device with speech synthesis

Reading

- Predictable books
- Changes in text size, spacing, color, background
- Book adapted for page turning
- Use of pictures/symbols with text
- Talking electronic device to speak challenging words
- Single word scanners
- Scanner with Optical Character Recognition and talking word processor
- Electronic books

Learning / Studying

- Print or picture schedule
- Aids to find materials (*e.g. color coded folders*)
- Highlight text
- Recorded material
- Voice output reminders for assignments, tasks
- Electronic organizers
- Pagers/electronic reminders
- Single word scanners
- Hand-held scanners
- Software for concept development
- Software for organization of ideas
- Hand-held computers
APPEAL LETTER FOR DURABLE MEDICAL EQUIPMENT

EXAMPLE

January 12, 2008

Wisconsin Department of Health and Social Services
Office of Administrative Hearings
P.O. Box 7875
Madison, Wisconsin 53707-7875

To Whom It May Concern:

My name is Ms. Advocate and I'm Ms. Consumer's representative. On her behalf I'm appealing the denial sent on January 11, 1999 for a communication device for my client Ms. Consumer (999-99-9999) who resides at 1111 N. Plankinton Avenue, Milwaukee, Wisconsin, 53203.

Correspondence can be sent to:

Ms. Advocate
Advocates of Wisconsin
5555 ADA Drive
Milwaukee, Wisconsin 53203

Sincerely,

Ms. Advocate
Advocacy Specialist

cc: Ms. Consumer
Week 3: Student's parents again visited school for additional help and instruction in programming the
_______________. Student is functionally using device within the Early Childhood program to choose snack, indicate discomfort, interact with peers, and to relay messages between off-ice and the classroom. Student has been introduced to the backspace and clear function keys as two symbol combinations have been added to overlays.

Student is successfully using both of these keys to edit incorrect messages. Approximately ten new activity pages were added this week to include vocabulary for field trips, grocery shopping, participation in a play, and many other activities.

Week 4: Additional messages for school and home are being added daily. Student is using the spontaneously without prompting. He has assumed responsibility for keeping the in close proximity and often is seen gesturing for his prosthesis so he can speak. Mrs. _____ reports that Student successfully used his device to complete a phone conversation with a Grandparent.

Summary and Justification:
Student demonstrates no functional verbal communication. Gestural communication is limited by motor constraints. Student has demonstrated effective use of the __________. He has excelled in vocabulary usage in a variety of contexts and in many different environments. Specific features of the ___________ which were critical for Student’s use include: dynamic display, color coding of categories, flexibility for size of symbols, easy self correction, potential for spelling, ease of operation and ability to use within varying environmental conditions. This prosthesis is the most functional choice for Student as a communication prosthesis which will be able to grow with Student and continue to meet his need for the future.
Report of trial results with AAC Device

Re: Student name

DOB: MA#

This letter is a written request for approval of funding for the purchase of a communication prostheses for a five year old boy with a diagnosis of cerebral palsy and a seizure disorder. Due to excessive muscle tone throughout his body, the student has no functional verbal speech, despite near age level receptive language skills. Please refer to the augmentative communication evaluation report for specific evaluation results and justification of a communication prosthesis for student.

Student was provided access to the through a four week rental agreement between the Company and the ABC School District. The student was accompanied by his mother and father to an introduction to the prosthesis conducted by the Company representative. All classroom personnel were also in attendance at the initial training. The following goals were set at the onset of the four week rental period. Student will:

1. make 10 requests per day
2. use at minimum five communicative intents per day
3. identify 10 categories
4. make requests using two symbol combinations - 10 per day
5. initiate communication with adults, peers and family - 10 per day

Progress:

Week 1: Student using 16 location individual menu and two activity pages to spontaneously make requests and describe feelings. device accompanies student to Early Childhood, day care and back home. Student was able to successfully communicate messages to parents concerning activities completed during day from onset of introduction. Student is able to directly access the using forefinger of right hand.

Week 2: Activity pages were added to include favorite toys, home routines, games, and a family page. Student is now using the to give directions while being pushed in his chair, while being positioned in the Early Childhood classroom and to his caregivers at home. Student has also been introduced to an alphabet display to begin to spell his name and address. He has demonstrated knowledge of use of dynamic display by independently navigating from menu to activity pages.
Receptive Language: e.g., Peabody Picture Vocabulary Test-Revised (PPVT-R)
Receptive One Word Picture Vocabulary (ROWPVT)
Test for Auditory Comprehension of Language (TACL)
Non Speech Test for Receptive Language
Receptive/Expressive Emergent Language Scale (REEL)

Expressive Language: e.g., Receptive/Expressive Emergent Language Scale (REEL) Non Speech Test for Expressive Language
Expressive One Word Picture Vocabulary Test (EOWPVT)

DEVICES CONSIDERED: itemize each separately and include:
Accuracy of Activation
Performance History
Mounting and Access - stress positioning
Justification for Acceptance or Rejection
All necessary Components

TRIAL PERIOD: INCLUDES TRIAL IN ALL PLACES OF USE, HOME/WORK/SCHOOL
1) List each week separately with measurable, functional goals and specific measurable outcome - avoid using percentages - speak to functional communication.
2) List mounting and component parts with cost.
3) Has 3rd party insurance denial been obtained prior to prior auth. request? ks9/95
AUGMENTATIVE COMMUNICATION SYSTEM EVALUATION
for Wisconsin Medicaid

Name: ____________________ D.O.B.: __________ Address: __________________________

Medicaid ID #: __________________________

Diagnoses: __________________________ Dates of Onset: __________________________

M.D. Order and Date: __________________________

Speech Pathologist: __________________________ Evaluation Date: __________________________

History: brief social and clinical __________________________

Gross/Fine Motor: __________________________

Vision/Hearing: __________________________

Oral/Motor: __________________________

Cognition: __________________________

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Resources on Funding

http://www.ucpa.org
Assistive Technology Funding and Systems Change Project (ATFSCP)
1660 L Street, NW. Suite 700
Washington, DC 20036
(202) 776-0406
This five year project has produced many useful documents on funding assistive technology. They can be found on the United Cerebral Palsy Association’s website.

http://trace.wisc.edu/archive/fintech/fintech.html
This online handbook, put together by the George Washington University Regional Rehabilitation Continuing Education Program, in collaboration with the electronic Industries Foundation, covers many aspects of financing assistive technology. The handbook presents information on over nine different major funding sources.

http://www.empowermentzone.com/at_faq.txt
This online document, produced by the Empowerment Zone, answers many frequently asked questions on assistive technology in great detail. It provides information on a number of different funding sources.

http://www.nls.org/natmain.htm
Neighborhood Legal Services, Inc.
495 Ellicott Square Building
295 Main Street
Buffalo, New York 14203
This project offers a number of different articles related to financing assistive technology. A special focus of the project is on legal issues related to assistive technology. An on line newsletter and booklet are offered as well.

http://www.katsnet.org/funding1.pdf
The Buck Stops Here: A Guide to Assistive Technology Funding in Kentucky
Kentucky Assistive Technology Service Network
Workforce Development Cabinet
Department for the Blind
Louisville, Kentucky
1 - 800 - 327 - 5287
Although this book speaks directly to funding in Kentucky, much of the information translates across states and is an excellent resource. The entire book can be downloaded from the above website.
interest areas may make them a possible funding source. Once you have selected several potential foundations, a letter of inquiry is the best way to begin. You will need to find out if they accept unsolicited requests, if so, when

requests are received, how to apply, etc. Based on the information you receive, you can target one and begin the application process.

**Service Clubs**
Service clubs are a very good source of financial assistance to purchase (or help purchase) assistive technology devices. These are groups of people who are looking for projects that they can support. A personal contact within the group is most helpful. However, if you don't know anyone personally, you can get to know them by approaching the group by telephone or letter and explain who you are and what you are seeking.

A list of all clubs is not possible, but the most common are: Elks, Kiwanis, Knights of Columbus, Lions, Moose, Optimists, Rotary, and Shriners. If you do not know anyone in these organizations, you can find a telephone number for them under Fraternal Organizations in the yellow pages of your telephone book.

Often the relationship that develops between the service club and the child or family that received funding is one of the added benefits. People enjoy raising money for a “good cause.”

**Conclusion**
As technology continues to become a more and more significant part of our daily life, it will hopefully mean that assistive technology will be more available and more affordable. In addition, as basic computer software become more “user friendly” its features will be more assistive to the user with a disability. Speech output and speech recognition input are examples of this.

In addition, as schools become more comfortable with technology and more aware of their role in providing assistive technology, it is our hope that the necessary devices and services will become almost “automatic” and there will no longer be a need for special funding.
Chapter 16-Funding Assistive Technology

Appealing a Denial under Medical Assistance

First requests for funding of assistive technology from Medical Assistance are frequently denied. Upon receipt of a denial of services for durable medical equipment you have the right to appeal their decision. You will appeal the decision through the fair hearing process. Murphy (1995) suggests your appeal should be in accord with the following.

1. The appeal must be in writing.
2. If you are currently receiving services you must appeal within 45 days after the denial.
3. If you are appealing a durable medical equipment denial you will need to do so within 45 days after notice is given.
4. After you have submitted the appeal follow-up with a call to the Office of Administrative Hearings to find out the time and location of the hearing.
5. If you need to postpone the hearing you may do this by phone and the hearing will be rescheduled.
6. If you need to cancel the hearing you must do so in writing and make sure this is done in advance of the hearing.

The Fair Hearing is a meeting between you, a representative from the opposing agency and the Fair Hearing Officer. All parties will be able to tell their story. A decision will be mailed to you by the Hearing Officer. Unless the record has been requested to be kept open for more information to be shared, the decision will be made within 90 days of when your request to have a fair hearing was received. (see sample letter of appeal for DME at end of chapter).

While all of these steps can seem overwhelming, Sadler (1996) reminds us that each time you complete one, you are that much closer to your ultimate goal of funding an AT device for a student with a disability.

Additional Sources of Funding

There are some other sources of funding that are sometimes utilized. Again, this can be time consuming, and is not necessarily a recommendation, but both foundations and service clubs have historically been a source of funding for assistive technology for individuals.

Foundations

There are thousands of foundations in the United States. The best way to begin to identify which one might be willing to fund an assistive technology device is to review one or more of the foundation directories. These are usually available at larger public libraries. In addition, Wisconsin's Marquette University is affiliated with the Foundation Center, a national network of library reference collections. The Marquette University library contains an extensive collection of directories as well as annual reports from state and national foundations. Other collections are available at UW Stevens Point and UW Madison libraries.

In general, foundations are either "general purpose" or "special purpose." Some special purpose foundations are dedicated to "handicapped individuals" or "technology" or "education." General purpose foundations may also have these interest areas as part of their focus. Any of these
increased mean length of communication, or complexity of communication. (See sample at end of chapter).
Student will use the names of three people within her environment during functional communication tasks.

Student will learn and use functionally ten messages related to social conversation on five randomly selected occasions.

Student will learn to use greeting messages and follow-up questions with peers in regular classroom four out of five opportunities.

Student will demonstrate at least five communicative intents.

Student will request objects during play.

Student will provide information concerning daily activities when he gets home.

Student will use his device to successfully use the phone to complete routine tasks (order prescription, call for van).

Student will indicate that he knows the answer to a question in class and then answer question correctly 80% of the time.

Student will give a food order while in cafeteria or fast food restaurant.

**Programming/authoring**

- Student will program three new messages in the device.
- Student will author five new messages weekly to be programmed into the device.
- The student will use appropriate volume when using his device.
- The student will be able to switch from spell to communication mode on device.
- The student will give a written note to a teacher using print command.

Keeping accurate data on the functional use of the device across all environments can be a challenge, but it is absolutely essential. One way of facilitating this is to attach a data sheet to the device and ask communication partners to document target goals during each week of the trial period. Remember to include goals and objectives to increase the independence of the user in the operation of the device.

After the completion of the trial period, the data collected reflecting the use of the device should be written up and submitted to the Wisconsin Medical Assistance office. The report should include:

- A brief summary of student, diagnosis, and type of device used during trial.
- A summary of experience with the device including the length of time used, the access method, mounting protocol, and a listing of overall goals of the trial period.
- A week by week account of specific objectives met during the target weeks. Include examples of functional use across environments and document increased successful communication attempts. Document the number of messages that the device had programmed in each particular week and the growth the client has demonstrated by use of the additional vocabulary.
- Note how the student is beginning to learn how to operate the specific features of the device (print function, volume control, tool box, etc.), or increased his or her range, or
Documenting Specific Evaluations

Kathleen Saunders of the Wisconsin Medical Assistance office developed a sample form for augmentative communication system evaluations for Wisconsin Medicaid applications (1997). (Located at end of chapter). Kathleen suggested including information concerning gross/fine motor skills, vision/hearing, oral motor, and cognition. Specific test scores reflecting receptive and expressive language abilities should also be included.

Augmentative Communication Evaluation

The augmentative communication system evaluation should also include an itemized description of each augmentative communication device considered. The description should include information concerning access method and accuracy of activation, mounting and positioning of device relative to access method, justification for acceptance or rejection of the device, and a listing of all critical components needed with the device. Description of how the device is used within all environments including home, work, community, and school should be included.

The augmentative communication system evaluation should also include a plan for implementation of the device during the trial period. You will need to specifically list goals and objectives for each week of the trial period. Document the vocabulary you intend to program during each trial week. You must keep functional communication as the end result and not just the "using" a device.

Remember that we need to document increased functional communication across environments as a result of use of the device. So our focus will need to be on how and what the individual will be able to do that he or she cannot do without the needed device.

Potential objectives. Following are several examples of potential objectives for a trial period. These are adapted from Kempka and Zientara (1993).

Medical need
- Student will communicate the need for assistance nine out of ten times he experiences pain (or other medical needs specific to the student you are writing about).
- Student will describe pain/discomfort in specific body parts during therapy.
- Student will communicate the need to be suctioned.
- Student will request to be repositioned
- Student will ask for help putting on his jacket before going outside on a cold day at least four out of five opportunities.

Feelings
- Student will learn and use four symbols for feelings with 90% accuracy as judged by the teacher and parent.
- Student will spontaneously communicate feelings four out of five opportunities during a one week period.
1. A letter from a doctor which should include:
   A. Information about the child's specific disability;
   B. An explanation of why assistive technology is important to the child's quality of life; and
   C. Specific technology requested - including access, if appropriate.

2. A letter from the parent which should include:
   A. A thorough description of the difference the assistive technology would make;
   B. Why technology is important to the child, the emphasis should not be education; and
   C. Goals which could be obtained.

3. Letters from professionals involved in the child's life that should include:
   A. Therapy/Instruction to be enhanced by equipment;
   B. Functional activities in which the child will be able to participate; and
   C. Goals which could be obtained.

4. Any of the following:
   A. Completed copies of the IEP;
   B. Evaluations - any evaluation which has been done within the last 2 years;
   C. Therapy progress reports if applicable to the technology being requested; and
   D. Long-term goals for use of the device.

5. Letter from the child, if that is possible, should include:
   A. Why this technology is important; and
   B. What the child hopes this technology will do for him/her.

6. Also included should be all denial letters the family has received
   A. Insurance;
   B. Private organizations;
   C. Philanthropic organizations; and
   D. Anything relevant to the denial of this technology.
6. The extent to which less expensive alternative services are available;
7. The effective and appropriate use of available services;
8. The limitations imposed by pertinent federal or state statutes, rules, regulations or interpretations, including Medicare, or private insurance;
9. The need to ensure that there is closer professional scrutiny for care which is of unacceptable quality;
10. The flagrant or continuing disregard of established state and federal policies, standards, fees or procedures; and the professional acceptability of unproven or experimental care, as determined by consultants to the department.

The request for prior authorization must show that the device or service meets the above criteria. The type of additional information required when requesting a prior authorization will depend on the type of device or equipment. Traditionally, in addition to the completed prior authorization form, the following information must also be included:

1. The name, address, and medical assistance number of the recipient for whom the service or item is requested;
2. The name and provider number of the provider who will perform the service;
3. The name of the person or provider who is requesting prior authorization;
4. The attending physician's diagnosis including where applicable, the degree of impairment. The physician's order must also include a listing of the specific equipment including modification and show why the equipment is medically necessary;
5. A description of the service being requested, including procedural code, the amount of time involved, and the dollar amount were appropriate;
6. A justification for the provision of services. Include a justification for why the device will be rented or purchased;
7. An evaluation should be included which includes evidence that the proposed equipment is effective for the person -in the case of an augmentative communication user this would include documentation the device enables the user to communicate more effectively; and
8. Include any denials from third party insurance or other funding sources to demonstrate that you have attempted to procure funding from other sources.

Additional information. Depending on the type of service or equipment that is being requested, the written evaluations may be completed by a speech & language pathologist, physical therapist, occupational therapist, or other provider. The individual reports are typically lengthy and specific to professional content area, but combined provide all of the essential information.

Creating a Funding Request Portfolio
The request for funding is a very critical event. It is not just a quickly written letter or a single report. The following suggested content of a funding request portfolio is adapted from the Colorado Easter Seal Society's Center for Adapted Technology (Blakely, 1994). It applies to requests from many sources, not just medically based ones.
1. Medically necessary for the person (i.e. must be required to prevent or treat a person’s illness or injury).
2. Consistent with the person’s symptoms or with prevention or treatment of that person's symptoms.
3. Not solely for the convenience of the consumer, their family, or providers.
4. Cost effective when compared to alternative medical services for the consumer.
5. The most appropriate type of service for the consumer.

The following is a list of frequently requested durable medical equipment that are not covered under medical assistance:

- cold air humidifiers
- air conditioners and air purifiers
- ring walkers
- intercom monitors
- exercise and physical fitness equipment
- whirlpools
- ramps
- van lifts or van modifications
- seat lift chairs
- elevators/stair gliders/stair lifts
- bolsters, wedges
- computers
- electric page turners

Prosthetic devices are covered if they replace all or part of an internal body organ or replace all or part of the function of a permanently inoperative or malfunctioning internal body organ. An electronic speech aid (electrolarynx) has been accepted under Medical Assistance as a prosthetic device.

**Getting Started**

The first step in the funding process for Medical Assistance is completing the prior authorization. Medical Assistance has special forms for requesting prior authorization. A prior authorization is required for short and long term rentals, purchase of equipment, and repair of equipment. In Wisconsin, the Department of Health and Family Services use the following criteria to approve or turn down a request for prior authorization:

1. The medical necessity of the service;
2. The appropriateness of the service;
3. The cost of the service;
4. The frequency of providing the service;
5. The quality and timeliness of the service;
possible, it often helps to end the letter with a picture of the child using the device for which you are seeking funding.

**MAKING THE REQUEST**

Once you have decided where you are going to seek payment for an assistive technology device, it is time to think about the specific details that you will need to provide to the potential payer. In this section of the chapter, we are going to look first at what we will call medically based funding sources such as Medical Assistance, private health insurance, etc.

**Components of a Medically Based Request**

If you are pursuing funding through a medical payment plan such as Medical Assistance or private insurance, it is important to review the policy of the payment plan to ensure that the recommended technology device falls within the domains of that particular funding source. For example, in Wisconsin, devices used for facilitated communication or auditory integration therapy are considered to be experimental and will not be reimbursed from Medical Assistance.

Prior to considering the use of parent's private medical insurance to pay for an augmentative communication device it is of critical importance to obtain informed parental consent. Remember the requirement that schools provide a Free and Appropriate Public Education (FAPE) 'without charge' or 'without cost'. This means that a school district may not compel parents to file an insurance claim, when filing the claim would pose a realistic threat that the parents of the child with a disability would suffer a financial loss not incurred by similarly situated parents of non-disabled children. Financial losses include, but are not limited to the following:

- a decrease in available lifetime coverage or any other benefit under an insurance policy,
- an increase in premium under an insurance policy,
- an out-of-pocket expense such as the payment of a deductible amount incurred in filing a claim.[Source: 45 Fed. Reg. 86390 (Dec. 30, 1980)]

With respect to augmentative and alternative communication systems, Wisconsin Medical Assistance has established specific policy defining the criteria that must be met to be considered for reimbursement:

- Functional communication-the individual must be able to demonstrate authorship of messages and be able to exchange thoughts and ideas with others;
- Basic and medically necessary-as defined within HSS code section 101.03;
- Self contained unit-Medical Assistance will not pay for a computer with software that provides augmentative communication, because they believe it could be used by the family for other purposes. They only fund dedicated augmentative communication devices.

**Durable Medical Equipment**

Under Medical Assistance guidelines, augmentative communication systems fall within the category of durable medical equipment (DME). For Medical Assistance to pay for the DME the following criteria should be met:
1. Locate an advisor who can support and guide you through the funding maze. This may be a social worker, therapist, vocational rehabilitation counselor, or virtually anyone who has knowledge and is willing to help you with jargon and paperwork.

2. Begin collecting information that will help you figure out where to submit your first request. If the family has private medical insurance that is the place to start, if the family is willing. Work together with the family to complete and submit the appropriate forms.

3. Get a good technology evaluation. Be sure you are asking for the best and most appropriate device for your need. A computer search through a database such as AbleData or a call to your Regional AT Consultant can help assure that you have explored all of the possibilities.

4. When making the request, make sure that you build in training and ongoing support, if funds will be needed for those, and set aside some money for software and a small contingency fund for repairs.

5. Use the right words when developing the justification. Medical Assistance does not fund based upon "educational need".

6. Be prepared for at least one denial, and be ready to make an appeal. A significant number of denials are overturned.

7. Include written information about the device for which you are seeking funding. Claim adjusters may know nothing about the device you need.

The heart of your application is the cover letter that explains exactly what you are requesting and why. The remainder of the packet that you will submit will be copies of evaluations and reports that support your request. Generally, the letter should contain the following information (Reed, 1991):

- A description of the child with age, diagnosis, prognosis (what is expected to happen), and his or her current level of functioning.
- An explanation of how the device will help. What the assistive technology will allow the child to do, its purpose (communication, recreation, vocational, homework, or some combination of these). Describe the settings in which it will be used and the advantages of this particular device. Be sure to explain why a cheaper device will not work. Include the total cost with shipping, support needs, software, additional parts, repair, etc.
- A chronological history of the evaluations that led to this conclusion. (Be sure to attach copies of those evaluations.) Include a doctor’s examination and evaluations by speech/language pathologists, occupational therapists, physical therapists, psychologists, or teachers. Be sure you include the disciplines that work directly with the device you are requesting.
- End with an explanation of why the request is being made to this particular funding source. Explain the family financial situation, other funding sources that have been tried or exhausted and why some funding sources are not available to you.

Cohen (1987) points out that the wording of the letter is crucial. Subtleties in terminology are extremely important. A computer can be a "prosthetic device meeting basic medical needs" or a device which "enhances employment potential". It all depends on how you describe it. If at all
functional assessments. Because of this ruling, children can be any age, even newborn. Family income is a factor in eligibility, but value of house, land, vehicle, personal and household belongings, pensions, and work property are exempt.

In addition, Social Security Disability Insurance (SSDI) and Plan for Achieving Self-Support (PASS) can be a source of funding for some children. There are no age requirements, but PASS is most appropriate for students over 15. PASS allows a person with a disability to work, but set aside a portion of their earnings so that they are still eligible for SSI (or so they can receive higher payments). The money set aside must be used for job related expenses such as a job coach, attendant care, transportation, or assistive technology.

TEFRA, the Tax Equity and Fiscal Responsibility Act of 1982, makes children, infants through age six, eligible for assistance. TEFRA provides coverage for children deemed diagnostically eligible, using SSI definition, but who would be financially ineligible for SSI due to parental income. Children must meet medical necessity requirements for institutional care; however, the technology can be used to help maintain the child at home.

Private Health Insurance
Private insurance companies represent a major source of third party funding. Because they are private, their coverage varies a great deal. In 1978, over 1200 separate companies provided group hospital coverage to 88 million Americans and covered almost 100 million people for surgical services and doctors visits. They also wrote individual insurance health policies for 21 million people and surgical policies for 10 million (Hofmann, 1989). Those numbers have grown since that time.

Coverage for a computer or dedicated augmentative communication device by a private insurance company depends on the terms of the individual policy and its interpretation. Policies specifically mentioning "prosthetic services and supplies" are more likely to cover augmentative communication devices or other assistive technology than those that do not. The specific areas covered by the individual policy are the critical factor in seeking funding from private health insurance. Remember that the use of insurance cannot result in any cost to the family. And it cannot be required of the family to seek to use their insurance. It must be strictly voluntary.

In general, funding an assistive technology device through private health insurance will require a doctor's prescription, supported by a funding justification prepared by someone working with the family. The justification must explain how the device is a covered service, and it must describe the medical need for the device, just as is required by Medicaid and Medicare. It is not unusual for the request to be denied initially, although appeals may lead to a reversal of an adverse decision. Sadler (1996) recommends approaching all applicable insurance carriers simultaneously to avoid delays.

Steps to Securing Funding
Pressman (1987) recommends the following steps when you attempt to secure funding from a third party payer.
devices to those capable of meeting the needs of people with missing, nonfunctioning, or malfunctioning upper and lower limbs, but not nonfunctioning or malfunctioning oral-motor mechanisms. Medicaid programs are not permitted to provide coverage for an artificial larynx, which is one form of AAC device and not also provide funding for other types of AAC devices. Despite its complexity and its often frustrating slowness, Medicaid programs, including Wisconsin's Medical Assistance Program, remain one of the primary funding programs for assistive technology.

**Vocational Rehabilitation**
The original purpose of the Vocational Rehabilitation Act was to assure that all individuals with disabilities are able to live their lives as independently as possible. The 1993 revisions added assistive technology and a presumption of ability, meaning that vocational rehabilitation counselors must assume that all individuals regardless of the severity of their disability must be regarded as being able to work. Because of the revision, the state VR plan must now describe how a broad range of rehabilitation technology services will be provided at each stage of the rehabilitation process. It must also describe the manner in which assistive technology devices and services will be provided, or work site assessments will be made as part of the assessment for determining eligibility and the vocational rehabilitation needs of each individual.

Assistive technology may be provided as part of employment or independent living. The key to obtaining funding is the inclusion of assistive technology in the Individualized Written Rehabilitation Program (IWRP). The technology must be needed to enhance or improve independent skills in working or living. Students are not eligible for services from Vocational Rehabilitation Division until age 14. VRD should become involved through transition planning that is required to start by the time the student is 16 years old.

**Medicare**
Medicare is a federal health insurance program serving individuals over 65 years of age plus those with severe disabilities under 65. It covers health care costs and is divided into two parts. It is Part B that can be a source of funding for assistive technology for individuals who qualify for Social Security Disability Insurance (SSDI) for a period of at least 25 months. Its requirements are similar to those for Medicaid. Medicare only pays for durable medical equipment (DME) which can withstand repeated use, is

primarily and customarily used to serve a medical purpose, is generally not useful to a person in the absence of illness or injury, and is appropriate for use in the home. Examples of equipment covered include internal prosthetic devices, external braces, and artificial limbs or eyes. For more information, download *Medicare, Managed Care and AAC Devices*, a joint project between Assistive Technology Funding & Systems Change Project at the United Cerebral Palsy Associations and National Assistive Technology Advocacy Project [http://www.nls.org/medihmo.htm](http://www.nls.org/medihmo.htm)

**Social Security Benefits**
In 1990 the U.S. Supreme Court (Zebley v. Sullivan) found that the childhood disability determination process used by Social Security was illegal. The law now provides that Supplemental Security Income (SSI) is available to children with serious disabilities, as based on
from outside sources as long as it is provided at no cost to the parents. They must remember, though that they cannot delay providing the needed assistive technology devices or services while they are seeking outside funding.

For more information on seeking funding of assistive technology through your school district, you can download *The Public school’s special education system as a funding source: The cutting edge.* (Hager, Smith 2003) from http://www.nls.org/pdf/special-ed-booklet-03.pdf or request a print copy from the Neighborhood Legal Services, Inc. 295 Main Street, Room 495, Buffalo, New York 14203 (716) 847-0650

**Medicaid**

The Medicaid program (Title XIX of the Social Security Act) is a program of medical assistance for low-income individuals and families, and is the primary source of health care coverage for America's poor. Medicaid, which is commonly referred to as "Medical Assistance" in Wisconsin, was created in 1965. Medicaid provides financial assistance to families with dependent children (Title IV-A), and the aged, blind and disabled receiving Supplemental Security Income (Title XVI). Medicaid provides reimbursement for the cost of health care services for more than 35 million people in the United States, half of whom are children (Golinker & Mistrett, 1997). Medicaid was the principal entitlement for funding for assistive technology before the revisions of IDEA and the Rehabilitation Act in 1993. Medicaid is financed jointly with state and federal funds and is administered by each state under Federal requirements and guidelines. States participate in Medicaid at their option.

The federal Medicaid law requires that certain basic services must be included in each state program. These include hospital services, laboratory and x-ray services. States may also provide a number of other items and services, if they choose to do so, including prescription drugs, physical therapy, speech, hearing, and language therapy, prosthetic devices, and durable medical equipment. There are wide variations from state-to-state in the benefits offered, program eligibility standards, and reimbursement levels. One of the most important things to remember is that the term "assistive technology device" is not used by Medicaid, and should not be used in funding justifications or other documents submitted to Medical Assistance (Golinker & Mistrett, 1997).

Unfortunately, "medical necessity" is not clearly defined in all Medicaid programs. Golinker and Mistrett (1997) point out several other funding barriers, including: The existence of lists of covered or non-covered items are significantly out of date or incomplete. The lists often include similar equipment on both lists, demonstrating a lack of knowledge, skill, and discretion among Medicaid decision makers. All of this presents frustrating and unnecessary barriers to obtaining technology through Medical Assistance.

One important factor to remember is that there are specific restrictions within the Medicaid program that prevent states from severely restricting access to devices within the covered services the state provides (Golinker & Mistrett, 1997). For instance, Medicaid is not permitted to provide prosthetic devices that will address some nonfunctioning or malfunctioning body parts but not others. Therefore, Medicaid programs are not permitted to limit the scope of prosthetic
in the IEP or IFSP for an individual child. **The requirement for school districts to provide assistive technology is not new.**

Assistive technology, although not mentioned specifically in P.L. 94-142, has, since 1975 been a responsibility of the school district if it was required in order for the child to receive a Free Appropriate Public Education (FAPE) (Golinker, 1992). When P.L. 94-142 was re-authorized in 1990 to become IDEA, assistive technology was one of several areas that were more clearly articulated by adding definitions and a more clearly defined directive.

Since 1990, the role of school districts has been further clarified by a series of policy letters from the US Office of Special Education and Rehabilitation Services that addressed questions that have been asked by individual families. A policy letter is a written, public response to a member of the general public who writes a letter to the Department asking for clarification on a section of the law. Courts pay great deference to agencies’ interpretations of the laws they administer (Goodman, 1995). Each letter has clarified a specific point:

- ♦ A child's need for assistive technology must be determined on a case-by-case basis. The IEP must include a specific statement about the needed AT and that it can be part of the child's specially designed instruction, related services, or a supplementary aid or service to help maintain a child with a disability in a regular classroom. School districts cannot presumptively deny assistive technology to a child with a disability. (August, 1990).

- ♦ If the IEP committee determines that a particular assistive technology device is required for home use in order for the child to receive FAPE, the technology must be provided by the school district (November, 1991).

- ♦ A hearing aid may be assistive technology and must be available to the child if it is determined by the IEP committee that it is needed for the child to benefit from his/her educational program (November, 1993).

- ♦ If parents provide a device for a child in order for his/her IEP to be implemented, the school must assume liability for the device (November, 1994).

- ♦ If a child with a disability needs eyeglasses to receive FAPE and the child's IEP specifies that the child needs eyeglasses, they must be provided by the school district. (1995).

Although the U.S. Office of Education was prohibited from using policy letters in the future, all of these points were incorporated into IDEA '97. In addition the requirement that every IEP team “consider” the need for assistive technology was added. (For more information on Consideration, see Chapter 1.) This is an important addition because in the past many educators had the mistaken idea that only “certain” children were candidates for assistive technology.

For parents, the IEP is the key to obtaining assistive technology through a school district. This often makes IEP meetings very stressful as the representative of the school district attempts to determine if the assistive technology is truly “needed” or just a “nice” addition. That point is the difference between receiving FAPE and not receiving FAPE.

However, if it is determined to be “needed”, what the law requires is that the school district "provide" the AT, nothing in the law prevents school districts from seeking funding assistance
One of the most frustrating aspects of obtaining funding is that many of the funding sources require written rejection from other sources. This requires a system of multiple requests for payment for a single device. Enders (1988) recommends these strategies for obtaining third party funding:

- Learn the specifics of the services delivery system from which you are trying to secure funding.
- Be aware that the entrance to all systems is controlled by gatekeepers, find out what they are looking for.
- Remember that all funding systems operate within a bureaucratic environment, you cannot change their timeline.
- Request funding or assistance in terms consistent with the purpose or mission of the system to which you are applying, e.g. medical assistance funds durable medical equipment.
- Conduct yourself in a professional manner.
- Educate the funding system about the effectiveness of your proposed purchase. Don’t expect the person there to already know all about technology.
- Remember that systems work because of the efforts of the people within them. You can never be too nice.
- Remember that all systems have some sort of appeal procedure.

Patience and persistence as well as accuracy and thoroughness are needed to obtain outside funding. Markowicz and Reeb (1988) and Hofmann (1989) point out that the major reasons for denial of claims from Medicaid include:

- The request supplied incomplete or inaccurate information.
- The equipment or service was deemed not medically necessary.
- No diagnosis was indicated on prior authorization forms.
- The claim exceeded filing time limit.
- The equipment would not lead to an increase in self-care.
- Another device would be less costly, with no justification for the higher cost.
- There were typographical errors in the request.

These are all things that could have been corrected before submission. If you decide to take the time to seek funding for a device, take the time to do it well. Utilize the language that will help the funding source understand why they are the logical entity to provide funding for this piece of equipment and what effect this device will have on the child’s life. Always have someone else read your completed application before mailing so that they can look for typographical errors and for statements that are unclear or unpersuasive.

**IDEA**
Remember that IDEA requires school districts to provide assistive technology devices and services that are necessary to allow the student to benefit from their special education program. They have a responsibility to make a basic array of equipment available for training purposes and to provide any individual piece of technology that is needed to meet the goals and objectives
formation of Assistive Technology Planning Groups in each area of the state, the Used Equipment Marketplace, and special prices on various assistive technology products.

In addition to the basic array of technology devices, school districts have an additional responsibility that goes beyond basic training. Under IDEA school districts must make available the specific assistive technology devices and services that are needed by a child to benefit from his or her special education program. This could include use of a device off of school premises and outside of school hours, if needed. However, this does not always require a school district to make a large expenditure of dollars. In the vast majority of cases, a child's assistive technology needs can be met for under $500.

Table 1 illustrates the range of possibilities for meeting a child's need for assistive technology. Planning teams should not overlook the many "no," "low," and "mid" tech possibilities, as well as increased access to existing technology to meet student's needs. There are many ways to help the child to benefit from his/her special education program.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Provision of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased access to existing computer lab</td>
<td>0</td>
</tr>
<tr>
<td>Increased access to existing computer in classroom</td>
<td>0</td>
</tr>
<tr>
<td>Placement of an existing computer into the child's classroom</td>
<td>0</td>
</tr>
<tr>
<td>Sole use of an existing computer</td>
<td>0</td>
</tr>
<tr>
<td>Purchase of low tech items</td>
<td>$10-50</td>
</tr>
<tr>
<td>Purchase of a word processor that interfaces with a computer</td>
<td>$200-500</td>
</tr>
<tr>
<td>Addition of adaptive input or output peripherals to a computer</td>
<td>$50-1500</td>
</tr>
<tr>
<td>Purchase of specialized software</td>
<td>$20-500</td>
</tr>
<tr>
<td>Fabrication of a custom designed device</td>
<td>$100-300</td>
</tr>
<tr>
<td>Adaptation of an existing device</td>
<td>$50-300</td>
</tr>
<tr>
<td>Purchase of a computer</td>
<td>$600-3000</td>
</tr>
<tr>
<td>Purchase of an augmentative communication device</td>
<td>$200-8000</td>
</tr>
<tr>
<td>Purchase of a power mobility -device</td>
<td>$5000-30,000</td>
</tr>
</tbody>
</table>

If the only possibility for meeting the child's need is one of the more expensive options, such as purchasing an augmentative communication device, there are some funding sources that may potentially be approached to purchase or to contribute to the purchase of a device.

**Seeking outside funding for assistive technology is most appropriate when you are trying to obtain a device that will belong to the family rather than the school district.** This allows the device to go with the child if he moves or graduates. Applying for funds from any of these sources takes a minimum of several hours of staff time to obtain forms, fill them out, copy existing reports or write new ones, gather any additional information that is needed, and submit the final packet of documentation. In some cases, for both entitlements and other funding sources, personal information about the family such as their income may be necessary in order to complete the forms. When that is the case, the family must be involved in completing the application.
The reason the technology device is needed is important because there are almost no funding sources that will pay for equipment for the school to use to teach students new skills. Providing a basic range of devices for teaching purposes is clearly the school's responsibility, just as they provide computers, tape recorders, and other types of equipment for student without disabilities. This basic provision should come from the school district’s general budget or special education funding such as IDEA flow through or discretionary money.

There are instances where state grants may be available which will allow some of the money to be spent on equipment. The Technology Literacy Challenge Fund (TLCF) program is a recent example, however no longer in existence. TLCF made a significant difference in the availability of all technology in the schools including assistive technology. The TLCF program was a federal Title III program that went to every state education agency. The amount of money received by each state was determined by the state’s Title I count. The state education agency distributed the funds in competitive grants to school districts. The federal guidelines for TLCF required that the school district describe how assistive technology was included in their technology plan. The description of the planned use of assistive technology was worth five points out of the possible 100 points in the application. Across the country the TLCF Funds dramatically increased the availability of technology for all students including those with disabilities. Although there is no comparable program available at the time of this writing, another opportunity may be offered in the near future.

In Wisconsin, in addition to TLCF, we had the governor’s Technology Education for Achievement program (TEACH Wisconsin, www.teachwi.state.wi.us). It had two components, one was an allocation and the other was a competitive grant program. The allocation was based on the size of the school district and its economic base. Every school district that had a technology plan approved by the Department of Public Instruction received this allocation. A district technology committee developed the technology plan. In school districts where a special educator participated on the technology committee, there was a greater awareness of assistive technology and it was more likely to be included in the plan.

There are also federal grants available, but to obtain such grants, school district staff must spend a great deal of time and effort planning and writing the grant and they must have an idea that is sufficiently unique and clever to be selected over dozens of (sometimes hundreds of) other grant proposals.

Because this area is so competitive, the chances of obtaining federal funding through grants are very slim. In most cases, the time could be better spend in planning for the timely acquisition of needed devices through their normal budgeting process and by developing a system to share, trade, and cooperate with nearby districts. Having a range of assistive technology devices available for instructional purposes is a basic service requirement that school districts need to meet. They can best do this by working collaboratively to plan for the acquisition of an appropriate selection of devices over the next two to three years. The development of a statewide lending library of assistive technology hardware, software, and resource materials plus increased access to low cost assistive technology are two of the strategies being implemented by the Wisconsin Assistive Technology Initiative to meet this need. Other strategies include the
Funding Assistive Technology for Students with Disabilities

Penny R. Reed, Ph.D. and Paula Walser, CCC, SLP, ATP

As we approach the topic of funding for assistive technology, it is important to remember that only a few short years ago our major problem was the lack of appropriate technology. How wonderful it is that we now have a wide range of devices available and the prospect of many more being developed every day. These devices allow a student with a disability to do many things that were not possible in the past. As more and more devices become available, our challenges are to keep up with the rapid changes in the field, to train service providers to operate and appropriately utilize the technology devices and to obtain funding to pay for assistive technology.

Over ten years ago as the field of assistive technology was developing, the primary sources of funding were Medical Assistance (or Medicaid), private insurance, and service clubs. Trefler (1989) found that approximately 60% of clients had their technology paid for by Medicaid. Others received funding from private associations, insurance companies, and private donations from service clubs. Unfortunately, in many areas this is still true today.

Procuring funding from these sources is time consuming. Gathering the necessary information and writing the request for funding approval can take 15 to 20 hours of work. In addition, specialists who routinely deal with third party payers state that it is typical to be rejected on the first request. Therefore additional hours are required to further explain and justify the funding request for resubmission.

In an effort to make assistive technology more available to individuals with disabilities, the federal government has created several specific entitlements. These entitlements, or funding streams, include the public schools under the Individuals with Disabilities Education Act (IDEA) and Vocational Rehabilitation under the Rehabilitation Act of 1993. IDEA requires assistive technology to be provided as part of early intervention services, and as part of the special education, related services, or supplementary aid or service by local school districts. Schrag (1991) made it very clear that school districts may not "presumptively deny assistive technology" to a child until a determination is made that assistive technology is not an element of a Free Appropriate Public Education (FAPE) for that child. It is clear that school districts have a responsibility to make assistive technology devices and services available to students with disabilities who need such a device or service in order to benefit from their special education program. If assistive technology is needed to accomplish the goals and objectives listed in the child's IEP, then it must be provided.

However, IDEA does not prevent school districts from seeking funding from other sources to fund a portion of the technology devices they may find necessary for students with disabilities. It requires the school district to "provide" the assistive technology. In providing it, the school district may borrow it, rent it, or seek an outside or "third party" funding source. Before seeking outside funding, school district personnel should consider the amount of time that may be required to obtain such funding and the reason the technology is needed in the first place.
Funding Assistive Technology

Penny Reed, Ph.D. and Paula Walser, CCC-SLP, ATP

In this chapter of the manual we will address the funding options for assistive technology. These include the school district, Medical Assistance, insurance, and other private funders such as service clubs and groups.

Also included in this chapter are print and online references that provide additional information.
<table>
<thead>
<tr>
<th>Supplementary Aids &amp; Services</th>
<th>Frequency</th>
<th>Duration</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Yes: FM classroom amplification system to assist with auditory discrimination</td>
<td>daily</td>
<td>entire school year</td>
<td>5th grade classroom</td>
</tr>
</tbody>
</table>
It is the specificity of frequency, duration, and location that may account for the fact that parents frequently request that the assistive technology being provided be documented as a Related Service. However, the provision of AT is equally binding when it is described under Supplementary Aids and Services or in the Short Term Objectives. Note: IDEA does not automatically require that an IEP include separate annual goals and short-term objectives for related services. For example, while typically there are not goals for things like transportation, there could be if the student is learning to access public transportation to get to a work site during transition. The determination of whether annual goals and short-term objectives are needed is contingent upon the related services. If the related services includes the learning of new skills which are not already part of, or incorporated in, an existing annual goal or short term objective, and some type of instruction is being provided, then there would need to be goals and objectives in addition to the statement under Related Services.

3. AT as Supplementary Aids and Services
Supplementary Aids and Services are those aids, services, and other supports which are provided to enhance or allow the student’s placement in the least restrictive environment (LRE), especially when an LRE is the regular education classroom. Assistive Technology may be a Supplementary Aid or Service. Assistive technology is most logically included in the IEP as a Supplementary Aid when it provides more independence and requires little instruction in order to be used effectively. Items such as portable word processors, talking spell checkers, and other small, portable devices are often included under Supplementary Aids and Services.

**Example 1:** Jacob is in kindergarten. He likes to do the coloring and writing activities with the other children. He has difficulty with these activities because he is subject to the symmetric tonic neck reflex (STNR) which causes him to round his shoulders and flex his arms whenever he bends his head down to look at the paper. It is very fatiguing for him to look down and back up at the teacher. It is important to Jacob to participate in the same way as the rest of the students.

**Example 2:** Carl uses his personal hearing aid to good advantage in quiet environments. However, he is confused when the background noise is elevated, as often occurs in active classroom situations and large group activities. He has therefore not been able to effectively participate in many important school activities.
STO 3: During group story time, Steven will use a single message voice output device to complete a repeated story line with peers 90% of the time as observed on 10 random trials.

Example 13:

**Present Level of Academic Achievement and Functional Performance:** Barb is a 15-year old girl. She uses a modified wheelchair with a specialized insert. She is medically fragile and has no speech, because her vocal cords were damaged as an infant. She does have mood swings that are triggered by various situations that result in self abusive behaviors. She enjoys music and being talked to. She has difficulty in large rooms. She cannot tolerate loud sounds. She has limited experience in integrated settings.

**Annual goal:** Barb will use a voice output device to respond in Life Skills class on three out of five opportunities.

**STO 1:** Barb will activate a single message output device during two of three life skills classes to answer one prearranged question. She will progress from a level of physical prompt at the elbow to no physical assist by the end of the semester. Given the verbal cue from the life skills instructor “Barb can you tell me what you think?”

**STO 2:** Barb will use a multiple message device to call on three of her cooperative group members to give their report during review day session. Moving from a level of full physical assistance to activate the switch to a level of slight physical cue and verbal prompt, three out of five review sessions.

**STO 3:** Barb will activate a switch connected to a pouring device. Barb will comply from a level of slight physical assist and three verbal prompts, to slight physical assist and one verbal prompt, on three of the last five cooking classes.

**STO 4:** Barb will activate a single message voice output device to be excused from an over stimulating environment rather than exhibiting inappropriate behaviors. She will increase use of this method from a level of zero uses to a level of three uses during the first quarter.

2. **AT as a Related Service**

A related service means transportation and such developmental, corrective, and other supportive services that are required to assist a child with a disability to benefit from special education and includes assistive technology services. Examples of AT as a related service include walkers, wheelchairs, and various positioning devices. Augmentative communication devices and computers are also sometimes listed there. When AT is to be included in the IEP as a related service, it will appear in the chart of related services. If Assistive Technology is not one of the choices under Related Services on the district’s IEP form, it can be written in under “Other”. Since Related Services must have the Amount/Frequency, Duration, and Location specified. That information must be filled in.

**Example:**

Stephanie is in the third grade. She has cerebral palsy, which makes it difficult for her to walk long distances. It is so fatiguing that she does not recover from the exertion for 30 to 45 minutes and is not able to concentrate on school activities if long walks are required. She is able to walk short distances with no ill effects if enough time is provided.
look toward the item that is needed next, or make a sound when his mother purposely “forgets” something.

**Annual Goal:** Jeff will use a single switch to activate adapted utensils and appliances to assist family members in targeted functional household tasks during three out of four opportunities.

**STO 1:** Jeff will activate the blender and mixer with a single switch at appropriate times to participate in preparing meals in three out of four opportunities on three consecutive trials.

**STO 2:** Jeff will activate the vacuum cleaner using a single switch at appropriate times when cued by his mother to participate in vacuuming in three out of four opportunities on three consecutive trials.

**Example 11:**

**Present Level of Academic Achievement and Functional Performance:** Kelly is in the third grade classroom for most of his day. He has a full time paraprofessional who assists him. He is unable to use a standard keyboard because of his physical limitations. Additionally, his speech is frequently unintelligible. He currently uses single message and multiple message voice output devices, eye gaze, and limited direct selection to complete his academic work. Kelly is functioning at about the second grade level in most curricular areas.

**Annual Goal:** Kelly will use an adapted keyboard with custom overlays and a computer with talking word processing to complete all academic work.

**STO 1:** Using an adapted keyboard with a custom spelling template, Kelly will complete a 10 word weekly spelling test taken from second grade curriculum and his current reading materials, with 80% accuracy once a week.

**STO 2:** Using an adapted keyboard with a custom overlay with three character names and facts or characteristics about them from a current reading selection, Kelly will generate three sentences describing a character or their actions with 100% accuracy on three out of four opportunities.

**STO 3:** After participating in a cooperative group science project, Kelly will use an adapted keyboard with a custom overlay that randomly lists three to five steps involved in the science project to sequence the steps in proper order with 80% accuracy and "read" them to his group as the "recorder" on three out of four opportunities.

**STO 4:** Using a basic numbers overlay on an adapted keyboard, Kelly will complete his adjusted daily math assignment with 100% accuracy on four out of five opportunities.

**Example 12:**

**Present Level of Academic Achievement and Functional Performance:** Steven is a four-year-old boy diagnosed with pervasive developmental disorder. His placement is in an Early Childhood classroom. He is able to understand and comprehend when spoken to, but does not communicate his needs consistently. When choices are simplified and broken into steps, Steven will try to communicate wants and needs. Peer interactions are limited.

**Annual Goal:** Steven will use a picture board or voice output device to express wants and needs to adults and peers in both home and school at least four times each day.

**STO 1:** During meal times at school and at home, Steven will use a picture board to point to at least three of six foods he wants to eat, two of three meals each day.

**STO 2:** Using a voice output device, Steven will make a choice of a “center” he wishes to participate in during choice/work time three or four days per week.
STO 1: Given a choice of two activities, Brandon will use a single message voice output device to choose a desired activity three out of five times on three consecutive days.

STO 2: Brandon will participate within play activities where an adult is using aided language stimulation on a phrase-based communication board five times per day.

STO 3: Brandon will use single message voice output devices to interact at appropriate times with peers/adults on 8 of 10 communicative attempts in play activities on three consecutive days.

STO 4: Brandon will use a four message voice output device to interact at appropriate times with peers/adults on 8 of 10 communicative attempts in a play activity on three consecutive days.

Example 8:
Present Level of Academic Achievement and Functional Performance: Michael is in the second grade classroom for most of the school day. He is interested in the material being presented by the teacher and wants to participate. He has a full time paraprofessional who assists him. He has difficulty being an active participant in academics because he uses a voice output AAC device and frequently does not have the “right” answer. The teacher is concerned at the amount of time it currently takes while Michael struggles to answer questions. The teacher is interested in finding ways for Michael to more actively participate.

Annual Goal: Michael will use eye gaze and prerecorded messages to respond to appropriately phrased questions in four subject area classes, mathematics, reading, science and social studies in three out of five opportunities.

Example 9:
Present Level of Academic Achievement and Functional Performance: Joey is a 20 month old with developmental delays. He is beginning to respond to visual and auditory action toys and laughs or makes sounds when a toy is activated. He will sometimes reach out to attempt to make the toy move again. Joey’s parents are happy to see him responding to toys and beginning to make sounds, but would like to see him making more attempts at communicating his wants and participating in turn taking games with the family.

Annual Goal: Joey will use a switch or voice output device to actively participate in play experiences to communicate interests to his parents or other caregivers in four out of five opportunities.

STO 1: Joey will use a switch to activate a mechanical toy, after being shown how in a turn-taking situation with his parents, with 80% success as observed during three random observations.

STO 2: Using a single message voice output device, Joey will request “more” or “do it again” when playing simple interactive games, like Peek-a-Boo or tickling that his family knows he is enjoying 80% of the time on three random samples.

STO 3: Using a voice output device with two options, Joey will indicate wanting to play a game or not play a game, “do it again” or “not do it again” during three out of three opportunities as observed on three of four random samples.

Example 10:
Present Level of Academic Achievement and Functional Performance: Jeff likes to interact with his family. He enjoys eating and being involved in meal time and other functional activities in the home. He has not been able to participate in cooking or cleaning except to
STO 3: Mary will initiate communication by “calling” someone using a preprogrammed message on a single message voice output device on three out of three opportunities on three consecutive days.

STO 4: Mary will “lead” singing during circle time by activating a preprogrammed single message voice output device on three out of three opportunities when it is her turn.

Example 5:
Present Level of Academic Achievement and Functional Performance: Sarah can use eye gaze fairly successfully to indicate her wants and needs when items are appropriately displayed so that her communication partner can tell what she is gazing at. She currently makes a grunting sound to greet others, to get attention, and to represent both yes and no. She has recently been using a four-message output device and is having some success at making choices. Sarah travels independently about the school in her power chair.

Annual Goal: Sarah will interact with others in the school environment in four out of five opportunities to indicate her preferences and needs using voice output devices and eye gaze strategies.

STO 1: When provided with a single message voice output device on her wheelchair, Sarah will use it to greet peers in the hallways, lunchroom, and classroom 100% of the time.

STO 2: Using an eye gaze frame mounted on her wheelchair, Sarah will indicate her preference between four choices 80% of the time on five random trials.

STO 3: When asked “yes/no” questions, Sarah will indicate “yes” with a smile and eye contact with communication partner, and “no” by looking down at her wheelchair tray for at least three seconds 90% of the time on 10 random trials.

STO 4: When provided with a preprogrammed four message voice output device, Sarah will participate in story time by using repetitive phrases, requests to “hear more”, “turn the pages” etc., appropriately 80% of the time during five random trials.

Example 6:
Present Level of Academic Achievement and Functional Performance: Andy uses a variety of sounds, gestures, signs, and picture/symbols to communicate with his family. He is very social and enjoys parallel play. Andy does not communicate vocally in the classroom, but does use some gestures. At school, Andy will sign, but only with prompts.

Annual Goal: Andy will increase expressive language production by using a variety of communication methods in the classroom, including sign language, gestures, communication boards, pictures, and simple voice output devices during four out of five opportunities.

Example 7:
Present Level of Academic Achievement and Functional Performance: Brandon communicates by using unintelligible vocalizations. He will physically obtain desired items independently and indicates refusal by pushing objects/people away. Brandon currently understands cause/effect relationships and will activate a switch with voice output to obtain a desired activity. It is questionable whether he understands the specific meaning of the utterance he has produced or if he simply knows that pressing the switch earns him an activity.

Annual Goal: Brandon will select activities and interact with peers/adults within those activities four out of five times when provided with voice output devices.
In some cases the child will need training and instruction on the use of the assistive technology and in other cases, it will be a material that the child is using to achieve a specific goal or objective. An augmentative communication device might be used under either of these conditions. Included here are a variety of examples of AT in annual goals and short-term objectives.

**Example 1:**
**Present Level of Academic Achievement and Functional Performance:** Johnny uses his right hand to write and to physically position his left arm and hand. He has difficulty managing papers as he writes. He collects and utilizes a lap tray, incline board, non-slip mat and modified clipboard but often waits for staff to set up modifications.
**Annual Goal:** Johnny will initiate the set-up of his writing station 80% of the time given a chart of needed materials for each task.

**Example 2:**
**Present Level of Academic Achievement and Functional Performance:** Eric participates in regular education programs for his academic subjects. His hand strength is limited and he fatigues quickly when doing any handwriting task. Civics and English homework are a particular problem because of lengthy assignments and reports that need to be completed.
**Annual Goal:** Eric will use a computer or portable word processor to complete 100% of his assignments in 10th grade English and Civics classes.

**Example 3:**
**Present Level of Academic Achievement and Functional Performance:** Becky is learning to read and is anxious to complete writing assignments with her peers. She is not able to produce handwritten material due to severe spastic quadriplegia. Becky is interested in using the computer and has been introduced to it. The staff has helped Becky experiment with several switches in a variety of locations. She seems to be most accurate using a switch mounted next to her head.
**Annual Goal:** Becky will use a single switch mounted on a switch-mounting arm positioned to the right side of her head and scanning software to access the computer 9 out of 10 times for a variety of educational assignments.

**Example 4:**
**Present Level of Academic Achievement and Functional Performance:** Mary currently communicates with sounds that are not always understood by those around her. She often becomes upset when she is not understood. She likes people and likes to be around both adults and children. She is beginning to play simple games.
**Annual Goal:** Mary will communicate her interests and needs in three or more environments/situations using a single message voice output device.
**Short Term Objective (STO) 1:** Using a single message voice output device, Mary will communicate when she wants to change activities during play time on three out of five opportunities on three consecutive days.
**STO 2:** Mary will use the single message device to interact with others during games, such as Peek-a-Boo on three out of five opportunities on three consecutive days.
**Measurable Annual Goals**

A statement of measurable annual goals must be included in the IEP, including academic and functional goals, designed to meet the child’s needs that result from the disability, to enable the child to be involved in and make progress in the general education curriculum, and meet each of the child’s other educational needs that result from the disability.

It is probably most logical to complete the IEP AT “consideration” after goals and objectives are established. Since assistive technology by definition is something that helps a child to “increase, maintain, or improve a functional capability” it is important to know what specific tasks the child will be expected to be able to accomplish in the next year. This information will make “consideration” more focused and concrete. The decision to provide assistive technology would logically be based on the recognition that the student is struggling to complete one or more specific tasks, is not able to access specific aspects of the curriculum or environment, is not able to communicate effectively, or is not as productive as will be needed over the course of the next year.

Although assistive technology devices or services may be either a part of a child’s **special education program**, a **related service**, or a **supplementary aid or service**, documenting it in the IEP continues to be a challenge for many. Following are examples of assistive technology that has been included in the IEP document in each of these three ways.

1. **AT as a part of the child’s Special Education program**

Special education is specially designed instruction to meet the unique needs of a child with a disability that is provided at no cost to the child or the child’s parents. It is provided in the classroom, in the home, in hospitals and institutions and in other settings. The process for identification of a disability is made by the child’s IEP team and includes a two-part analysis:

1. Determination that the child meets at least one of the eleven eligibility areas identified in state and federal law AND
2. Identification of the need for special education services as a result of the identified impairment

When the assistive technology is provided as part of the child’s special education program, it will be described in the goals and objectives. IDEA 2004 eliminated short-term objectives and benchmarks for students with disabilities, except for those students who take alternate assessments (Section 1414(d)(1)(A)(i)(I)). Nothing in IDEA 2004 prohibits the development of short-term objectives, however.

In writing annual goals, both academic and non-academic, it is important to include three components: the area of need; the direction of change; and the level of attainment (Wright & Laffin, 2001). In addition, it is critical to relate it to the functional task that the child needs to complete. For instance, a technically correct annual goal might be, “Bobby will activate a single switch 75% of the time.” However, it fails the “So What?” test. Why is it that you want Bobby to activate a switch in the first place? What will he accomplish? Will he operate a toy? Will he operate a computer? Will he use it to call for help? Will he use it to indicate he is ready to be moved to a new position? Will he greet a friend? If we always relate the use of the technology to a functional outcome, we will avoid the mistake of focusing on the equipment as an end in itself rather than a means to an end.
(D) coordinating with other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;  
(E) training or technical assistance for an individual with disabilities, or where appropriate that child’s family; and  
(F) training or technical assistance for professionals (including individuals providing education and rehabilitation services), employers or others(s) who provide services to employ, or are otherwise, substantially involved in the major life functions of children with disabilities.  
[Authority 20 U.S.C., Chapter 33, Section 1401(26)]

There are several “special factors” that must also be considered when developing the IEP. While none of these factors are new additions, changes in wording have occurred. For all students, the team must consider the need for assistive technology devices and services. IEP teams must now consider whether a student with a disability needs assistive technology, instead of whether the student requires assistive technology. The specific IDEA requirement for schools to provide assistive technology states:

§300.105 Assistive Technology
Each public agency shall ensure that assistive technology devices or assistive technology services or both, as those terms are defined in 300.5 - 300.6 are made available to a child with a disability if required as a part of the child’s  
(a) Special education under 300.36;  
(b) Related services under 300.34; or  
(c) Supplementary aids and services under 300.114(a)(2)(ii).

The development of a student’s IEP has always been guided by the consideration of several important factors. These are:

- The strengths of the child  
- The concerns of the parents for enhancing the education of their child  
- The results of the initial evaluation or most recent evaluation of the child

IDEA 2004 includes the above in addition to the:

- academic,  
- developmental, and  
- functional needs of the child.

The IEP must contain several statements that describe the child’s performance and outline the special education and related services the school district will provide. There have been many important changes to these areas, as explained below.

**Present Level of Performance.** The statement of the child’s present level of education performance has been revised to reflect the child’s academic achievement and functional performance, including how the child’s disability affects the child’s involvement and progress in the general education curriculum.
Documenting AT in the IEP

Changes to the Individual Education Plan (IEP) process made by The Individuals with Disabilities Education Act (IDEA) 2004 were effective July 1, 2005. The federal regulations for IDEA 2004 became effective October 13, 2006. When Congress reauthorized IDEA 2004, they specifically noted the intent to coordinate IDEA 2004 with the No Child Left Behind (NCLB) (Section 1400(c)(5)(C)). Many definitions in IDEA 2004 come directly from NCLB.

In the “Purposes” section of IDEA 2004 (Section 1400(d)), Congress described what they intended the law to accomplish. Congress also added “further education” as a purpose of the law:

“The purposes of this title are to ensure that all children with disabilities have available to them a free appropriate public education that emphasizes special education and related services designed to meet their unique needs and prepare them for further education, employment and independent living.” (Section 1400(d)(1)(A))

The IDEA requires that the IEP team consider what, if any, assistive technology may be needed by every student with a disability. When a determination is made that there is a need for assistive technology by the IEP team, it is then necessary to describe the assistive technology in the student’s IEP. This may be done in a variety of ways. This section provides several examples. First we’ll review the definitions and legal requirements.

Assistive technology may be any tool that assists a child performance in a functional task that they cannot perform well or cannot perform at all because of their disability. Assistive Technology devices and services are defined in IDEA as:

§300.5 Assistive Technology device
Any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of children with disabilities. (Authority: 20 U.S.C. Chapter 33, Section 1401 (25))

The definition is consistent with past legislation but includes new language from Section 602 (1) of the Act. The definitions of ‘‘assistive technology device’’ and ‘‘related services’’ do not include a medical device that is surgically implanted or the replacement of the device.

§300.6 Assistive Technology service
Any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device. Such terms include:
(A) the evaluation of needs including a functional evaluation, in the child’s customary environment;
(B) purchasing, leasing or otherwise providing for the acquisition of assistive technology devices;
(C) selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing of assistive technology devices;
This chapter is about the challenging task of documenting in the IEP the assistive technology devices and services that the school district will be providing. We have tried to include a variety of examples. We have not shown a specific form because there are so many different ones being used.

We believe that there are many “right” ways to include assistive technology in the IEP. The main concern should not be on getting it “right” or “wrong” but rather trying to clearly communicate to the parents and future readers of the IEP document exactly what services the school district will provide and the intended outcomes for the student.

We have attempted to include here a variety of examples of children with varying ages, disabilities, and needed assistive technology, not to provide something you would copy, but instead to stimulate your thinking about potential ways to describe your own unique situations.
Chapter 15 – Documenting Assistive Technology
Into the IEP

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<thead>
<tr>
<th>Vendor</th>
<th>Summary</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>SoftTouch</td>
<td>SoftTouch develops software for students in early childhood and students of all ages with significant disabilities. They specialize in emergent literacy and language development software with engaging use of music and animation. All software is accessible by one and two switches, touch screen, mouse and IntelliKeys keyboards.</td>
<td><a href="http://www.ablenetinc.com/">www.ablenetinc.com/</a></td>
</tr>
<tr>
<td>Stages Assessment software</td>
<td><em>Stages</em> is a seven-level developmental framework that describes a learner's cognitive and language abilities. Stages helps schools comply with alternate assessment mandates by providing an accessible way to assess learners with special needs. Stages also serves as a selection guide for curriculum activities (including both software and off-computer activities). The sequence of seven Stages is based on the work of Madalaine Pugliese, a nationally recognized authority in the fields of assistive and instructional technologies.</td>
<td><a href="http://www.intellitools.com/">http://www.intellitools.com/</a></td>
</tr>
<tr>
<td>Vendor</td>
<td>Summary</td>
<td>Contact Information</td>
</tr>
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<td>--------</td>
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</tr>
<tr>
<td>Don Johnston Literacy Starters</td>
<td>Switches, computer interfaces, software from early literacy to learning disabilities, resource books.</td>
<td><a href="http://www.donjohnston.com/">http://www.donjohnston.com/</a></td>
</tr>
<tr>
<td>Dynavox Mayer-Johnson LLC Boardmaker</td>
<td>Mayer-Johnson, Inc. Picture Communication Symbols (PCS) used in augmentative communication. Products include educational materials, software used to make communication boards, educational materials, and overlays for different computer access devices and for speech output.</td>
<td><a href="http://www.dynavoxtech.com">www.dynavoxtech.com</a></td>
</tr>
<tr>
<td>Enabling devices</td>
<td>This company develops learning and assistive devices to help people of all ages with disabling conditions including communicators, toys and switches for the physically challenged students.</td>
<td><a href="http://enablingdevices.com/catalog">http://enablingdevices.com/catalog</a></td>
</tr>
<tr>
<td>Every Move Counts tm</td>
<td>A sensory based communication program for individuals with severe multiple differences, developmental differences and autism.</td>
<td><a href="http://www.everymovecounts.net/Index2.htm">http://www.everymovecounts.net/Index2.htm</a></td>
</tr>
<tr>
<td>Inclusive technologies</td>
<td>Inclusive Technology provides special educational needs software, switches and computer access devices, simple communication aids and assistive technology for learners with a physical disability, sensory impairment or learning difficulty. Their resources include SwitchIt!, ReadIt! and Choose and Tell software series.</td>
<td><a href="http://www.inclusive.co.uk">http://www.inclusive.co.uk</a> click on severe and complex special needs tab</td>
</tr>
<tr>
<td>Intellitools</td>
<td>IntelliKeys® USB, versatile, alternative keyboards that enable users with physical, visual or cognitive disabilities to easily type, enter numbers, navigate on-screen displays, and execute menu commands.</td>
<td><a href="http://www.intellitools.com/">www.intellitools.com/</a></td>
</tr>
<tr>
<td>Lekotec</td>
<td>Independent ratings of toys/play ideas for individuals with disabilities</td>
<td><a href="http://www.lekotek.org">www.lekotek.org</a></td>
</tr>
</tbody>
</table>
## Vendors

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Summary</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attainment Company</td>
<td>This company produces a variety of products including augmentative communication devices, software, videos, and curriculum. Programs utilize a picture-based approach for teaching low-level or non-readers the skills for active participation in their home, school and work communities. All materials are particularly appropriate for young adults.</td>
<td><a href="http://www.attainmentcompany.com">www.attainmentcompany.com</a></td>
</tr>
<tr>
<td>Ability Hub</td>
<td>Information on adaptive equipment and alternative methods available for accessing computers.</td>
<td><a href="http://www.abilityhub.com">www.abilityhub.com</a></td>
</tr>
<tr>
<td>Ablenet</td>
<td>This company develops and markets products and services to meet the needs of children and adults with severe disabilities. Products include simple technology systems and related materials that allow users to actively participate in daily activities.</td>
<td><a href="http://www.ablenetinc.com">www.ablenetinc.com</a></td>
</tr>
<tr>
<td>AblePlay</td>
<td>AblePlay is a website developed by National Lekotek Center which provides a unique search tool to match toys to disability categories: physical, communicative, sensory and cognitive</td>
<td><a href="http://www.ableplay.org/">http://www.ableplay.org/</a></td>
</tr>
<tr>
<td>Clicker Crick Software</td>
<td>Clicker is a writing support and multimedia tool, which enables you to write with whole words, phrases or pictures. It is switch accessible.</td>
<td><a href="http://www.cricksoft.com/us/products/clicker/">www.cricksoft.com/us/products/clicker/</a></td>
</tr>
<tr>
<td>Communication Matrix</td>
<td>The Communication Matrix is an assessment tool designed to pinpoint exactly how a child is currently communicating and to provide a framework for determining logical communication goals</td>
<td><a href="http://www.communicationmatrix.org">http://www.communicationmatrix.org</a></td>
</tr>
</tbody>
</table>


Siegel-Causey, E. & Guess, D.(1989) *Enhancing Interactions between Service Providers and Individuals who are Severely Multiply Disabled: Strategies for Developing Non-symbolic Communication*. Kansas Special Education Unit

Chapter 14 – Assistive Technology for Students with Multiple Challenges

Books


Erickson, K. (2001). 9th Summer Seminar on Literacy in AAC, Gustavaus Adolphus College, St. Peter, MN Individuals with Disabilities Education Act (IDEA) of 1987


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Helen Keller National Center for Deaf-Blind Youths and Adults ... and Cued Speech for the
Student with Deafblindness by Robbie Blaha, Education Specialist, ...
www.orientationandmobility.org/deafblind.html

Cortical Visual Impairment

Here you can find Tangible Symbols book online to download.
http://ohiolionseeyeresearch.com/cortical_visual_impairment.htm
http://osepideasthatwork.org/toolkit/InstPract_tan_sym.asp

Organizations and Associations

Family Connect
American Foundation of the Blind and the National Association for Parents of Children with
Visual Impairments
www.familyconnect.org/parentsitehome.asp?SectionID=79

Family Center on Technology and Disability
This site is Funded by the U.S. Department of Education The Family Center on Technology and
Disability provides a wide range of resources on assistive and instructional technologies,
www.fctd.info

TASH (formerly Association for Persons with Severe Handicaps)
www.tash.org

The Arc of the United States
www.thearc.org

United Cerebral Palsy Associations, Inc.
www.ucp.org

Curriculum Examples

The Learning Standards and Alternate Performance Indicators for Students with Severe
Disabilities [Final Version]

New Jersey adapted curriculum
http://www.state.nj.us/education/specialed/ccsssd800.pdf
www.projectidealonline.org/multipleDisabilities.php
Activity Ideas for Students with Severe/Profound/Multiple Disabilities
PALAESTRA: Forum of Sport, Physical Education & Recreation For Those With Disabilities
http://www.palaestra.com/featurestory.html

Nevada Dual Sensory Impairment project
Best educational practices for students with severe and multiple disabilities
Many informational sheet to download and low tech assistive technology ideas
www.unr.edu/educ/ndsip/factsht.html

Short outline of strategies for students with multiple challenges

Hold Everything! Twenty Stay-Put Play Spaces for Infants, Preschoolers, and Developmentally Young Children with Sensory Impairments and Other Special Needs by Kay L. Clarke This 48 page manual is available for download through The Ohio Center for Deafblind Education
www.sSCO.org/ocdbe/products.html

Switch and touch screen “videos” can be downloaded all are available in PC format but not all in Mac version. They include cause effect activities and interactive talking books. This resource also includes lesson plans and teaching ideas.
http://www.priorywoods.middlesbrough.sch.uk/

Short outline of strategies for students with multiple challenges

Switch and touchscreen “videos” can be downloaded all are available in PC format but not all in Mac version. They include cause effect activities and interactive talking books. This resource also includes lesson plans and teaching ideas.
http://www.priorywoods.middlesbrough.sch.uk/

Design to Learn - This resource includes strategies and materials address the educational needs of children and adults who have severe disabilities, including multiple and "low incidence" disabilities such as deaf blindness and autism.
http://www.designtolearn.com/

Communication Resources

Articles on communication for severe profound and tangible symbols
http://www.designtolearn.com/pages/articles.html

Online book about tangible symbols
http://osepideasthatwork.org/toolkit/InstPract_tan_sym.asp

Articles on Tangible symbol
http://www.mayer-johnson.com/ResearchArticles.aspx
Chapter 14 – Assistive Technology for Students with Multiple Challenges

Resources

References


Ballinger, R. (1999). Learned helplessness. *Augmentative and Alternative Communication (AAC) Connecting Young Kids (YAACK) Website*. Available at: [http://aac.unl.edu/yaack/b1.html#b1b](http://aac.unl.edu/yaack/b1.html#b1b)


Texas School for Blind and Visually Impaired. (2003). *IEP quality indicators for students with deafblindness*. Available at: [http://www.tsbvi.edu/Outreach/deafblind/indicators.htm](http://www.tsbvi.edu/Outreach/deafblind/indicators.htm)


Wisconsin Center for the Blind and Visually Impaired (n.d.). *Powered mobility for children who are blind or visually impaired: principles and promising practice recommendations* [Brochure]. Janesville, WI: Tellefson, M.

Websites and Links

Project IDEAL (Informing and Designing Education For All Learners)

Texas Council for Developmental Disabilities (TCDD).
evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The following is a resource toolbox with some resources to get you started.

**Tool Box for Students with Multiple Challenges: Mobility Resources**

*Please also see Chapter 2: Seating, Positioning and Mobility*

| **Power mobility for everyone** | Baniec, M. (n.d). Pediatric Mobility retrieved from the internet 4-2009  
|-------------------------------|-------------------------------------------------------------------|
|                               | Kangas, K., (2008) Why power? Why should children be considered candidates for powered mobility? retrieved 2-6-09 from  
| **Seating**                   | Kangas, K. (2003) Seating for Task Performance Closing the Gap Handout |
| **Mastery of Independent Mobility** | Kangas, K. (2008) Clinical Assessment and Training Strategies for the Child’s Mastery of Independent Mobility Shamokin, PA. Available through the author @ kmkangas@ptd.net |
Staff knowledge
What is the staff knowledge of power mobility? Do you need more training?
What other person(s) do you need to connect with?
  - PT
  - OT
  - Wheelchair vendor
  - Seating and positioning
  - Other

Access to other devices
Will you want the student to do more than mobility? Do they need to access the computer, communication device, environmental controls?
Did you know? It is best at the time of ordering to know that you will want these extra accesses, you do not need to know what devices and what computer software.

Transitions
Is the student involved in transitions?
Did you know? This is something that wheelchairs currently don’t do – but need to do.

Sensory Considerations
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student’s learning, identify the sensory levels in each environment in which the student will be. What is calming and what is alerting and what is over arousing?

Tasks
As a team discuss and write on chart paper the tasks that the student needs to do related to mobility.
  - Increase power mobility independence
  - Safe transportation
  - Other

Narrowing the Focus
As a team, identify by circling or other means those few tasks the student needs to do for communicating that will have the most impact.

Solution Generation: Tools/Strategies
As a team, brainstorm and write on chart paper any assistive technologies &/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise
Position for a Task Performance
Does the student have different positions for working versus safe mobility?

Kangas (2003) verified that seating for task performance is not a seated posture to be maintained all day, or for long periods of being inactive. In short, the seating has to allow a change in postures. This can best be developed with the use of a tilt-in-space function as well as less restrictive seating while the individual performs a task. With a powered system, the seating can be changed without changing the seat with which the individual is already extremely familiar.

Sensory Impairments
Does the student have vision or hearing issues?

Hardy (2004) said that children and adults with vision and hearing impairments are able to ambulate safely within in our society. These people need to compensate for their sensory impairment by using strategies such as assistive technology (vision cane, hearing aide etc.), environmental supports (Braille signs, curb indicator line, etc) and other support systems. Using similar principles, there would seem to be no real reason why people with sensory impairments can’t be considered as candidates for powered wheelchair mobility. Problem solving around the issues involved may result in the development of new technologies for powered wheelchairs such as sensor.

Environment
As a team discuss and write on chart paper any environmental considerations that might impact the student’s communication in the classroom, number of different settings or any other environmental impacts.

Assistive Technology: past and present
What assistive technology has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist or can be changed such as computer conflicts, lack of training, not transferring to a new building/staff, lack of interest, or other reasons that are no longer present. If the student is currently using assistive technology, note the locations, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference.

If there is currently a chair but if the student is not using it effectively try this:
Check out the programming of the controls, can they be changed? If using a joystick did you consider using a head array?

Did you know: All wheelchairs are made to work with a joystick? This can be changed; some chairs are easier to add these electronics than others.
Chapter 14 – Assistive Technology for Students with Multiple Challenges

The following are suggested questions to ask when using the Decision Making Guide, and information that will help teams think more about the questions.

**Student’s Abilities and Difficulties**

As a team, discuss what the student’s abilities and difficulties are related to communication.

**Age**

How old is the student? What motor milestones have they achieved?
Hardy (2004) stated that children as young as 4-18 months of age are able to mobilize around their environment using any of a variety of means according to their physical development, typically; rolling, crawling, cruising, walking then running. They require constant supervision while they enjoy the opportunities to explore and learn about their environment. Children with disabilities who have no other means of experiencing independent movement can and should be given an opportunity to experience independence using an augmented mobility system. Young children using powered wheelchairs simply need the supervision and learning support (appropriate to their developmental level) normally provided to their ambulant peers.

**Supervision**

How much supervision does the student require for participation in activities?
Hardy (2004) found that children and adults with cognitive impairments deserve to experience and learn through independent movement. There are many ambulant people in society who have varying degrees of cognitive impairment. These people require varying degrees of supervision and support within their individual environments. People with cognitive impairments can use a powered wheelchair for mobility and should be provided the training, support and supervision required in specific environments.

**Pelvic Stability**

What is happening at the pelvic girdle when the student is sitting?
Kangas (2008) said that for isolation, and adequate use of an extremity to be used in a graded, controlled movement, pelvic stability with pelvic weight-bearing must occur and be controlled by clients themselves. This stability of the pelvis is not a position of immobility but rather a position that allows a range of self-controlled (limited, graded) pelvic mobility. In short, the body must allow muscle lengthening and controlled shortening simultaneously to allow controlled holding. Pelvic girdle stability is required for shoulder girdle mobility. This relationship is critically related to weight-bearing and movement.

**The Seating Position**

Is the student’s seating system flexible? What kind of chest supports does the child have? Where is the shoulder girdle in relation to the pelvis? Does it change or stay the same throughout the day?
Kangas (2008) asserted that for many individuals with hypertonicity, or combined hyper and hypotonicity, chest supports are not working. The adult or child can be readily observed to be hanging on the chest supports, collapsing their trunks into the support, rather than being assisted by the support to remain upright.

Rotelli (2008) confirmed that the shoulder girdle is behind the pelvis you are using more peripheral vision. When shoulders are slightly forward in relationship to the pelvis, central vision is better and arm power is stronger.
### WATI Assistive Technology Decision Making Guide

**Area of Concern: Powered Mobility**

#### PROBLEM IDENTIFICATION

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current level of independent mobility</td>
<td>What environmental considerations impact the area of mobility including staff?</td>
<td>What task(s) do you want the student to do that relate to mobility?</td>
</tr>
<tr>
<td>• Age</td>
<td>• Current or past AT used</td>
<td>Increase power mobility independence</td>
</tr>
<tr>
<td>• Supervision</td>
<td>• Staff knowledge of power mobility</td>
<td>Safe transportation</td>
</tr>
<tr>
<td>• Pelvic stability</td>
<td>• Need for other access</td>
<td>Other</td>
</tr>
<tr>
<td>• Seating position</td>
<td>• Transitions</td>
<td></td>
</tr>
<tr>
<td>• Task performance position</td>
<td></td>
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</tr>
<tr>
<td>• Vision</td>
<td></td>
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<tr>
<td>• Hearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Sensory Considerations

What sensory challenges does the student have that impacts mobility? (i.e., visual, auditory, tactile)

#### Narrowing the Focus

i.e. Specific task identified for solution generation

#### Solution Generation Tools & Strategies

- Brainstorming Only
- No Decision

#### Solution Selection Tools & Strategies

- Use a Feature Match Process to Discuss & Select Idea from Solution Generation

#### Implementation Plan

- AT Trials/Services Needed:
  - Objectives to determine effectiveness of trial
  - Training needed
  - Date
  - Length
  - Person(s) Responsible

#### Follow-Up Plan

- Who & When
- Set specific date now.

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Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Kangas (1997) believes that any child with a physical disability who is unable to walk independently, in all environments, with efficiency and safety is a candidate for powered mobility. She goes on to say, “Anyone who can demonstrate an understanding of starting and stopping can benefit from a powered wheelchair. The only motor control necessary is to get off the ‘go’. It is the adults’ job to make the child safe.”

Kermoian, (1997, quoted by Seiberlich), “If children need to demonstrate prerequisite cognitive and physical skills in order to receive a powered wheelchair and if these skills are usually developed with mobility, then many of children who could benefit from a means of independent mobility may not qualify for a powered wheelchair”

**Self-produced movement is a foundational skill for learning.**
(Seiberlich) Various cognitive, motor, perceptual and psychosocial skill developments are dependent upon and associated with the development of self–produced mobility in early childhood.
- Spatial cognition
- Emotional skills
- Self awareness
- Increased independence
- Ability to cope with environmental stresses

Tellefson (n.d.) “The effects of motor dysfunction are cumulative and incrementally disabling because motor action and mobility play such a crucial role at every stage and in virtually every aspect of a child’s continuing development. Secondary benefits include improved posture, increased attention, improved motivation and interaction and desire to communicate.”

**Using the SETT process and Decision Making Guide**
Important: It is intended that you use this as a guide for the process of assessing students for assistive technology. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory under Student and Environment for Sensory Considerations. Additional categories include Narrowing the Focus to help identify a specific task in order to select appropriate assistive technology, a category for Implementation Plan to assign trials, dates, responsibilities, data collection and also a Follow-Up Plan to set a date for the team to reconvene. Again, this is intended as a guide; during the actual assessment each topic should be written in large print where everyone can see, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

The questions posed are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology for their students.

The resource toolbox at the end of this section will provide teams with some resources to get you started.
HomeTalk is an assessment tool for parents and care providers of children who are deafblind and who have other disabilities. Its purpose is to help you participate in the planning of your child’s educational program. As a parent or care provider, you have the best opportunities to make observations of your child at home and in the community. HomeTalk can provide a broad picture of your child’s skills, special interests, and personality. HomeTalk was developed by a group of parents and professionals who know the importance of collaboration. Your assessment will be very helpful to members of your child’s educational team, such as teachers, therapists, special instructors, and aides, who may not know your child well or have the chance to observe your child outside of the school.

On the Same Page makes it easy for parents and teachers to compare how the child behaves in the two different environments and to discuss and generate logical new skills to target based on information from home and school. The form also includes space to evaluate the teaching environment using Design To Learn to identify environmental supports for learning within activities the team has identified as motivating to the child.

**Power Mobility for Students with Multiple Challenges**

**Introduction**

**Mobility Core Beliefs**

1. Every child has the right to move more independently and our job is to make them safe.
2. Each child must be honored in the process of mobility.
3. Transitions are the richest movement of all so the student must be involved in the transition.
4. Positioning is dynamic. There is no one position rather positions are task specific.
5. Self-produced movement is a foundational skill for learning.

This chapter will help guide the team working with students with multiple challenges to think about powered mobility and what resources your teams need to assess your student for powered mobility. Please read Chapter 2 - Assistive Technology for Seating, Positioning and Mobility. There are articles listed in the reference section for a more complete understanding about the components needed for seating and positioning for powered mobility. This chapter will pose questions to the team specifically about mobility for students with multiple challenges. Karen Kangas, and Lisa Rotelli from Adaptive Switch Labs, have been instrumental in the development of our approach to the content in this section. They carefully consider a functional approach to seating and positioning for powered mobility. Karen and Lisa believe that every person should be given the chance to try power mobility. It takes a willing team working diligently with a wheelchair vendor and specialized equipment to make this a reality for students with multiple disabilities.

**Background information to think about:**

**Every child has the right to move more independently.**

The following are several statements from professionals working in the field of powered mobility. Hear what they have to say:
Below you will find a Tool Box of Resources for Students with Multiple Challenges that will help you developmentally and systematically move your students to their highest potential.

**Tool Box for Students with Multiple Challenges: Communication**

*every move counts clicks and chats (emc²)* is a systematic sensory based assessment and implementation resource that supports and encourages communication. The power of this program is that it takes the student through a communication matrix that is based on where the student is currently functioning. *emc²* helps identify, refine and expand responses into a more functional communication system. Assistive technology from switches to voice output are included. Available at: [http://www.everymovecounts.net/](http://www.everymovecounts.net/)

**Design to Learn Package** Includes the following resources. They can be purchased as a package or purchased individually. Available at [http://www.designtolearn.com](http://www.designtolearn.com)

- **First Things First** book provides practical strategies for encouraging early communication in children who have no or minimal intentional communication. First Things First describes instructional strategies for children who are not yet ready to use symbols to communicate.
- **Tangible Symbol Systems** manual helps teach individuals to communicate using objects or pictures that represent items, people, and events in their daily lives. These products describe and illustrate alternative communication options and instructional strategies for a broad range of learners of all ages who are unable to communicate using speech, manual sign language, or other systems that involve abstract symbols.
- **Communication Matrix** The Communication Matrix (©1996, 2004 Charity Rowland) is a communication skills assessment instrument. Available in three formats:
  - the ORIGINAL version designed for professionals
  - a "user-friendly" version designed Especially for Parents – Now available in Spanish
  - an ONLINE version using the parent-friendly format, but available as a FREE service to parents and professionals
- **Design to Learn** The Design to Learn environmental inventory is used to track the opportunities to learn communication and object interaction skills that are provided in classroom activities for a specific student. The inventory was developed especially for children with pervasive developmental disorders (including autism) and it is applicable to nonverbal children with wide a range of disabilities.
- **Hands-On Learning** The Hands-On Learning materials address a wide range of object interaction skills, including the use of objects in symbolic play and in social interactions. They focus on the child’s interaction with the physical environment and specific object interaction skills that may reflect cognitive and social skill development.
- **Problem Solving Skills** These materials are appropriate for nonverbal children with multiple disabilities that may include severe mental retardation or sensory impairments, including deaf-blindness. These assessment tools are used to examine a child's everyday interactions with the physical environment in order to determine cognitive ability. This information will help educators and parents to target problem solving skills that will promote cognitive development.
Transitions
Is the student involved in the transitions to an activity throughout the day?
List times when the student is involved in the transition from one activity to another.

Kangas, (2009) noted:
Transition prepares a child for control. Intention develops when a child understands
the beginning, the middle and the end of a task. What happens is we control the
beginning, extend the middle too long and we control the end. Instead we should
repeat the frequency of the activity not the duration. When the child can anticipate
the beginning and the middle then they can control the duration.

Assistive Technology: past and present
What assistive technology has been employed in the past or is currently used with the student?
List all assistive technologies that have been used with the student. If some have been
discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons
that no longer exist or can be changed such as computer conflicts, lack of training, not transferring
to a new building/staff, lack of interest, or other reasons that are no longer present. If the student
is currently using assistive technology, note the locations, level of effectiveness, trained staff, and
any other issues that are pertinent to the student/building. Do not discount assistive technology
that was previously tried and discarded. There may have been a mismatch between the assistive
technology and the student’s skills at the time. Differences in skill development, maturity, a
different environment or other factors may make all the difference.

Tasks
As a team discuss and write on chart paper the tasks that the student needs to do related to
communication:
What skill does the student need to develop prior to utilizing A.T.?
- Communication intent
- Reliable motor response
What symbol set will the student use for communication?
- Objects, partial objects, pictures, line drawings, symbols, touch cues/ partner assisted
  scanning, signs. Voice output (see chapter for ideas).

What tasks do we want the student to do that assistive technology would enhance?
- Refuse
- Make choices
- Social Participation
- Make comments

Narrowing the Focus
As a team, identify by circling or other means those tasks the student needs to do for
communicating that will have the most impact.
Sensory Considerations
What does the environment look like?
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student’s learning, identify the sensory levels in each environment in which the student will be communicating. It is imperative that we consider the sensory needs of children with multiple challenges.

- What sensory input is calming to the student?
- What sensory experiences are over-arousing to the student?
- Does the student have a sensory diet?

Environmental Considerations

As a team discuss and write on chart paper any environmental considerations that might impact the student’s communication in the classroom, number of different settings or any other environmental impacts.

Type of classroom: self contained, resource or full inclusion?
Least restrictive does not mean full inclusion; it means that they are in the classroom that provides them with the best meaningful educational benefit. With the differences in needs and interests among students with disabilities, there is no single definition of what a least restrictive environment (LRE) will be for all students.

Multiple classrooms or environments create additional challenges. How will the student access the necessary assistive technology tools? Will there need to be multiple sets of tools in each environment? How will staff and other children in these multiple environments support the student using the assistive technology tools? One approach is to provide a dictionary of the student’s communication system, and directions on how support staff should use them.

Team approach
Do you use a team approach in the classroom? How many support staff are in the room? Do they rotate between students? Where does therapy take place?

Communication opportunities
What communication opportunities are happening throughout the day?
Bukelman & Mirenda (1998) stated that the primary emphasis of communication intervention has shifted to the acquisitions of functional communication skills within natural environments. Although structural approaches are still utilized, best practices today emphasize functional language skills within natural daily routines and natural environments.

“Naturalistic teaching procedures typically incorporate the following:
- Instruction that is based on the child’s interest and that follows the child’s lead
- Frequent models of appropriate communication within natural routines
- Open, unambiguous prompting of child communication
- Use of natural consequences
- Ongoing interaction between the child and the interventionist.” (Warren & Richele, 1992)
accurately complications due to premature birth, such as intracranial bleeding. Typical visual behaviors of an infant or child with CVI include:

- Momentary fixation – the child will look (fixate) on things only briefly, say about a second or less
- Variable vision – the child with CVI will seem to "see" at certain times and not at other times
- Selective attention – the child may look at some things that may be rather hard to see (e.g., small toy) but act unaware with very salient objects (e.g., faces)
- Avoidance – some children with CVI will actively avoid (e.g., look away from) salient visual objects
- Prefer certain colors – some children with CVI will attend to colored objects (e.g., yellow) but ignore black-white objects
- Moving objects – some children with CVI will track or watch an object when it is moving (e.g., a small ball rolling across the floor) but ignore or exhibit "blind" behavior (using hands to locate a nearby object) to the same object when it is stationary
- Act blind but respond to objects – some children with CVI will act as though they’re not able to see or identify an object but, at the same time, are able to locate and grab or actively avoid the object.
- Hemianopsia – some children with CVI will be missing parts of their visual field and may prefer to fixate on objects by looking to the left or right of the object.

**Central Auditory Processing**

Auditory processing is a term used to describe what happens when your brain recognizes and interprets the sounds around you. Humans hear when energy that we recognize as sound travels through the ear and is changed into electrical information that can be interpreted by the brain. The "disorder" part of auditory processing disorder (APD) means that something is adversely affecting the processing or interpretation of the information.

Children with APD often do not recognize subtle differences between sounds in words, even though the sounds themselves are loud and clear. For example, the request "Tell me how a chair and a couch are alike" may sound to a child with APD like "Tell me how a couch and a chair are alike." It can even be understood by the child as "Tell me how a cow and a hair are alike." These kinds of problems are more likely to occur when a person with APD is in a noisy environment or when he or she is listening to complex information.

APD goes by many other names. Sometimes it is referred to as central auditory processing disorder (CAPD). Other common names are auditory perception problem, auditory comprehension deficit, central auditory dysfunction, central deafness, and so-called "word deafness." More information is available at:


National Institute on Deafness and Other Communication Disorders
National Institutes of Health
31 Center Drive, MSC 2320
Bethesda, MD USA 20892-2320
It is important to consider vision and hearing. Below are three common visual and or hearing deficits often found in children with multiple challenges. This is not a complete list, but is meant to provide a basic understanding and lists of common behaviors.

**Deaf-Blindness**
Students that are considered severe/profound may also have dual sensory impairments. The nature and extent of deaf-blindness in children is often misunderstood. Although the term deaf-blindness implies a complete absence of hearing and sight, in reality, it refers to children with varying degrees of vision and hearing loss. The core feature of deaf-blindness is that the combination of losses limits access to auditory and visual information. When both vision and hearing are affected, especially from birth or early in life, natural opportunities to learn and communicate can be severely limited.

The National Consortium On Deaf-Blindness November 2007 newsletter reported on the findings of the National Deaf-Blind Child Count. Key points were identified as:
- Deaf-blindness is varied and complex.
- Children with deaf-blindness are as diverse as the number of children reported.
- Early identification and intervention are critical.

Children and youth who are deaf-blind often have other disabilities. In fact, more than 90% of children who are deaf-blind have one or more additional disabilities or health problems and some may be identified as having multiple disabilities rather than deaf-blindness. In these cases, the impact of combined hearing and vision loss may not be recognized or addressed. Training and support are available through federally-funded technical assistance projects in each state. [http://www.nationaaldb.org](http://www.nationaaldb.org)

For a student with deaf-blindness, the combined effects of the vision and hearing loss create a barrier that significantly impedes the ability to gather information from the environment. This causes chronic difficulties with incidental learning and concept development. Students cannot learn what they do not detect, and they may be unaware of what they are missing. Access to information is a primary issue for all students with deaf-blindness, and should be addressed in each IEP. (From *IEP Quality Indicators for Students with Deaf-blindness* - [http://www.tsbvi.edu/Outreach/deafblind/indicators.htm](http://www.tsbvi.edu/Outreach/deafblind/indicators.htm))

**Cortical Visual Impairment**
[http://ohiolionseyeresearch.com/cortical_visual_impairment.htm](http://ohiolionseyeresearch.com/cortical_visual_impairment.htm)

Cortical visual impairment (CVI) is a complex and heterogeneous condition in which the eyes and optic nerves appear healthy; yet, the patient does not have normal vision or normal visual perception. Indeed, as the name implies, CVI is not an eye condition but rather a brain condition. Previously, many eye doctors referred to such patients as "cortically blind" but it is now generally believed that many of these patients have useable, albeit abnormal, vision.

CVI results from a number of conditions that affect the brain and particularly the surface of the brain called the cortex. Intracranial bleeding, head trauma, birth defects, strokes, or seizures can result in CVI. Typically diagnosed during infancy, CVI is also associated with premature or more
Student’s Abilities and Difficulties

As a team, discuss what the student’s abilities and difficulties are related to communication. In looking at beginning communicators it is critical to ask the following questions:

Mode of communication
How does the student demonstrate intent to communicate? Does the student use change in affect, gestures, vocalizations, facial expressions, or eye gaze to tell you something? Does the student have a reliable motor response? When looking for a reliable movement, reflexes and tone can interfere in reliability, so you must be careful in choosing a movement for communication. It must be reliable, not reflex-induced or position-dependent. You want to strive for optimal positioning for the student. If a student can only use a movement in one position that will make communicating at all times difficult.

One needs to be acutely aware of the continuum-of-communication intent to ensure that one does not miss a potential response by the student. For example, you may be watching for the student to extend their hand to point, while they have gazed at the object several times. It is common for each team member to have communication interactions based on different communication responses. It is significant that you determine whether the student has intent in their communication responses. The key to keep in mind is for everyone to understand the student’s communication (familiar communication partners as well as unfamiliar communication partners) and we want the student to be able to say what he/she wants to say.

Motivating activities
What are motivating (enjoyable) activities? How often do they occur during the day? It is important to keep in mind when teaching communication skills that you must start with what the communicator finds enjoyable, and it must occur often for them to learn the connection between the message (the topic, what the communicator is communicating about) and their means of communication (behavior used to communicate the message). Only when communication is recognized and consistently reinforced will those with severe differences find the effort to communicate worthwhile.

Readiness to use symbols to communicate
Does the student understand that concrete symbols (symbolic gestures and vocalizations, three-dimensional objects, two-dimensional pictures) represent an activity (event or person)?

The work of Charity Rowland and Phillip Schweigert have demonstrated that tangible symbols may serve as bridge to other symbol systems (such as speech or manual sign language), and that learning to use tangible symbols does not interfere with the acquisition of speech.

Rowland, C. & Schweigert, P. (1990, 1996). *Tangible Symbol Systems.* is one resource for teachers if the student is ready for Tangible Symbols. This resource explains tangible symbols for expressive communication, receptive communication, and levels of representation. The book includes a Tangible Symbol pretest, a comprehension check and progress monitoring tools. It is available on the Design to Learn website through the authors and online at http://osepideasthatwork.org/toolkit/InstPract_tan_sym.asp.

Vision / Hearing
## WATI Assistive Technology Decision Making Guide

### Area of Concern: Multiple Challenges-Communications

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the student’s abilities &amp; difficulties related to the area of communication?</td>
<td>What are the staff doing/ what does the environment look like? Type of classroom • Self contained • Resource • Full inclusion • Team approach • Communication opportunities • Transitions • Assistive Technology: past and present</td>
<td>What skill does the student need to develop prior to utilizing A.T.? • Communication intent • Reliable motor response • Identify motivating activities • Symbol set</td>
</tr>
<tr>
<td>Review Student Information Guide, Chapter 1 • Current Mode of communication (reliable and predictable motor movement) • Motivating activities • Readiness to use symbols • Visual Concerns • Hearing Concerns • Medical conditions • Other concerns</td>
<td></td>
<td>What tasks do we want the student to do that assistive technology would enhance? • Refuse • Make choices • Social Participation • Make comments</td>
</tr>
</tbody>
</table>

### Sensory Considerations

What sensory preference/ sensitivities does the student have that impacts Communication (i.e., visual, auditory, tactile) i.e. Specific task identified for solution generation

### Solution Generation

<table>
<thead>
<tr>
<th>Tools &amp; Strategies</th>
<th>Solution Selection Tools &amp; Strategies</th>
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</thead>
<tbody>
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<td>Use a Feature Match Process to Discuss &amp; Select Idea from Solution Generation</td>
</tr>
</tbody>
</table>

### Implementation Plan

AT Trials/Services Needed: Communication Objectives to determine effectiveness of trial: • Training needed • Date • Length • Person(s) Responsible

### Follow-Up Plan

| Who & When | Set specific date now. |

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Using the SETT process and Decision Making Guide-Communication

Important: It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory under Student and Environment for Sensory Considerations. Additional categories include Narrowing the Focus to help identify a specific task in order to select appropriate assistive technology, a category for Implementation Plan to assign trials, dates, responsibilities, data collection and also a Follow-Up Plan to set a date for the team to reconvene. Again, this is intended as a guide; during the actual assessment each topic should be written in large print where everyone can see, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

The questions posed are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology for their students.

It is important to remember for students with multiple challenges we need to focus on the interaction and communication- not the technology. Sensory Considerations play a significant role with children with multiple challenges.

The next section will go through the Student, the Environment and the Tasks on the Decision Making Guide. Typically you would also talk about brainstorming Tools and Strategies, Selection of Tools and Strategies and the Implementation Plan.

The purpose of this section is to help teams to identify where the student currently is with their communication skills. The resources listed in the toolbox provide frameworks to systematically approach student assessment all the way to developing an implementation plan. It is critical that teams spend time on assessing the student’s current functioning.
Blackstone (2002) research looks at some behaviors of communication partners:

- Dominate communicative interactions.
- Ask yes/no questions.
- Take the majority of conversational turns.
- Provide few opportunities for individuals using AAC to initiate conversations or to respond during conversations.
- Frequently interrupt the utterances of individuals using AAC or his or her message.

At the same time, individuals using AAC have been noted to:

- Play passive roles (e.g., initiate few interactions, respond only in obligatory contexts)
- Produce a limited range of communicative functions; and
- Use restricted words.

There is clear evidence that many communication partners need to learn how to successfully interact with individuals who use AAC.

Karlan (1989) developed a program called Environmental Communication Teaching (ECT). ECT is a research-based communication intervention approach that uses incidental teaching episodes that are directed toward functional communication. The goal of this training program is to facilitate an increase in augmentative communication use in target students. One day of the training is looking at how partners can act to facilitate, rather than inhibit, the student’s communication skills.

**We must start where the child is at for them to advance. Sometimes we have to take a step back to kick it up a notch.**

Rowland and Schweigert (2000), show that most individuals who do not have pre-symbolic means of communication are not successful in acquiring any sort of symbolic means of communication. Through their research they demonstrated that once individuals learn to communicate pre-symbolically, it is a fairly straightforward matter to teach students to use some sort of symbol system to communicate (assuming that you have identified the type of symbol that makes sense to that child). (Rowland & Schweigert, 2000)

Prior to children understanding that symbols represent an activity is a level of pre-symbolic communication. At this level children use body and limb movements, gestures and vocalizations as a way of intentionally communicating.

Tangible Symbols have proved useful for a wide variety of individuals of all ages. *Tangible Symbols Systems™* is not just a mode of communication, but a systematic instructional sequence. A recent study (Rowland & Schweigert, 2000) demonstrated the following findings:

- Tangible symbols may serve as a bridge to other symbol systems, including abstract symbol systems such as speech or manual sign language.
- Learning to use tangible symbols does not interfere with the acquisition of speech.
- Tangible symbols may be a useful means of communication for some children with autism spectrum disorders.
- Individuals who are already able to communicate effectively using gestures or vocalizations are more readily able to learn to use tangible symbols than are those who do not have intentional pre-symbolic communication skills.
To prevent learned helplessness, the child needs to be able to exert some control over other people and the environment. This can be done by providing the child with instruction and adaptations that increase his or her ability to reliably and effectively influence others and the environment, such as Alternative Augmentative Communication (AAC) devices. In addition, the child can also be given the ability to exercise this control through increased sensitivity and responsiveness from partners, and ample opportunity to make choices. (Reichle, York, & Sigafoos, as cited in Ballinger, 1999, sec.2)

Research related to communication for children with multiple disabilities is limited due to the low incidence of this population, and the heterogeneous nature of their make-up. We can look for the research in the area of deaf blind populations. This group often has other considerations including cognitive, sensory, or motor issues that impact their communication.

**Research**

**Research tells us that we all communicate.**

- Research on the development of communication in infants without disabilities has shown that parents and infants communicate with each other soon after the infant is born. This knowledge has helped to understand that speech is not the only way we communicate and that we can teach individuals with severe communication disorders to communicate using a variety of means. (Rowland & Schweigert 1990, 1996)
- Contemporary assessment procedures can best be characterized as fitting the Participation Model, which holds that all persons with severe disabilities can achieve enhanced communication ability. This makes it a strength model, a departure from previous deficit-based models (Kroth & Bolson, 1996)
- Perhaps the greatest change in augmentative and alternative communication has been the near-universal abandonment of prerequisites for AAC services. This has occurred largely because of the lack of compelling empirical research supporting the requirement that certain cognitive prerequisites be present prior to beginning effective augmentative communication services (Kangas & Lloyd, 1988)

**We must change how we (the communication partner) interact with the students.**

vanDijk’s (2006) research suggests:

- Teachers and parents can improve the quality of interactions with children who are deaf-blind by learning new skills.
- Video analysis is a powerful tool in training.
- When parents and teachers change their own attitudes and behavior, children use more positive interactive behaviors in response.

Mirenda (1993) noted, “Communication is not something that has to be learned. It is inevitability because people cannot not communicate.” The success of an interaction with a child with complex communication needs depends heavily on the interaction skills of the communication partner.
Communication for Students with Multiple Challenges

Introduction
Communication is a major functional skill.

- Every child deserves to communicate in multiple ways.
- Communication is the key to engagement in all environments.
- Receptive language develops before expressive.
- Every child has a story to tell and we must find away to help them tell it.

When an individual cannot communicate, often their communication partners assist with prompts and interpretations. Given this situation, it is not possible to determine if the message source is truly the individual with the disability or the communication partners.

Individuals with severe disabilities often depend upon communication partners to send messages. In some cases, partners play "20 questions" to determine wants, needs, and desires. Examples include:

"Do you want juice or cookies?"
"You want a cookie?"
"Do you want chocolate chip or peanut butter?"
"Oh, you don’t want a cookie, do you want chips?’’

Other times, partners prompt the individual to convey specific messages. For example:

"Tell Mrs. Ice you want the front seat."
"Say thank you!"

Communication partners translate information to third parties, and also to themselves. For example:

"When he makes that face, I know he wants more."

When these experiences happen again and again a child is being taught to be a passive communicative partner which in turn leads to learned helplessness.

Learned helplessness occurs when a student does not attempt to ask for or do things for themselves due to repeated experiences in which the child has not been able to have an effect on other people or the environment. This is likely the result for a child who is unable to act or behave in expected or conventional ways or is helplessness due to a disability. Because family members are not able to interpret or respond to the child's communicative attempts, the child does not discern a relationship between his or her own actions and a response from people or the environment. Learned helplessness is associated with excessive dependence and lowered self-esteem. Children with severe disabilities are at risk for learned helplessness due to:

- Motor, sensory or cognitive impairments that impede their ability to effectively act the environment, or to understand the results of their actions.
- Lack of opportunity to make choices or otherwise be able to determine one's own life.
- Communication impairments that prevent them from being understood by others.
rather a team tool to look at the student and develop the IEP after they answer six key questions that end with “What would an ideal day at school be like for the student?”

3. **Information on Literacy, reading and writing**—look to Copeland, & Keefe, Susan, & Elizabeth (2007). *Effective Literacy Instruction: for students with moderate or severe disabilities*. Baltimore, Maryland: Brookes


5. **Stages Framework** - “Stages is a seven-level developmental framework that describes a learner's cognitive and language abilities. Stages helps schools comply with alternate assessment mandates by providing an accessible way to assess learners with special needs. Stages also serves as a selection guide for curriculum activities (including both software and off-computer activities). The sequence of seven Stages is based on the work of Madalaine Pugliese, a nationally recognized authority in the fields of assistive and instructional technologies. Stages is a seven-level developmental framework that describes a learner's cognitive and language abilities. Stages helps schools comply with alternate assessment mandates by providing an accessible way to assess learners with special needs. Stages also serves as a selection guide for curriculum activities (including both software and off-computer activities).”

This software assists teachers to look at students needs in the following areas:

1. Cause and Effect
2. Language Readiness
3. Emerging language
4. Early Concepts
5. Advanced Concepts and Communication
6. Functional Learning
7. Written expressions

As the team focuses in on the specific academic needs for a student, it has been our experience that when using the ASNAT process the team realizes that for the student to succeed it is less about the tools used and more about supporting communication and positioning for task performance. We also find the team needs support in identifying appropriate IEP goals and consistent teaching strategies. It is for these reasons that we added sections to this chapter on communication and how powered mobility might be addressed.
Each ASNAT chapter has a list of tools or strategies that may need some adaptation to meet the needs of students with multiple disabilities. See the continuum in each targeted academic area.

For additional information on instruction, look at the supports in our Toolbox for Academics.

**Tool Box for Academic Support for students with Multiple Challenges**

1. **Program development: COACH: Choosing Outcomes and Accommodations for Children**
   Support for developing individual education programs in integrated setting.
   Giangreco, Cloninger, & Iverson, Michael F., Chigee J., & Virginia S. (2005). *COACH: Choosing Outcomes and Accommodations for Children*. Baltimore, Maryland: Brookes. This tool assists IEP team members in understanding the relationship between functional and academic skills that are part of the general education curriculum. The COACH includes a set of questionnaires and forms to guide users through a series of interviews and a problem-solving process of divergent and convergent decision-making that results in a list of prioritized objectives that reflect valued life outcomes for individual students. The overall model can be viewed below. In the bull's eye are those priority IEP objectives these priorities are identified as a result of the planning process and includes general learning outcomes (in the second concentric circle) that are expected for all students. IEP teams use COACH to identify the subset of outcomes targeted for instruction and the general supports (in the third circle) that can be used to enable students to meet the prioritized outcomes. Other content can be considered to be part of the student’s curriculum enhancement but not a priority-the third circle. Assistive technology can be used at any level.

   ![The COACH Model](image)

2. **MAPS (Making Action Plans)** is a widely used approach to person-centered planning. MAPS helps bring together the key people in someone's life to develop a support plan developed by Marsha Forest and Jack Pearpoint at the Marsha Forest Center, 24 Thorne Crescent, Toronto, Ontario, Canada M6H 2S5 (416) 658-5363 or FAX 658-5067. This is not a curriculum but
We may start with tasks identified in the general education setting. Wisconsin Adaptive Skills Resource Guide (www.dpi.wi.gov/sped/adaptskills.html) is aligned with the Wisconsin Knowledge Content Standards. Many of the students this chapter supports will utilize the Pre-Requisite Concepts beginning on page 6 of the guide. Here is a math example:

I. Pre-Requisite Concepts

<table>
<thead>
<tr>
<th>Performance Standard</th>
<th>Sample Alternate Performance Indicators</th>
<th>Sample Performance Tasks</th>
<th>Instructional Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math A.4.1 Use reasoning abilities to:</td>
<td>A. Demonstrate visual discrimination</td>
<td>1. Use sensory input to match colors</td>
<td>- flashcards for matching</td>
</tr>
<tr>
<td>- Perceive patterns</td>
<td>B. Use receptive/expressive language</td>
<td>2. Sequence colors to follow a given pattern</td>
<td>- coloring books</td>
</tr>
<tr>
<td>- Identify relationships</td>
<td>C. Recognize similarities and differences</td>
<td>3. Point to requested color</td>
<td>- manipulatives (i.e., vehicles, fruits, animals)</td>
</tr>
<tr>
<td>- Formulate questions for further exploration</td>
<td></td>
<td>4. Name/sign basic colors as requested</td>
<td>- brick blocks</td>
</tr>
<tr>
<td>- Justify strategies</td>
<td></td>
<td>5. Sort by color</td>
<td>- commercial games</td>
</tr>
<tr>
<td>- Test the reasonableness of results</td>
<td></td>
<td>6. Sort by attribute (same/different)</td>
<td>- crayons</td>
</tr>
</tbody>
</table>

Narrowing the Focus

As a team, identify by circling or other means those few tasks the student needs to do in whatever curriculum area has been chosen that will have the most impact. In our experience the goals usually chosen are communication. But they may be asked to communicate about a function curriculum task. So we will be utilizing two applications of assistive technology and possibility three if the positioning issue also needs attention.

Solution Generation: Tools/Strategies

As a team, brainstorm and write on chart paper any assistive technologies and/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for reading. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology.
What do they look like? Can you predict when they occur? How do you deal with them? We find that when we can address the sensory and communications needs of these students challenging behaviors decrease.

**Other Concerns**
List other items that are particular to this student and affect their ability to perform the task.

**Environmental Considerations**
As a team discuss and write on chart paper any environmental considerations that might impact the student’s communication in the classroom, number of different settings or any other environmental impacts.

There may be concerns about the transition from one activity to another within the classroom or across the school environment. Is there an opportunity to slow the transition time down for those students who process differently? Does the student have ready access to a variety of materials (manipulative, picture or tactile supports, real objects, music, e-text, computers, other access materials and supports) that would help them to understand and process content? Can they move around the environment? How is the lighting, sound? Is there a quiet place to work? Is there room for the student to be in a work group with peers? Does the teacher include materials in the lesson that meet the unique learning style of this student? Does the program time respond to the student processing need or does the student need to adjust to a predetermined schedule? What are barriers to this child’s active participation?

**Sensory Considerations**
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student’s learning, identify the sensory levels in each environment in which the student will be communicating.

**Assistive Technology: past and present**
What assistive technology has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist or can be changed such as computer conflicts, lack of training, not transferring to a new building/staff, lack of interest, or other reasons that are no longer present. If the student is currently using assistive technology, note the locations, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference.

**Task(s)**
As a team discuss and write on chart paper the tasks that the student needs to do related to the tasks.
Student’s Abilities and Difficulties
As a team, discuss what the student’s abilities and difficulties are related to communication.

Medical Considerations
Does the child receive medications that might affect their learning or recognition systems? Does their level of awareness change in response to when they receive their medications? If so, we need to take this into consideration when developing instructional programs.

Severe Physical Challenges
Often with significant cognitive involvement there will also be significant physical disability. It is critical that the student’s position be assessed for active engagement in an activity to occur. We also need to determine how accessing the AT is going to be accomplished. If the student does not have hand movement, we may need to consider providing access at the head, or eye gaze. Please see position section of this chapter for further information, as well as Chapter 2 – Assistive Technology for Seating and Positioning.

Cognitive (memory, recognition, strategic and limbic systems, generalizing learning)
As we learn more about how the brain processes information we make better instructional decisions. How does the student respond to a novel tool or environment or person? How many exposures does it take for the student to retrieve or remember that information? Does this recognition only occur in the setting in which the information was learned or can the student apply this learning to unfamiliar settings? How does the student demonstrate they know or recognize information? How does the student feel about school? Are there certain activities they like more than others? How do they demonstrate this? How long does it take to learn new information? How often does the student require repeated practice? Does this change with content?

Sensory Challenges
Most students have a preferred sensory system. This can assist in finding the assistive technology that will support the chosen task. How does their sensory system impact learning? Which is their primary system? Which system affects them negatively? Does this change throughout the day?

A Combination of Sensory and Cognitive Challenges
It will often be the case that there will be both sensory and cognitive challenges. It is important that the assessment team assesses how to approach the implementation of AT with this in mind. Supports such as Every Move Counts, Clicks and Chats can assist in determining sensory influences.

Variability of Abilities from Day to Day or Hour to Hour
Variability of abilities is often a characteristic observed in some students in this category. Teachers will often remark, “The student knew how to do that last week.” There is more than one reason for this. It could have been a skill taught in isolation and not generalized. It may be something that met criteria on one day and was not returned to. There may be some organic issues that are affecting retention, or the task has little meaning to the student. Students can be fully engaged at different times of day. Teachers will need to look at what happens prior to an optimal learning state. Was there: a preceding vestibular activity, a change in position, a long bus ride, or too much noise in the classroom? Many factors can affect these children that other children without these significant disabilities can screen out so they can focus and recall.

Challenging Behaviors
**WATI Assistive Technology Decision Making Guide**

**Area of Concern:  Multiple Challenges- Functional Academics**

Statement about individuals who are unable to perform tasks due to cognitive limitations or because of severe physical involvement, or both.

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Medical conditions</td>
<td>What environmental considerations impact the area of concern?</td>
<td>What task(s) do you want the student to do that relate to the area of concern?</td>
</tr>
<tr>
<td>• Severe physical challenges</td>
<td>• Are there multiple ways representing content?</td>
<td>• Ex. Reacts to objects, activities or interactions by displaying an observable change in behavior.</td>
</tr>
<tr>
<td>• Cognitive challenges (Memory)</td>
<td>• Are multiple means of expressing what the students know supported?</td>
<td>• Directs and sustains attention to activity</td>
</tr>
<tr>
<td>• (recognition, strategic, limbic systems) (ability to generalize information)</td>
<td>• Are there multiple approaches to student engagement accepted.</td>
<td>• Uses objects for intended purposes</td>
</tr>
<tr>
<td>• Or combination</td>
<td>• How flexibility is the scheduling or classroom schedule?</td>
<td></td>
</tr>
<tr>
<td>• Motivating activities</td>
<td>• How much adult support is in the room?</td>
<td></td>
</tr>
<tr>
<td>• Movement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Variability on abilities from day to day or hour to hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Challenging behaviors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Communication abilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Other concerns</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sensory Considerations**

What sensory challenges does the student have that impacts response level, self regulation, recovery time, transition issues i.e. Specific task identified for solution generation

**Narrowing the Focus**

**Solution Generation Tools & Strategies**

- Brainstorming Only
- No Decision
- Review Continuum

**Solution Selection Tools & Strategies**

- Use a Feature Match Process to Discuss & Select Idea from Solution Generation

**Implementation Plan**

AT Trials/Services Needed:
- Objectives to determine effectiveness of trial
- Training needed
- Date
- Length
- Person(s) Responsible

**Follow-Up Plan**

- Who & When
- Set specific date now.

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Using the SETT process and Decision Making Guide

Important: It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory under Student and Environment for Sensory Considerations. Additional categories include Narrowing the Focus to help identify a specific task in order to select appropriate assistive technology, a category for Implementation Plan to assign trials, dates, responsibilities, data collection and also a Follow-Up Plan to set a date for the team to reconvene. Again, this is intended as a guide; during the actual assessment each topic should be written in large print where everyone can see, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

The questions posed are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology for their students.
The State of Wisconsin has established Extended Grade Band Standards in Reading, Mathematics, and Science to guide instruction and curriculum planning for students with significant cognitive disabilities. The extended standards indicate what students with significant cognitive disabilities are expected to know and be able to do academically. The extended standards are used as the basis for the Wisconsin Alternate Assessment for Students with Disabilities (WAA-SwD).

This support assists teachers in developing IEPs that reflect a standards-based approach. This will then further assist them to identify tasks the student needs to accomplish and identify the AT tools that may support them.

At the web site goals look like this:

**READING – Extended Grade Band Instructional Examples: 3-4**

*Model Academic Standard A: Reading*

<table>
<thead>
<tr>
<th>Objective 1: Determine the Meaning of Words and Phrases in Context</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EXTENDED GRADE BAND OBJECTIVE 1A:</strong> Match Words to Pictures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructional Achievement Descriptors</th>
<th>Advanced</th>
<th>Proficient</th>
<th>Basic</th>
<th>Minimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use words or pictures to determine meaning</td>
<td>Match words to pictures</td>
<td>Identify correct object when given two word choices</td>
<td>Identify one picture or object from a set of two</td>
<td></td>
</tr>
<tr>
<td>Take pictures of various places in the school (office, gym, music room, restrooms, etc.). Introduce pictures and words to student. Describe an activity that takes place in a specific place. Have student identify the correct picture and corresponding word card.</td>
<td>Take pictures of various places in the school (office, gym, music room, restrooms, etc.) Prepare word cards for each room. Introduce pictures and words to student. Have student match the name of the place to the picture of the place. Repeat activity with community locations and rooms in the home.</td>
<td>Take pictures of various places in the school (office, gym, music room, restrooms, etc.) Prepare word cards for each room. Introduce pictures and words to students. Hold up one picture and have the student identify the correct name of the place from a choice of two word choices.</td>
<td>Take pictures of various places in the school (office, gym, music room, restrooms, etc.) Introduce pictures to student. Have student identify picture of the requested place from a choice of two.</td>
<td></td>
</tr>
</tbody>
</table>

With this as a guide, we have movement and skill development. A student begins at minimal or basic, and then moves to proficient or advanced. The activity of matching is connected to a real activity in their environment. It begins with a low technology solution, such as photos, and then moves to picture or word cards. As we probe this example we may need to add more support depending on the student’s involving and understanding. We may need to look at which communication symbol best represents the activity (see communication section in this chapter as well as the Chapter 3-Assistive Technology for Communication within this manual).

Functional academics will provide students with skills that allow them to make choices about their care and preferences. This includes engaging in communication that is understood and honored. The communication section of this chapter provides the reader with more information on the importance communication and how this impacts all aspects of this population’s quality of life.

Other supports:
Every Move Counts, Clicks and Chats (2008).
using traditional large-n approaches at worst is impossible, and at best is both extremely difficult and intrusive to the natural dynamic and relationships present in those settings. A number of applicable research methodologies that are less intrusive (e.g., participant observation, case studies, single subject designs) are available that may be necessary either to collect any data related to low incidence populations (e.g., individuals with intensive support needs, dual sensory impairments, or multiple disabilities) or to avoid endangering individual relationships and opportunities for the collection of meaningful data in inclusive settings. These methodologies potentially provide a high level of both reliability and validity and inform practitioners, parents, and educators about effective and scientifically-based practices.

**Thought Point:** As we assess individual students for their assistive technology needs it benefits not only the student but also our field of practice if we develop replicable implementation and data collection methodologies.

TASH also expressed concern about

The passage of the No Child Left Behind (NCLB) Act has dramatically extended research in general education curriculum and instruction, but has lead to a steadily decreasing investment in educational research for individuals with the most significant disabilities, including individuals with intensive support needs, dual sensory impairments, or multiple disabilities.

**Thought Point:** How does this affect students as we implement universal design for learning (UDL) principals? Does UDL include all students? How do we make certain the needs of our most involved students are also considered?


Specific research on functional academics is limited. With the reauthorization of IDEA ‘04 and NCLB there is a new accountability built into programming and assessment. In the past goals for this population may have been along the lines of:

- Will match one out of two colors given a set of two.
- Will hit a switch.
- Will pick up an object and put it into a container.
- Will indicate yes, no.
- Will sit quietly during story.
- Will greet a peer.

Many of these goals did not lend themselves to real learning or measureable outcomes. Switch use can be a tool but to do what activity or to participate in what task? In Wisconsin, the Department of Public Instruction has responded by creating the Wisconsin Extended Grade Band Standards [http://dpi.wi.gov/sped/assmt-extstd.html](http://dpi.wi.gov/sped/assmt-extstd.html).
C. Functional academics
   1. Every student should be provided with curriculum that is engaging and meets their needs.
   2. There is the expectation there is measurable change in goal attainment.
   3. There needs to be a balance between learning outcomes (observable change in the
      student’s behavior) and general supports provided by the staff.

This chapter will also have a Decision Making Guide. We will follow the guide with a Tool box. This departs from the continuums in the other chapters. We encourage you to look at those chapters to see if they provide you with ideas of tools to try with your target student’s task. If you need something else look to the tool box. These are examples of possible supports and do not follow a progression. Resources can be found at the end of this chapter. We also suggest for each category/task the reader look to the main chapters in this manual for further information on specific tasks and the continuum of tools. This chapter is meant to augment the other chapters, not replace them. This is not a chapter on specific teaching techniques. We encourage you to consult the resource section for a more extensive reference list.

Introduction to Functional Academics

Core Beliefs:
   1. Every student should be provided with curriculum that is engaging and meets their needs.
   2. There is the expectation there is measurable change in goal attainment.
   3. There needs to be a balance between learning outcomes (observable change in the
      student’s behavior) and general supports provided by the staff.

Research
Because of the low incidence and heterogeneous nature of this population, research is not as readily available to support implementation of assistive technology or best instructional practices. One of the chief advocacy groups for this population brings two questions to light that need to be considered as we develop environments that support students with significant disabilities.

It is important that teachers have expectations for the students with significant disabilities. This is often a foundation upon which the assessment for assistive technology supports is built. All staff must expect that the technology will provide a student with access to engaged and participatory learning. Research has been done on the affect of teacher attitude on student achievement. For more information, look to the study by:


To further state the situation TASH (The Association for Persons with Severe Handicaps) presented testimony to the Interagency Committee on Disability Research Stakeholder Meeting in Washington on August 13, 2008. Targeting research design for this population:

In addition to the small numbers of, and high degree of variance across, individuals with low-incidence disabilities, exerting experimental controls in inclusive settings
According to IDEA '97:

Multiple disabilities means concomitant impairments (such as mental retardation-blindness, mental retardation-orthopedic impairment, etc.), the combination of which causes such severe educational needs that they cannot be accommodated in special education programs solely for one of the impairments. The term does not include deaf-blindness. Authority: 20 U.S.C. 1401(3)(A) and (B); 1401(26)

According to IDEA '97:

Deaf-blindness means concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational needs that cannot be accommodated in special education programs solely for children with deafness or children with blindness. Authority: 20 U.S.C. 1401(3)(A) and (B); 1401(26)

Purpose

This chapter’s purpose is to augment the content in the other ASNAT chapters by providing some guidance to the ASNAT teams when they are considering assistive technology to support students with multiple, significant and profound disabilities. The original ASNAT process can work for helping teams sort through the options of support for these students with additional questions. These questions clarify how each disability area influences the target task and impacts assistive technology service and tool selection. Often the questions ASNAT team members uncover will require additional information to be gathered with other assessment tools. The tools we include we have found useful in our work. They are not an exhaustive list, but are presented as a starting point to assistive teams to better identify the needs of students. It is also noted that teacher beliefs influence how children succeed. This is so important when dealing with students that require ongoing instructional support and for whom skill attainment requires consistent and thoughtful interventions. To this purpose we have developed what we term “core beliefs” that are intrinsic to teachers’ abilities to adopt high-learning expectations for this diverse group of students. These beliefs often affect the assessment team’s approach to assistive technology and outcome expectations for this population. They will reappear in each section.

Core Beliefs

1. Movement
   1. Every child has the right to move more independently and our job is to make them safe.
   2. Each child must be honored in the process.
   3. Positioning is dynamic and there is no “one” position.
   4. Positioning is task-specific.
   5. Movement is the foundation for all learning.
   6. Transitions are the richest movement of all.

B. Communication
   1. Every child deserves to communicate in multiple ways.
   2. Communication is the key to engagement in all environments.
   3. Every child has a story to tell and we must find a way to help them tell it.
   4. Receptive language develops before expressive.
Chapter 14 – Assistive Technology for Students with Multiple Challenges

Assessing Students’ Needs for Assistive Technology (2009)

Assistive Technology for Students with Multiple Challenges

Jill Gierach MSE ATP, Shelly Weingarten M.Ed, OTR, Mary Beth Werner OTR

Introduction

Students with Multiple Challenges: Who are they?
Students who experience these multiple challenges often require assistive tools and services that are responsive and flexible to the medical, sensory, physical and cognitive challenge they experience daily. By definition of the heterogeneous nature of this population, each child may have fluctuations of attending that make it imperative that teachers are capable of adjusting instruction as well as skilled in utilizing a variety of tools to maximize the instructional moment.

“It is imperative that any set of disability-specific needs not serve to stereotype a student, to lower expectations for a student, or to contribute to negative self-fulfilling prophecies for a student. So-called unique or disability-specific needs should be taken only as possible areas of risk for IEP teams to investigate, not inevitable features automatically conjoined to a specific disability in question”. (Jackson, R., 2005).

The students within this group represent about 1% of the school population. It is suggested by some that we think of this group not in terms of the type of disability label; instead, we recognize that by using the response to instruction (RtI) model’s definition that without specific individualized supports, students will not be able to participate independently at the universal level, or at the targeted level to address their instructional needs. The greatest part of a student’s day will need individual supports provided at the top tier for the instruction to be responsive to their needs. This does not mean to suggest that these students cannot participate in general education environments. It does mean that schools must systematically utilize multiple initiatives to guarantee lasting support and meaningful students outcomes (Coyne, Simonsen, Fraggella-Luby, 2008). These are the students who will require some level of support twenty-four hours a day; these students will require assistive technology to engage in nearly all activities. Often they will require outside assistance to utilize this technology.

We further identify this group of students in the following way: these individuals will depend on significant levels of caregiver support throughout their lifespan. These students are typically not independent in communication, mobility, self-care, or decision-making areas. They have difficulty transitioning from one task to another and from one environment to another. They often have difficulty generalizing skills or applying learning across environments. Their sensory systems are not integrated systems. They may express behaviors that interfere with instruction. They may be categorized as deaf blind and also have other disabilities.
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SMARTBoard Interactive White Boards – www.smarttech.com

UbiDuo Face-to-Face Communicator www.scommonline.com

**Telecommunications Services**
CSD-VRS Communication Service for the Deaf www.c-s-d.org

Hamilton Relay Inc. www.hamiltonrelay.com/states/wi.htm

Hands-On Video Relay Service (HOVRS) www.hovrs.com

Sorenson Communications www.sorenson.com

**Wisconsin-based AT Demonstration Sites**
Assistive Technology Resource Center www.wiatrc.org

Independence First www.independencefirst.org

Stout Vocational Rehabilitation Institute www.svri.uwstout.edu

UniversaLink www.cdhh.org

WATI Lending Library www.wati.org

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**Cochlear Implants / Baha**
Advanced Bionics [www.bionicear.com](http://www.bionicear.com)
Cochlear Americas [www.cochlear.com](http://www.cochlear.com)
Med-El [www.medel.com](http://www.medel.com)

**Hearing Aid Companies**
GN Resound [www.gnresound.com](http://www.gnresound.com)
Micro-Tech [www.hearing-aid.com](http://www.hearing-aid.com)
Rexton [www.rexton-online.com](http://www.rexton-online.com)
Siemens [www usa siemens.com](http://www usa siemens.com)
Starkey [www.starkey.com](http://www.starkey.com)
Unitron [www.unitronhearing.com](http://www.unitronhearing.com)
Widex [www.widexPro.com](http://www.widexPro.com)

**Products**
ADCO Hearing Products [www.adco.com](http://www.adco.com)
Harris Communications [www.harriscomm.com](http://www.harriscomm.com)
Hear More Products for the Deaf and Hard of Hearing [www.hearmore.com](http://www.hearmore.com)

**Signaling Devices**
HiTec Group, Inc [www.hitec.com](http://www.hitec.com)
Sonic Alert [www.sonicalert.com](http://www.sonicalert.com)
Ultratec Inc. [www.ultraatec.com](http://www.ultraatec.com)

**Specific Technology Related Products**
Caption Mic [www.captionmic.com](http://www.captionmic.com)
Digital Pen [www.logitech.com](http://www.logitech.com)
Dragon Naturally Speaking [www.nuance.com/naturallyspeaking](http://www.nuance.com/naturallyspeaking)
iCommunicator [www.mycicomunicator.com](http://www.mycicomunicator.com)
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References and Resources

**Deaf and Hard of Hearing Information**
American Speech Language Hearing Association [www.asha.org](http://www.asha.org)

Hearing Loss Association of America [www.hearingloss.org](http://www.hearingloss.org)

National Association of the Deaf [www.nad.org](http://www.nad.org)


WI Department of Public Instruction [www.dpi.wi.gov](http://www.dpi.wi.gov)

*Students who are Deaf or Hard of Hearing: Eligibility Criteria Guidelines (2003)*
Retrieved December, 2008

WI Educational Services Program for the Deaf and Hard of Hearing (WESPDHH) [www.wesp-dhh.wi.gov](http://www.wesp-dhh.wi.gov)

**Product / Website Resources**

**Assistive Listening Devices**
Audio Enhancement [www.audioenhancement.com](http://www.audioenhancement.com)

LightSPEED Technologies [www.lightspeed-tek.com](http://www.lightspeed-tek.com)

Lifeline [www.lifelineamp.com](http://www.lifelineamp.com)

Oticon [www.oticonus.com](http://www.oticonus.com)

Phonak [www.phonak.com](http://www.phonak.com)

Sonovation [www.avrsono.com](http://www.avrsono.com)

William Sound [www.williamssound.com](http://www.williamssound.com)

**Captioning**
Communication Access Real Time Captioning [www.cartinfo.org](http://www.cartinfo.org)

C-Print Rochester Institute of Technology [www.ntid.rit.edu/CPrint](http://www.ntid.rit.edu/CPrint)

Described Captioned Media Program (DCMP) [www.dcmp.org](http://www.dcmp.org)

Chapter 13 – Assistive Technology for Students who are Deaf or Hard of Hearing

Selection: Tools & Strategies

Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time or require additional or significant staff training.

Implementation Plan

 Depending on the device/s chosen, they may be able to be purchased or loaned for such things as alerting and telecommunication devices. However, many others such as personal amplification or captioning services require specialized equipment or software and/or support personnel including audiologists, trained captionists or interpreters. Determining benefit of a particular device or service should be implemented through a trial period to make sure what was chosen is meeting the needs of the student. Input regarding improved accessibility should be obtained from the student themselves as well as the team and family.
speaker needs to work with the specific device to train it to recognize their voice. Some allow only one user, but others are beginning to recognize multiple speakers.

**Caption Mic**™: With minimal practice, a voice captionist repeats what was said by an instructor into a microphone that converts the information to captioning to be read by the deaf or hard of hearing individual.

**Dragon Naturally Speaking**™: A voice recognition software package that was developed for general public use that can be beneficial for deaf and hard of hearing individuals by creating text documents out of voice files.

**iCommunicator**™: Performs as a communication tool that converts the spoken word into text, instantly translating it into Sign-Language or Computer-Generated Voice, providing access to acoustic information in real-time. This software is able to convert speech to text; speech/text to video sign-language; or speech/text to computer generated voice.

**Video Remote Interpreter:** When an interpreter is not available to attend a function in person, video remote interpreting provides another option. Utilizing a phone or other computer devices or software, an interpreter in another location can listen to a presentation and use sign language to relay the information presented through a web camera or video phone. High-speed Internet service is required to access this type of remote interpreting. The deaf or hard of hearing consumer can view the signed information on a computer or video telephone.

**Real Time Captioning:** Real time captioning provides a typewritten account of all verbal information presented within a lecture, meeting, discussion or presentation. All of these systems require the skills of a trained captionist and specialized software or equipment such as a computer. They typically vary based on the amount of information represented within the visual display of information ranging from summaries to word for word transcription.

**CART (Communication Access Real Time Captioning)** - Provides a word-for-word transcription (similar to a court reporter) using a stenotype machine, laptop computer and real time software.

**CPrint** – Developed as a speech to text communication access system at the National Technical Institute for the Deaf (NTID), a college of Rochester Institute of Technology (RIT). This system condenses information using a meaning-for-meaning translation (not verbatim).

**Remote Captioning:** Rather than having a captionist physically present, the user can listen in using a phone, cell phone, or computer microphone which allows the captionist to transmit the text back to the consumer using a modem, internet or some other data connection.
Example:

**UbiDuo Face to Face Communicator™:** This device consists of two portable battery operated keyboards with displays that have a wireless connection that allow the deaf or hard of hearing person to communicate with a hearing person instantly through typed written messages.

**Group Activities:** Communicating and accessing information within group environments such as lectures, discussions, programs and community events can be especially challenging for deaf or hard of hearing individuals. There are several types of assistive technology that can assist in providing the information through a visual means such as text or sign language. Because there are fewer options and manufacturers for this type of technology, specific examples will be provided within the text as well as websites within the Resources section.

**Note taking:** Often times, deaf or hard of hearing individuals find it difficult to watch the speaker or interpreter and take notes at the same time. Each time they look to their paper, they miss the information that continues to be presented. There are several options for assisting with note taking.

**Copies – teacher / participant notes:** Copies of the teacher’s or another participant’s notes can be provided. Duplication paper can still be obtained or most facilities now have copy machines available.

**Electronic note taking:** An individual can be trained and/or paid to take notes using a computer or portable word processor to provide a written summary of lectures, meetings and discussions.

**Handwriting recognition devices:** There are commercially available products that convert handwritten materials into computer-generated text. Depending on the device, the information can be saved and printed as written or can convert the hand written materials into printed text for easier reading similar to a voice recognition system.

**Digital Pen™:** This system allows the user to combine the use of pen and paper with the power of a computer. The software converts your handwritten notes into digital text. The user can modify the hand written text or convert it to text.

**Interactive Whiteboards (SMART Board™):** The touch-sensitive display connects to your computer and digital projector to show your computer image. The user can then control computer applications directly from the display, write notes in digital ink and save your work to share later.

**Voice to Text / Sign:** There are several commercially-available products that utilize voice recognition software to convert voice to printed text or computer-generated sign language. These devices are seeing increased use for a variety of situations. Sometimes the recognition is not exact and the deaf or hard of hearing consumer must be able to recognize when errors occur. The
camera and TV display is needed as well as high speed internet service. The deaf or hard of hearing person is able to sign for themselves in direct communication with other video phone users.

**Video Relay Service:** In the same fashion as telephone relay, video relay service can be accessed to allow the sign language user to call other hearing people with the assistance of an operator. As with other relay services, the operator identifies themselves and the relay call process. They then proceed to voice interpret the signed message from the caller. They are also able to convert the voice message into sign language for the deaf or hard of hearing person.

**Closed Captioning:**
- **FCC:** The Federal Communication Commission (FCC) has developed regulations related to the provision of closed captioning within public programming. Closed captioning allows for a text display of the spoken dialogue contained within television programs and movies. As of 1993 all televisions with screens larger than 13 inches must have built in captioning. In 2002, the FCC expanded the rule to include all digital television receivers. There are also closed captioning decoders that can access captioning when not available within a television or projection system. Closed captioning encoders allow for captions to be added to live broadcasts or existing materials. In addition, many commercially available movies include captioning within their language or subtitle set-up features. For additional information regarding closed captioning, the reader is referred to the FCC website listed in the Resources section.

- **DCMP:** The Described and Captioned Media Program is a FREE LOAN service that has thousands of educational titles to ‘stream’ and view on a computer immediately or DVD’s for order that can be sent to home or school.

**Person to Person:** Options available for a deaf or hard of hearing person to communicate directly with a hearing person have exploded with the increased use of cell phones with text capabilities, computers with internet service and overall public awareness.

- **Pen / Paper:** The most basic communication tool that can be used between a deaf or hard of hearing person is a pen and paper. Writing notes back and forth can be time consuming, yet effective.

- **Cell Phone / Pager / Text Device:** Numerous texting options are now available through computers, pagers or cell phones for sending text messages, instant messages and email.

- **Computer / Web Camera:** Web cameras combined with high speed internet service have also become more widely used to help deaf or hard of hearing individuals communicate with others.

- **Commercial Devices:** Several devices have been developed to allow deaf or hard of hearing individuals to communicate directly with hearing people by allowing individuals the means to exchange type written messages that can be considerably faster than writing.
phones or external attachments designed specifically for hard of hearing users that provide even greater output levels.

**TDD/TTY:** Telecommunication Device for the Deaf (TDD), previously known as teletype machine (TTY), allows the user to place phone calls using text through a regular phone line. Each TDD has a keyboard with a text screen. A user either needs to connect with another person that has a TDD or use a relay service that can convert the text into voice for the hearing listener receiving the call. Models range from basic to high-end with additional options such as printers, answering machines, and memory to save text or messages. With improvements in technology for phones, pagers, text devices and computer services, the use of the TDD is declining.

**Captioned / Text Telephones:** Similar to the specialized amplified phones or TDD, captioned telephones allow the user to see text of their telephone conversation as well as access relay services.

**Telecommunications / Telephone Relay Service:** When placing a call to another party without a TDD, the deaf or hard of hearing consumer dials into the relay service and provides the phone number they wish to call. The relay operator dials the number and explains the relay service and how to use it. Once the two parties are connected, the operator will voice all of the text messages for the hearing person and convert all of their verbal replies into text for the deaf or hard of hearing caller. This process also works in reverse when a hearing person wants to contact a deaf or hard of hearing person.

**Telecommunications / Telephone Relay with Voice Carry Over (VCO):** Another component of using the relay service is for deaf or hard of hearing callers who can voice for themselves, but cannot hear on the phone. They can utilize the relay service to have what is said by the hearing person they called typed for them to read and they can speak for themselves.

**Computer / Web Camera:** Many individuals utilize the combination of a web camera and computer Internet service to be able to visually connect with others. This readily available technology has been used increasingly by deaf and hard of hearing individuals to expand their communication options. This set-up can be utilized to access an IP relay service using sign language instead of text.

**Internet Protocol Relay (IP):** The increasing use of computers has resulted in additional telecommunication services for deaf or hard of hearing individuals. Callers can now use their computers to place phone calls through a relay service rather than their phone and TDD. The concept is the same; the deaf or hard of hearing person uses their computer to connect with an IP relay service. The operator places the call, identifies themselves and the relay service, and facilitates the exchange of information through text and voicing.

**Video Phone:** One of the newest telecommunication devices available for deaf or hard of hearing callers that communicate through sign language is a video phone. A small
Chapter 13 – Assistive Technology for Students who are Deaf or Hard of Hearing

**BAHA™ – Bone Anchored Hearing Aid:** The BAHA is another surgically implanted device available through Cochlear Americas that is most often utilized in cases of severe conductive hearing loss related to anatomical malformations, chronic middle ear problems or Single Sided Deafness™. There is a soft headband option that can be utilized until surgery can be completed at approximately five years of age. This device is also compatible with ALDs.

**Alerting Devices**
Alerting devices typically provide an amplified and/or visual signal or vibration used to get the attention of the deaf or hard of hearing individual. They can be used for public emergency alerts like fire alarms and tornados or for every day situations like the telephone ringing or a baby crying. Many offer both household and travel sized versions. For alerting devices, there are numerous clearinghouses for purchasing devices as well as lending libraries or demonstration centers. The reader is referred to the Resource section for additional information. Devices that can be utilized with alerting technology include the following:

- Baby Monitor
- Clock / Watch
- Computer
- Door Bell / Knock
- Fire / Carbon Monoxide Detector
- Telephone / Cell Phone
- Weather

**Communication Supports**
Within Communication, assistive technology devices have been divided into three subcategories: telecommunication services; person-to-person interactions; and group activities. As before, general explanations will be given with additional contact information provided within the Resources section.

**Telecommunication:**

**Cell Phone / Pager / Text Device:** Many commercially available devices can be used by deaf and hard of hearing consumers without modifications. Cell phones may list that they are hearing aid compatible, supporting the use of telecoil/telephone switches to utilize the electromagnetic energy within the phone itself. In addition, any pager or cell phone that has text capabilities can now be used for sending text messages, instant messages, or email.

**Amplified Phone / Phone Amplifier:** A phone may have a built in amplifier or may be connected to an external amplifier. Regardless if the amplification is internal or external, it allows the user to increase the overall volume to their comfort level. This feature is available to some extent in regular phones and cell phones, but there are also specialized
permanently installed within the walls or ceiling of larger areas like theaters, auditoriums or churches. For individuals to access this type of technology, they must have a Telecoil (t-coil) within their hearing aids.

**One-to-one communicators:** These types of systems tend to require that the listener and sound source are close together because the transmitter and receiver are connected by a wire or cord that transmits the sound. The person using the system can adjust the volume as needed to hear conversation from another person, listen to TV, or while riding in the car.

**Personal Amplification**
These devices are designed to provide an individual with increased access to sound across all environments. They are chosen based on an individual’s preferences, degree and configuration of hearing loss, and special features. Devices in this category must be obtained and fitted through an audiologist. Although many sources do not consider personal amplification as assistive technology, assistive listening devices and other auditory-based devices (MP3, TV, computer) may be connected through these systems, so they will be explained briefly. Also, some funding sources provide resources for personal amplification under the category of assistive technology.

**Hearing Aid:** There are numerous manufacturers of hearing aids, but all have the same basic components and purpose of amplifying sound. Styles of hearing aids include behind-the-ear (BTE); in-the-ear (ITE); and in-the-canal (ITC). They vary based primarily on size and features. In the past, most hearing aids had analog circuits that processed sound in a linear fashion so that what came in was made louder in equal amounts. Today with improvements in technology, most hearing aids are digital and programmable which allows them to be set very specifically based on each individual’s hearing level at different frequencies. Many have special processing capabilities that help improve speech recognition, noise reduction, and overall performance. Many hearing aids include a telecoil (t-coil) or telephone switch that allows the user to access the electromagnetic energy in telephones as well as many publicly available assistive listening devices (ALDs). There is also the option of having a hearing aid integrated with an FM system that does not require direct audio input (DAI) or connection to other devices.

The following two devices are not assistive technology as defined by law (IDEA I.). School personnel may need to understand them in order to appropriately use compatible assistive listening devices.

**Cochlear Implant:** A cochlear implant (CI) is a surgically-implanted device that converts sound energy into electrical stimuli that can be processed by the auditory nerve. There are specific criteria that must be met in order for a person to be a CI candidate. There are three CI manufacturers: Advanced Bionics; Cochlear Americas; and Med-El. Readers are referred to their websites within the Resources section for additional information. Most offer multiple options including body worn and ear level processors. Most have the ability to connect to assistive listening devices (ALDs) and other external devices.
Chapter 13 – Assistive Technology for Students who are Deaf or Hard of Hearing

Hearing Technology

Hearing Technology can broadly be defined as any device utilized for improving the level of sound available to a listener. Hearing technology can further be divided into two general subcategories of assistive listening devices (ALD) or personal amplification. Assistive listening devices can be utilized by individuals or large groups of people and can typically be accessed without the support of specific personnel. Personal amplification is chosen specific to the needs of an individual based on their level of hearing and requires the support of an audiologist to determine candidacy for different devices and appropriately fit and adjust the chosen device.

Assistive Listening Devices

These devices typically are used to improve the signal-to-noise ratio in any given situation. In addition to increased volume, ALDs provide the listener with a direct connection to the sound source and help minimize the effects of background noise, distance and room acoustics. There are both individual ALDs and public or large group ALDs. All ALDs utilize a transmitter that sends a person’s voice or other sound source to a receiver that distributes the sound evenly throughout a room such as in theaters and churches or directly to an individual. Sound is transmitted in four primary ways: Frequency Modulation (FM); Infrared (light); Induction Loop (electromagnetic); or through a direct connection. Some hearing aids have a special connection option called Direct Audio Input (DAI) that allows the user to connect directly to an FM system or Induction Loop receiver. In many instances, one can even connect directly to other devices such as a computer, TV, MP3, iPod, or radio.

**FM:** With FM or Frequency Modulation systems, the sound is transmitted on a specific frequency or channel similar to a radio. The Federal Communications Commission (FCC) has designated specific frequencies for these types of systems. FM systems can be used for whole rooms or by individuals. Large areas can be set up with single or multiple speakers depending on the size of the room. These systems can be permanently installed in a given location or there are also several versions that are portable. Individual systems typically have a receiver that looks like a Walkman or MP3 player and uses different styles of earphones or headsets and may be useful for 1:1 communication, car rides, and watching TV. With miniaturization, there are now small receivers that can be connected directly to a person’s hearing aids through Direct Audio Input (DAI). Any time an FM system is coupled to a hearing aid, special settings and connections are required from an audiologist. Sometimes when several FM based systems are used in the same building, there can be problems with cross over between rooms and channels.

**Infrared:** These systems utilize light waves to transmit sound from the transmitter to a special light sensitive receiver. The signal can be broadcast to a whole room through speakers or a person can wear an individual receiver. There must be a clear line of connection between the transmitter and receiver so that the light signal is not interrupted. The benefit of infrared systems is that they only work in the room where the transmitter and receiver are located resulting in significantly fewer issues with cross-over. These systems can be sensitive to external light sources or interfering objects.

**Induction Loop:** Induction loop systems utilize electromagnetic energy to transmit the signal. These systems can cover a small area with a loop placed under a rug or may be
## A Chart with Examples For the Continuum Of Considerations For Assistive Technology For Individuals Who Are Deaf Or Hard Of Hearing

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<td>• Telephone / Cell Phone</td>
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<td>• Weather</td>
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<td><strong>Closed Captioning:</strong></td>
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<td>• Hearing Aid</td>
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<tr>
<td>• TTY/TDD</td>
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<tr>
<td>• Captioned Telephone</td>
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<td><strong>Person to Person:</strong></td>
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<tr>
<td>• Pen / Paper</td>
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<tr>
<td>• Cell Phone / Pager / Text Device</td>
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<td>• Computer / Web Camera</td>
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<td>• Commercial Devices</td>
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<td>• UbiDuo</td>
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<td><strong>Group Activities:</strong></td>
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<td><strong>Note taking:</strong></td>
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<td>• Copies</td>
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<td>• Computer-assisted note taking</td>
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<td>• Handwriting recognition Devices:</td>
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<td>• Digital Pen</td>
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<tr>
<td>• White Board</td>
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<td><strong>Voice to Text/Sign:</strong></td>
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<tr>
<td>• Caption Mic</td>
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<td>• Dragon Naturally Speaking</td>
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<td>• iCommunicator</td>
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<td>• Video Remote Interpreter</td>
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<td>• Remote Captioning</td>
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</table>
Chapter 13 – Assistive Technology for Students who are Deaf or Hard of Hearing

A Continuum of Considerations for Assistive Technology for Individuals who are Deaf or Hard of Hearing

**Hearing technology**
- FM
- Infrared
- Induction Loop
- 1:1 Communicators
- Personal Amplification

**Alerting**
- Visual or Vibrating Alerting Devices

**Communication**
- Telecommunication supports (cell phone/pager, amplifier, TTY, captioned phone)
- Closed Captioning (FCC, DCMP)
- Person to Person (pen/paper, texting device, computer w/webcam, portable texting device)
- Classroom/Group Activities (print copies, electronic notetaking, handwriting recognition devices)
- Voice To Text/Sign (voice recognition, text devices)
- Real Time Captioning
Chapter 13 – Assistive Technology for Students who are Deaf or Hard of Hearing

Tasks
The goal of this chapter is to increase awareness of the challenges faced by deaf or hard of hearing students to access information to the same extent as other students. Each team needs to be knowledgeable about how a given student uses their residual hearing, vision and other senses to access information in different environments. Be specific when outlining the tasks that need to be supported. Rather than stating “participate in class”, state “give class presentation” or “participate in small group discussions.”

Narrowing the Focus
As mentioned in other chapters and based on the Assistive Technology Decision Making Guide, the team should generate a list of tasks or activities and the associated challenges with accessing information. This will allow the team to identify the greatest challenges and prioritize what can be done to support the student. The goal is to provide the deaf or hard of hearing student access to all of the information others access through their hearing, and a way to demonstrate their understanding.

Solution Generation-Tools and Strategies
Often there are multiple solutions and outlining them through brainstorming and using a feature match process can help determine which have the greatest impact across the most environments. Readers are reminded that each deaf or hard of hearing student will access information differently and what works for one may not necessarily work equally as well for another. Assistive technology for deaf or hard of hearing students often has profound impact on their ability to access information and be part of a community, both for school and home. Some devices are more appropriate for school environments while others are more home and community based. This chapter has attempted to introduce the reader to general categories of devices as well as a few specific tools. It is important for the team to remember that accessibility needs are highly variable and may require different technologies over time, within different environments and even among students. Support from a teacher of the deaf and hard of hearing and/or educational audiologist will help the team identify strengths and challenges for each individual student.

Classifications Of Technology
Assistive technology for the deaf or hard of hearing can be grouped into three general categories: Hearing technology; alerting devices; and communication supports. Within each category, there are numerous manufacturers and a multitude of models that are updated and improved frequently. Due to the large number of devices and ever changing technology, general explanations of each type will be given and the reader will be directed to the Resource section to obtain a sampling of manufacturer websites for additional information or to resource locations that provide demonstrations or lending of multiple products. Related to deaf and hard of hearing technology, it is often difficult to maintain a hierarchy of “low to high” technology. Most often, the decision for one type over another is based on particular needs related to specific features and may vary over time or for different environments or situations. To the extent possible, technologies will be explained in a “low to high” order.
Distance
How far is the student seated from the teacher, interpreter, other students or alternate sound sources like televisions and announcements? Often deaf or hard of hearing students are seated in the front seat of a classroom, typically known as preferential seating. However, most teachers move about their classrooms while lecturing, so that the distance between them and the students varies. The farther a student is from the speaker or sound source, the softer the sound they receive. Sometimes, deaf or hard of hearing students can access spoken messages when they are close to the speaker, but they may not be able to do the same for peers located across the room.

Visual access
How well can the student see everything that is happening in different locations? Are there visual alarms? How is the student provided with access to announcements? Deaf or hard of hearing students often rely on their vision to provide information they may not have access to through their hearing. As previously mentioned, preferential seating typically involves the student sitting in the first seat. In reality, moving a student to a second or third seat provides them with more visual access to happenings within the class. They can see what some of the other students are doing without having to turn around. Arranging seats in a “U” shape or circle provides the greatest visual access. If a student relies on lip reading, they often need to physically turn in their seat to determine who is speaking and see what is being said. When a teacher turns to write on the board and continues to lecture, the deaf or hard of hearing student cannot continue to visually access what is being said. The same applies for note taking; every time a student looks to their paper, they lose visual contact with the speaker or interpreter. For many deaf or hard of hearing students, visual alarms are necessary for them to know when there is a fire or tornado drill. In addition, public address systems may have reduced sound quality that makes it difficult for deaf or hard of hearing students to access daily school updates. A written copy of announcements insures that deaf or hard of hearing students receive the same information as their peers.

Lighting
What type of lighting is available? Fluorescent lights are present in most school environments. These lights often emit additional background noise. Inadequate lighting or large banks of windows can be challenging for deaf or hard of hearing students because they cannot see the speakers face well or an interpreter may be located in shadows. Arranging seating accordingly can help minimize these effects.

Available Technology
Many schools have implemented technology that improves access for all students. Technology such as computers, televised announcements, sound field amplification systems, and interactive white boards can have positive impacts for all students, but especially those that are deaf or hard of hearing.

Sensory Considerations
In addition to being deaf or hard of hearing, these students may have the same kinds of sensory challenges that other students face. Any additional challenges need to be addressed accordingly, but are beyond the scope of this chapter. See Chapter 14 - Assistive Technology for Students with Multiple Challenges for information on students who may be deaf blind and have cognitive disabilities.
Chapter 13 – Assistive Technology for Students who are Deaf or Hard of Hearing

Student Abilities and Difficulties

Each deaf or hard of hearing student performs differently in regards to how they utilize their residual hearing, are affected by different environments, and benefit from technology. As a team, discuss the student’s abilities and difficulties related to accessing different types of information across different environments, tasks and situations. Some questions to consider may include:

- How does the student utilize their residual hearing?
- What type/s of hearing technology is the student using or has been used in the past?
- Do they use sign language and/or an interpreter?
- Can they access what the teacher says at the front of the room, while the teacher walks around, or with their back turned to the class while writing on the board?
- Can they access what their peers say during class discussions or group activities or while in challenging environments?
- Do they have access to fire/tornado alarms? Announcements?
- Are movies/videos shown in class? Do the student, family and staff know how to access captioning?
- How do they communicate with others – family, peers, and community?
- Is the student able to take notes and watch the teacher/interpreter effectively?
- How do they access information during group activities – lectures, programs, or events?

Environmental Considerations

Happenings in the environment can have a significant impact on a deaf or hard of hearing student’s ability to access information. One of the greatest challenges can be that extraneous factors are constantly changing from moment to moment, and from classroom to classroom; and most often are beyond the control of the student. A few areas to consider include:

**Noise**

What is the level of background noise from students, equipment like computers and overheads, and heating/cooling systems? Are there extraneous noises from neighboring classrooms, streets, playgrounds or hallways? Noise is present in every classroom to some extent and varies constantly. Background noise affects everyone’s ability to hear and understand what is said. Noise has even greater impact on deaf and hard of hearing students because it tends to mask or cover over speech.

**Room acoustics**

What do the physical spaces the student spends time in look like? Surfaces (walls, windows, tile) and objects within every room interact to produce reverberation in response to sound. Reverberation refers to how much sound echoes in a given space and causes sound to become smeared or unclear. Every room has some amount of reverberation, but gymnasiums, cafeterias, auditoriums and music rooms tend to be more challenging listening environments. Smaller spaces and sound absorbing surfaces like carpet and acoustic ceiling tiles tend to have lower reverberations effects.
**WATI Assistive Technology Decision Making Guide**

**Area of Concern:** Hearing

<table>
<thead>
<tr>
<th><strong>Problem Identification</strong></th>
<th><strong>Tasks</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student’s Abilities/Difficulties</strong></td>
<td><strong>Environmental Considerations</strong></td>
</tr>
<tr>
<td>What are the student’s abilities &amp; difficulties related to accessing auditory information?</td>
<td>What environmental considerations impact the area of concern?</td>
</tr>
<tr>
<td>• Benefit of assistive listening devices/personal amplification</td>
<td>• Noise</td>
</tr>
<tr>
<td>• Teacher/peers/announcements</td>
<td>• Room Acoustics</td>
</tr>
<tr>
<td>• Access to alarms/warnings</td>
<td>• Distance</td>
</tr>
<tr>
<td>• Telephone</td>
<td>• Visual Access</td>
</tr>
<tr>
<td>• Programs/Movies/DVDs</td>
<td>• Lighting</td>
</tr>
<tr>
<td>• Person to Person</td>
<td>• Available Technology</td>
</tr>
<tr>
<td>• Group Activities</td>
<td></td>
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<tr>
<td>• Note-taking</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Sensory Considerations</strong></th>
<th><strong>Narrowing the Focus</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>What sensory challenges does the student have that impacts this area of concern? (i.e., visual, auditory, tactile)</td>
<td>i.e. Identify specific task(s) for solution generation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Solution Generation Tools &amp; Strategies</strong></th>
<th><strong>Solution Selection Tools &amp; Strategies</strong></th>
<th><strong>Implementation Plan</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorming only</td>
<td>Use a feature match process to discuss and select ideas(s) from Solution Generation</td>
<td>AT Trials/Services Needed:</td>
</tr>
<tr>
<td>No decisions yet</td>
<td></td>
<td>Date</td>
</tr>
<tr>
<td>Review the area continuum</td>
<td></td>
<td>Length</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Person responsible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Formulate objectives/criteria to determine success of trial/AT</td>
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<td></td>
<td></td>
<td><strong>Follow-Up Plan</strong></td>
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<tr>
<td></td>
<td></td>
<td>Who &amp; When</td>
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<td></td>
<td></td>
<td>Set specific date/s now</td>
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</tbody>
</table>

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Deaf: In the adult community, the term Deaf does not connote nor describe the degree of hearing impairment but rather an affiliation with the community of people who are deaf and use American Sign Language (ASL) to communicate. Deaf students may demonstrate the ability to speak or speech-read well in certain situations.

Deafness: This term indicates a hearing loss so severe that processing of linguistic information through hearing alone, with or without hearing aids, is severely limited. Students with cochlear implants are considered physically deaf even though they may function as hard of hearing. Deafness is not solely dependent on ability to speak or need to use sign language.

Hard of Hearing: This term describes a degree of hearing loss that allows the student to process acoustic information necessary for auditory-verbal communication, with the assistance of hearing aids or assistive listening devices (ALD) when needed. Yet the amount of hearing loss is not an accurate predictor of how one functions auditorally. The audiologic evaluation does not reliably predict the student’s ability to hear with comprehension. Some hard of hearing students function very well with hearing aids and ALDs while some may require sign language to understand classroom instruction or conversation, especially in noisy situations.
ASSISTIVE TECHNOLOGY FOR INDIVIDUALS WHO ARE DEAF OR HARD OF HEARING

Stacie Heckendorf, Educational Audiology Consultant
WI Educational Services Program for the Deaf and Hard of Hearing (WESP-DHH) Outreach
A Program of the WI Department of Public Instruction

Individuals who are deaf or hard of hearing utilize a variety of assistive technologies that provide them with improved accessibility in numerous environments. Most devices either provide amplified sound or alternate ways to access information through vision and/or vibration. These technologies can be grouped into three general categories: hearing technology; alerting devices; and communication supports. Within each main category there may be subcategories based on different purposes or intended audiences when utilizing the technology. The overall goal of all of these devices is improved accessibility to information most people gain through their hearing. The following descriptions related to these tools are intended to provide the reader with a better understanding of their purpose and when and how they might be utilized. Depending on their needs in specific situations, deaf and hard of hearing individuals may require assistive technologies. At times these assistive technologies may be used simultaneously. Many devices developed for use by deaf or hard of hearing individuals may also be beneficial to others without hearing loss; however, this information would be beyond the scope of this chapter. The information provided is considered to be comprehensive for the purpose of assisting the reader with a general understanding of assistive technology typically utilized by deaf or hard of hearing individuals. Every device, manufacturer and resource, however, cannot be realistically listed, due to ever changing technology and websites.

The description of a person’s hearing loss is often based on their level of hearing at different frequencies as measured by an audiologist. Hearing loss levels are often broadly described as mild, moderate, severe and profound. Generalizations based on these single word descriptors often do not accurately predict an individual’s skills across a variety of tasks such as speech, language, listening, communication mode, etc. The terminology “deaf” and “hard of hearing” used to describe individuals with hearing loss is based on a medical model and definition of hearing loss levels. How an individual views him/herself, however, can depend on self-identity and cultural values related to or separate from the status of their hearing. For example, a person who has a level of hearing that may be medically described as hard of hearing (a person diagnosed with a “moderate” or “severe” hearing loss) may actually identify him/herself as Deaf based on their preferred communication mode, cultural values, and self-identity. Regardless of definition, many deaf and hard of hearing people do not support the use of negative descriptors such as hearing loss, impairment, or disability. A basic description that attempts to address both medical and cultural perspectives of the differences between deaf and hard of hearing will be provided. It is not the purpose of this chapter to define these various points of view in-depth, but rather to describe assistive technology that supports deaf and hard of hearing individuals across a variety of environments. The WI Department of Public Instruction provides a general description of the differences between deaf and hard of hearing within their publication “Students who are Deaf or Hard of Hearing: Eligibility Criteria Guidelines (2003)” as follows:
Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

Testimonials

- http://www.dolphinuk.co.uk/dolphin.asp?id=23

Useful resources

- www.aph.org/webfeat/index.html - Web accessibility
- www.aph.org – Catalogs with a large collection of assistive technology for different areas
- http://wwwafb.org/aw/main.asp - AccessWorld is an assistive technology journal with up-to-date articles related to technological breakthroughs in the area of visual impairments.
- www.wcbvi.k12.wi.us – Wisconsin Center for the Blind and Visually Impaired
- www.badgerassoc.org - Badger Association Of The Blind And Visually Impaired
- www.able.org – Services that prepare text in alternative formats like Braille or audio

For information on supports for Deaf/Blind severe disabilities, see Chapter 14 – Assistive Technology for Students with Multiple Challenges

Formats

There are many different formats in which data is saved and stored. Some, like TXT or ASCII are open, meaning many programs are able to recognize it. There are also some that are proprietary meaning that only specific software can handle them, e.g. KESI, WYNN, etc.

- Open vs. Proprietary formats http://www.openformats.org/en
- DAISY http://www.bookshare.org/web/SupportDaisy.html
- BRF http://www.bookshare.org/web/AboutFormats.html
- PDF http://winplanet.webopedia.com/TERM/P/PDF.html
- ASCII http://www.webopedia.com/TERM/A/ASCII.html
Solution Selection Tools & Strategies
Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the educational tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, those that can be done in a reasonable time period and those that will be considered at a later time or require additional or significant staff training.

Implementation Plan
After tools have been selected and prioritized, identify any trials or services that are needed including: procurement of trial materials; team member(s) responsibilities; start date and length of trial; training needed; and any other student/staff specific issues. Be certain to identify learning objectives and criteria of performance to determine the effectiveness of the trials.

Assessment
As the team completes the SETT process, questions may arise about the student’s ability to perform certain educational tasks. Various informal assessments (see Assessments section) or teacher observations may answer those questions, however, adapted, specialized or alternative assessments may be needed.
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<thead>
<tr>
<th>Type</th>
<th>Product</th>
<th>Company</th>
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<tbody>
<tr>
<td>Text-to-Braille translation software</td>
<td>Braille Maker</td>
<td>Cragside AccessABILITY Ltd</td>
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<td>Braille Music Translator suite</td>
<td>Dancing Dots</td>
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<td>Duxbury, Perky Duck</td>
<td>DuxburySystems</td>
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<td>MegaDots</td>
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<td>iBraille for Mac</td>
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<td>OpusDots Lite</td>
<td>Opus Technologies</td>
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<td>Monty</td>
<td>Quantum Technology</td>
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<td>Braille Master</td>
<td>Robotron</td>
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<td>KWIKBRL</td>
<td>Sensory Software</td>
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<td>Port. Writers</td>
<td>Alphasmart, Neo</td>
<td>Alphasmart</td>
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<tr>
<td></td>
<td>Fusion, Writer</td>
<td>Advanced Keyboard Technologies, Inc.</td>
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<tr>
<td>E-text reader</td>
<td>ClassMate Reader</td>
<td>HumanWare</td>
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### Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

#### Blindness

<table>
<thead>
<tr>
<th>Product</th>
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<tr>
<td>Gemini embosser (Braille+print)</td>
<td>Nippon Telesoft</td>
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<tr>
<td>Versa Point</td>
<td>TeleSensory Corporation</td>
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<tr>
<td>Emprint (Braille+print), ViewPlus Pro, Cub, Max</td>
<td>ViewPlus</td>
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<tr>
<td>InteliKeys</td>
<td>Cambium Learning Technologies</td>
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<tr>
<td>Talking Tactile Tablet</td>
<td>Touch Graphics</td>
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<tr>
<td>IVEO</td>
<td>ViewPlus</td>
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<tr>
<td>ScannaR</td>
<td>Baum Retec</td>
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<tr>
<td>Milestone 311/312</td>
<td>Bones</td>
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<tr>
<td>Cybook</td>
<td>Bookeen</td>
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<tr>
<td>Cicero</td>
<td>Dolphin</td>
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<tr>
<td>Sara</td>
<td>FreedomScientific</td>
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<td>MobilEyes</td>
<td>Guerilla Technologies</td>
</tr>
<tr>
<td>Bookworm</td>
<td>HandyTech</td>
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<td>Victor Reader, Vibe, ClassicX, Stream</td>
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<td>K-NFB Reader</td>
<td>Kurzweil – NFB</td>
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<td>Plextalk Series</td>
<td>Plextor</td>
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<td>BookCourier</td>
<td>Springer Design</td>
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<thead>
<tr>
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<td>EasyReader</td>
<td>Dolphin</td>
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<tr>
<td>EasyProducer</td>
<td>Dolphin</td>
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<td>OpenBook</td>
<td>FreedomScientific</td>
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<tr>
<td>FSReader</td>
<td>FreedomScientific</td>
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<td>Kurzweil 1000</td>
<td>Kurzweil Educational Systems</td>
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<td>TextAloud</td>
<td>NextUp</td>
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<td>Text-to-Audio, ScanPro</td>
<td>Premier Assistive Technology</td>
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<tr>
<td>INFORM</td>
<td>Sensory Software</td>
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<tr>
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<td>StreetTalk</td>
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<tr>
<td>Trekker / Breeze GPS</td>
<td>HumanWare</td>
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<tr>
<td>BrailleNote GPS</td>
<td>HumanWare</td>
</tr>
<tr>
<td>Mukana</td>
<td>Slashphone</td>
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<tr>
<td>Wayfinder Access</td>
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## Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

<table>
<thead>
<tr>
<th>Type</th>
<th>Product</th>
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</tr>
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<tbody>
<tr>
<td><strong>Blindness</strong></td>
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<tr>
<td><strong>Braille writers/PDAs</strong></td>
<td>PacMate, Type Lite</td>
<td>FreedomScientific</td>
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<td>Braille Lite, Braille’n’Speak</td>
<td>FreedomScientific</td>
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<td>BrailleSense</td>
<td>GW Micro</td>
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<td></td>
<td>Small-Talk</td>
<td>GW Micro</td>
</tr>
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<td></td>
<td>Braillino</td>
<td>Handy Tech</td>
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<td></td>
<td>BrailleNote</td>
<td>HumanWare</td>
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<tr>
<td></td>
<td>VoiceNote</td>
<td>HumanWare</td>
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<tr>
<td></td>
<td>Maestro</td>
<td>HumanWare</td>
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<tr>
<td></td>
<td>EasyLink</td>
<td>Optelec</td>
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<tr>
<td></td>
<td>Mountbatten Brailler</td>
<td>Quantum Technology</td>
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<tr>
<td></td>
<td>TatraPoint</td>
<td>Bronislav Mamojka</td>
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<tr>
<td></td>
<td>Perkins Brailler</td>
<td>Howe Press (Perkins)</td>
</tr>
<tr>
<td><strong>Screen Readers</strong></td>
<td>Hall</td>
<td>Dolphin</td>
</tr>
<tr>
<td></td>
<td>Jaws</td>
<td>FreedomScientific</td>
</tr>
<tr>
<td></td>
<td>Window-Eyes</td>
<td>GW Micro</td>
</tr>
<tr>
<td></td>
<td>Thunder-RJ</td>
<td>RJ Cooper</td>
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<tr>
<td></td>
<td>Lifestyle, the System Access</td>
<td>Serotek</td>
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<tr>
<td></td>
<td>Mobile Network</td>
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<tr>
<td><strong>Refreshable Braille Displays</strong></td>
<td>Vario</td>
<td>BAUM</td>
</tr>
<tr>
<td></td>
<td>Focus</td>
<td>FreedomScientific</td>
</tr>
<tr>
<td></td>
<td>Braille Star</td>
<td>Handy Tech</td>
</tr>
<tr>
<td></td>
<td>Handitech</td>
<td>Handy Tech</td>
</tr>
<tr>
<td></td>
<td>Braille Wave</td>
<td>Handy Tech</td>
</tr>
<tr>
<td></td>
<td>Brailliant</td>
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<tr>
<td></td>
<td>Alva</td>
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<td>Delphi</td>
<td>Optelec</td>
</tr>
<tr>
<td></td>
<td>Voyager</td>
<td>Optelec</td>
</tr>
<tr>
<td></td>
<td>Elba</td>
<td>Papenmeier</td>
</tr>
<tr>
<td></td>
<td>BRAILLEX</td>
<td>Papenmeier</td>
</tr>
<tr>
<td><strong>Braille printers (embossers)</strong></td>
<td>Braille BookMaker, Marathon</td>
<td>Enabling Technologies</td>
</tr>
<tr>
<td></td>
<td>Braille Express</td>
<td>Enabling Technologies</td>
</tr>
<tr>
<td></td>
<td>BraillePlace</td>
<td>Enabling Technologies</td>
</tr>
<tr>
<td></td>
<td>Juliet, ET, Romeo</td>
<td>Enabling Technologies</td>
</tr>
<tr>
<td></td>
<td>Triple Impressions</td>
<td>Enabling Technologies</td>
</tr>
<tr>
<td></td>
<td>Braille Blazer</td>
<td>FreedomScientific</td>
</tr>
<tr>
<td></td>
<td>Basic S/D, 4x4 Pro, Everest</td>
<td>Index Braille</td>
</tr>
</tbody>
</table>
### Products for Low Vision and Blindness

The table below is a comprehensive list of products for people who are blind or have low vision. By no means is this list complete. More detailed information of the products can be found on the companies’ websites. The manufacturers’ sites will also have the most updated inventory of their products. Many offer free 30 day trials of their software. American Foundation for the Blind is another informative resource; they offer a huge searchable database of products. You can browse by category, manufacturer, or task. On the Home page – [www.afb.org](http://www.afb.org) - click Product Search and then method by which you want to locate desired products.

<table>
<thead>
<tr>
<th>Type</th>
<th>Product</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnifying software</td>
<td>ZoomText</td>
<td>AiSquared</td>
</tr>
<tr>
<td></td>
<td>BigShot</td>
<td>AiSquared</td>
</tr>
<tr>
<td></td>
<td>Dual with Solo</td>
<td>Claro</td>
</tr>
<tr>
<td></td>
<td>Lunar</td>
<td>Dolphin</td>
</tr>
<tr>
<td></td>
<td>SuperNova</td>
<td>Dolphin</td>
</tr>
<tr>
<td></td>
<td>MAGic</td>
<td>FreedomScientific</td>
</tr>
<tr>
<td></td>
<td>iZoom 1.2, iZoom2Go</td>
<td>Issist</td>
</tr>
<tr>
<td></td>
<td>VisioVoice (Mac)</td>
<td>Origin Instruments</td>
</tr>
<tr>
<td></td>
<td>Lighting</td>
<td>Sensory Software</td>
</tr>
<tr>
<td>Low Vision</td>
<td>QuickLook</td>
<td>Ash Technologies</td>
</tr>
<tr>
<td></td>
<td>Fusion</td>
<td>Ash Technologies</td>
</tr>
<tr>
<td></td>
<td>Liberty</td>
<td>Ash Technologies</td>
</tr>
<tr>
<td></td>
<td>OPTi Verso (distance)</td>
<td>Ash Technologies</td>
</tr>
<tr>
<td></td>
<td>Prisma</td>
<td>Ash Technologies</td>
</tr>
<tr>
<td></td>
<td>Optic magnifiers</td>
<td>Bausch &amp; Lomb; Eschenbach</td>
</tr>
<tr>
<td></td>
<td>Clarity Series (distance), i-vu</td>
<td>Clarity</td>
</tr>
<tr>
<td></td>
<td>Acrobat, Amigo, Flipper, Jordy, Max</td>
<td>Enhanced Vision Systems</td>
</tr>
<tr>
<td></td>
<td>Topaz</td>
<td>FreedomScientific</td>
</tr>
<tr>
<td></td>
<td>Opal</td>
<td>FreedomScientific</td>
</tr>
<tr>
<td></td>
<td>SenseView</td>
<td>GWMicro</td>
</tr>
<tr>
<td></td>
<td>MyReader</td>
<td>HumanWare</td>
</tr>
<tr>
<td></td>
<td>SmartView</td>
<td>HumanWare</td>
</tr>
<tr>
<td></td>
<td>MagniLinkS OCR (distance, scanning)</td>
<td>LVI</td>
</tr>
<tr>
<td></td>
<td>Compact</td>
<td>Optelec</td>
</tr>
<tr>
<td></td>
<td>ClearView</td>
<td>Optelec</td>
</tr>
<tr>
<td></td>
<td>Traveller</td>
<td>Optelec</td>
</tr>
<tr>
<td></td>
<td>ClearNote (distance)</td>
<td>Optelec</td>
</tr>
<tr>
<td></td>
<td>Optron, I-stick (distance)</td>
<td>Optron</td>
</tr>
<tr>
<td></td>
<td>MonoMouse, ColorMouse</td>
<td>Sensory Software</td>
</tr>
<tr>
<td></td>
<td>Shoppa, BigReader</td>
<td>Sensory Software</td>
</tr>
<tr>
<td></td>
<td>View series (distance)</td>
<td>Vision Technology</td>
</tr>
</tbody>
</table>
the Profiles section show that individual solutions need to be prescribed to accommodate their educational needs.

There are a number of online resources that offer open source solutions for users who are blind or have low vision with access software free to download and free to use. Some need verification that the user is visually impaired, while others have no restrictions. The examples below present different types of access software ranging in the number of features and functionalities. It is advised that service providers get familiar with them prior to proposing them to their students.

**Magnification:**
- Desktop Zoom – A free screen-magnifying program with full screen or magnifying glass options.
- Virtual Magnifying Glass 3.3.1 - A free open source screen magnifier for Windows, Linux, FreeBSD and Mac OS X.
- iZoom Web by Issist – A web-based magnifier. The computer has to be connected to the Internet to run this program.

**Screen Reader:**
- NVDA – A free screen reading program that can be either installed on the hard drive or on a USB pen drive to go.
- Thunder by Sensory Software – Another free screen reader.
- System Access – a free version is available for K-12 students upon verification.
- SAtoGo – a Web-based version of System Access free to use by anyone whose computer is connected to the Internet.

**Internet Access:**
- LowBrowse by Lighthouse - A new way for those with low vision to access web documents, embodied in a Firefox extension (Windows, Mac, Linux).
- pwWebSpeak – a free version of a talking Internet browser.
- WebAnywhere – a Web-based browser that does not require any installation.

### Free Resources

Built-in accessibilities can be a great start in assessing a student’s need to access computer systems. However, some of the features present in the operating systems may turn out not to be sufficient. Users of the Windows system may find open sources solutions that will satisfy their needs. Although the majority of free solutions are not as robust as the commercial products (the quality and features may not be comparable to commercial versions), it may be worth trying them out before spending money. Nonetheless, users will have an opportunity to explore the most significant options required to operate a computer system. These experiences will make it easier for the user to understand what skills they may need to use an enlarged screen or a keyboard controlled system environment.

When working with a student who is blind audio or tactile output of information is needed. If a student with low vision is having difficulties operating a computer, it is necessary to assess which mode will work best for them. Magnification may appear to be the best solution, but the student may find it difficult to navigate and control the enlarged screen area. The screen reading option may occur to be more functional even though the student may have sufficient vision to access the system visually. The students depicted in

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**Table: Assistive Technology Features**

<table>
<thead>
<tr>
<th>Area</th>
<th>Windows Operating System</th>
<th>Mac Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vision</strong></td>
<td>Magnifier</td>
<td>Zoom</td>
</tr>
<tr>
<td></td>
<td>Zoom Option in IE 7.0 and up</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Text size in IE, Firefox</td>
<td>Text size in Safari, Firefox</td>
</tr>
<tr>
<td></td>
<td>High contrast</td>
<td>High contrast</td>
</tr>
<tr>
<td></td>
<td>Cursor width and blink rate</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Cursor size and color</td>
<td>Cursor size</td>
</tr>
<tr>
<td></td>
<td>Pointer Speed and Acceleration</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>SnapTo</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Visibility-Pointer trails</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Hide the pointer while typing</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Show location of pointer</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Scroll bar width</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Narrator</td>
<td>VoiceOver</td>
</tr>
<tr>
<td></td>
<td>Desktop Icons size</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>Dock icons size</td>
</tr>
<tr>
<td></td>
<td>Keyboard shortcuts</td>
<td>Keyboard shortcuts</td>
</tr>
<tr>
<td></td>
<td>Sound Notification when turning an accessibility features on or off</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>CoverFlow OS Leopard (folder magnification)</td>
</tr>
<tr>
<td></td>
<td>Audio Descriptions Vista (when available)</td>
<td>Audio Description (QuickTime)</td>
</tr>
</tbody>
</table>

X – indicates that the features is not available
point at distant objects. Additionally, this camera also sends the signal to a TV set showing the teacher what the student sees on his monitor. Thanks to this system the teacher can position the material she holds in her hands appropriately. Bruno also uses the CCTV to explore details in pictorial information.

**Built-in accessibilities in Mac, Windows, and Linux computers**

Universal Design for Learning (UDL) recommends that products should be designed for diverse users, meaning accessibility features should be implemented at the onset of development. Computer operating systems are not entirely accessible for some users with visual impairments who need to install specialized third party software to operate their computers. However, both Mac and Windows platforms offer a variety of accessibility features that allow users with visual impairments to customize the screens and to access them.

Both manufacturers of the above mentioned operating systems inform their clients about accessibility features on their respective Websites:

Windows (98, 2000, ME, XP, Vista)

Mac (OS X Leopard)

Windows has a very comprehensive set of online tutorials broken down by the version of the operating system. Even users who may still be working on Windows 95 computers will find extensive information about available accessibility features. Users who are blind or visually disabled and those with low vision will be directed to the respective sections to learn what the best possible alterations are there to enhance access to the operating system.

Apple’s Website also has a section on universal access for users with visual impairments. The Mac users will find an overview of accessibility features specific for persons with visual impairments. Those users that need speech output can expand their knowledge of screen reading feature following the VoiceOver link.

This section would not be complete without mentioning the Linux operating system. Although it is the least popular of the three, there may be users with visual impairments who work with this system. Currently Linux does not have many built-in accessibility options. Users who have vision disabilities and use this system should find Orca screen reader included in the most recent Solaris and Linux releases. A number of free special software available for download from different providers can be found online. The Linux Documentation Project http://tldp.org/HOWTO/Accessibility-HOWTO/visual.html page discusses options for people with vision concerns.

The following table compares accessibility features available in Mac OS X and Windows XP and Vista. Notice that both systems have made progress in adding accessibility features to help people with visual impairments.
Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

examples below show how students can benefit from different learning media and corresponding technology.

**Fernando, 8 years old, blind**
Fernando is only beginning his adventure with assistive technology. He is a proficient Braille reader who has been using a Braille writer for writing. He has also learned touch typing, allowing him to produce some of his schoolwork in print. Because he has no vision he uses a screen reading program to give access to the computer system. He is only beginning to master his computer skills, so he relies mostly on the lower tech devices, including an abacus for math.

**Britney, 14 years old, low vision**
Although, Britney has only some residual vision in one eye, she is a visual learner. She tends to access learning material visually with a minimal addition of touch. She uses three different learning media, with print being the primary. Britney is an avid reader both in print and braille. Large print has been determined to be impractical due to its physical dimensions. She is a proficient user of a portable electronic magnifier for shorter readings. She uses this device to access her print textbooks and worksheets. This method is not for longer readings due to eye fatigue. Braille appears to be a logical solution here. What is difficult for her is handling large braille books. An electronic note-taker or laptop with braille display would solve most of the issues in her case.

**Marquee, 15 years old, low vision, Asperger Syndrome**
Marquee is a high school student with retinopathy of prematurity. He has some residual vision in one eye only. He has been learning Braille for many years, but has not been able to master it, thus it is not a viable learning medium at this time. He likes using CCTV, especially for short reading or writing. He has excellent computer and auditory skills. So although he can access written material visually, audio versions work best for him. His comprehension soars when he listens to his learning material. Because his handwriting is rather poor he uses computer for longer papers. Marquee also occasionally records his answers as he finds written composition difficult.

**Amelia, 11 years old, cortical (cerebral) visual impairment**
Amelia’s condition affects the brain’s ability to interpret visual information. Although she can see print, she is not able to identify the characters. She uses Braille as her primary learning medium. She can distinguish some details in pictorial information, so simple graphical presentations are functional for her. She has been learning to use a screen reader to access text information on the computer. She enjoys using the mouse to start programs from the desktop. Her enjoyment of the mouse led to the use of software that reads information under the mouse pointer, providing her with auditory support.

**Bruno, 6 years old, low vision**
As a young child, Bruno is only beginning to familiarize himself with various pieces of technology. His condition allows him to access slightly enlarged material on his desk. However, he needs support for classroom presentation. To access whiteboard and posters on the walls, he uses a CCTV system with a camera that can be tilted and swiveled to
Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

- Peer note-taker
- Reader
- Scribe
- Special seating
- Special lighting
- Time for individual/small group instruction/test taking
- Minimizing visual distraction
- Monitoring and make adjustments for visual fatigue
- Minimizing auditory distraction
- Modification of length of assignments, tests, exams
- Extended time for assignments, tests, exams
- Take tests and exams with TVI (Teacher of Visually Impaired)
- Test items explained or paraphrased as needed
- Access to notes/text/learning materials such as tactiles/manipulatives during tests, exams

Assessments
Before you thrill your students with the news about cool equipment they are going to work with, make sure you know the level of their technological advancement. You would not want to overwhelm them with a learning tool that is far too complex. The initial excitement might quickly turn into frustration. Several publicly available informal assessments will be helpful in determining how much your students know, and how much they still need to learn. A few have been included here as examples.

The following are checklists and instruments available online that may assist you in the assessment process:

- VI Technology Assessment – www.tsbvi.edu/technology/tech-assess.htm - A variety of assessments and checklists broken down into various categories. Unlike many other assessment lists, this set is designed for assessing students who are blind or have low vision.

Profiles
The following are real-life profiles of students who are blind or have low vision and use various types of assistive technology. Their names have been changed to respect their privacy. As indicated throughout this chapter, students who are blind or have low vision constitute a heterogeneous group. Each student will require a different set of instructional and adaptive tools that will offer support in academic and extra-curricular activities. The
Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

- Text-to-Braille translation software – programs that translate print to Braille
- Embosser – aka Braille printer, a device used to emboss text in Braille
- Braille instruction support tools.
- Scanner with Optical Character Recognition (OCR) software – device used to convert paper text into digital format. Optical Character Recognition OCR is software that converts the image of the text on pages that are being scanned and turns it into e-text.
- Image simplifying software – programs that convert images from visual to textual by simplifying their content.
- Image embossing devices – hardware that makes flat print images tactually accessible.
- Color copier with enlarge function – a device that allows enlargement of print material.
- Text-to-audio software – programs that convert electronic text into an audio format. Some programs also save files as portable audio files like .mp3 or .wav.
- Voice recording software – programs that allow digital voicing recording and editing. Files can be saved in various formats and subsequently either listened to on the computer, or transferred to portable media players.

In addition to the above solutions, various simple tools and materials can complete the inventory of adaptive material. A comprehensive list would be too long to include in this chapter. Teachers may use a variety of textures, models, shapes, foods, ingredients, etc. to either replace visual material, or supplement it. It is recommended that a combination of simple, self-made material and ready-made commercially produced teaching aids be utilized. To cover all curricular areas a teacher may use a mixture or low-tech to high-tech solutions.

Accommodations
Accommodations that do not include specialized equipment may be sufficient to support students with visual impairments. In rare cases, students’ academic needs may be met without them. However, accommodations are only part of complete curricular support. The following list gives the most common strategies for accommodating students who are blind or have low vision in educational settings.

- Large print materials
- Modified print text: amount per line, kerning, letter size, letter and background color
- Bold-line paper
- Raised-line paper
- Braille materials
- Braille paper
- Braille transcriber
- Personal copy of chalkboard materials
- Personal copy of overhead materials
Cortical (Cerebral) Visual Impairment:
- Talking dictionary – hardware or software tools to assist in language-related tasks.
- Word-prediction software – programs that support composition of sentences.
- Organization tools – software or hardware to facilitate organization and learning material management (like color coding, binders, bright color or tactual markings).
- Tactile-audio systems – haptic devices that enhance tactile exploration.
- Models – real objects are typically more appealing and meaningful than pictures and should be used when possible.

Many of the tools mentioned above recur in different groups, meaning they can be used for various purposes. It is often the case that a variety of tools and support services will be used contingent upon the student’s visual impairment, skills, abilities, and needs. Tasks will also determine the selection of one or more accommodations. For example, if a communication skills activity requires writing, particular writing tools will be involved to accommodate a specific student performing this activity. Talking dictionaries may appear useful both for reading and writing as well as for other classes where new terminology is introduced.

Students with cortical visual impairment often require some accommodations. Tools that are described in the Reading, Writing, or Organization chapters may be effective and efficient. Students with CVI may present decreased acuity, while others will not experience significant loss in the vision sharpness. An excellent resource that includes instructional strategies for students with CVI is the article *Strategies for Working with Children with Cortical Visual Impairment* by Jeanne Gardier. This article is available online as a .pdf file at www.pattan.k12.pa.us/files/db/cvi.pdf.

Tools for Transition
AT solutions that students may need once they leave school, such as portable text reading or ADL equipment, should be explored during the school years and used in context in the work/home environments. This helps the students prepare for their post-school lives, careers and experiences. Other information the graduating students should know about include accessibility options for PDAs, cell phones or household appliances. Please see the resource section for further information on these resources.

Tools for Teachers
Adaptation and conversion of learning material to make it accessible may be time-consuming. It also requires knowledge and planning to ensure quality and correctness. There are various ways and methods of preparing material. Some things can be done using low-tech materials, while others will require specialized software and hardware. Below is a list of possible devices that are needed to provide academic services to students with visual impairments:
Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

- Braille blocks – plastic blocks with Braille characters to assist instruction in Braille.
- Beeper ball or other acoustic ball - play balls with sound-generating elements.
- Voice output measuring and household devices – various kinds of adapted appliances with speech output and/or tactual markings, talking management software

***All of these strategies may be helpful for students with low vision or CVI.

Cortical (Cerebral) Visual Impairment (CVI):

- Talking typing instruction software - programs to assist in keyboarding instruction
- Money management software - programs to assist in managing financial activities like balancing checks, etc.
- Highlighter tapes – transparent tape that easily sticks to and peels off paper to emphasize important fragments or words in text.
- Highlighters – bright color markers used to emphasize important fragments or words in text.
- Light box – a device that provides lighted working surface to give higher contrast or attract visual attention.
- Adapted gym instruments – balls, baskets, etc. modified with extra bright colors to increase their visibility or auditory cues to assist in locating them.

Assistive Technology for Additional Support

Low vision:

- Talking dictionary/large print – hardware or software tools to assist in language-related tasks.
- Word-prediction software – programs that support composition of sentences.
- Organization tools – software or hardware to facilitate organization and learning material management.
- Tactile-audio systems – haptic devices that enhance tactile exploration.
- 3-D images for concept development – tactual images to complement or supplement textual information.

Functional Blindness/Blindness:

- Talking dictionary – hardware or software tools to assist in language-related tasks.
- Talking test software – software that reads out the content of the test entered by the teacher or another person that administers the test.
- Word-prediction software – programs that support composition of sentences.
- Organization tools – software or hardware to facilitate organization and learning material management.
- Tactile-audio systems – haptic devices that enhance tactile exploration.
- Image simplifying software – programs that convert images from visual to textual by simplifying their content.
- 3-D images for concept development – tactual images to complement or supplement textual information.
Assistive Technology for Expanded Core Curriculum

Low vision:
- Monocular – an optical device used for close-ups of distance objects. It may be used in the classroom to read board work or presentations projected on large screens.
- Digital talking compass – a directional device that announces the directions through an audio output.
- Manipulatives – toys, shapes, models, and other objects to support the learning process. They may complement and/or replace pictures that might not be clear or meaningful.
- Adapted games – board or computer games specially designed to accommodate vision loss.
- Typoscope – a rectangular cutout used to provide borders which outline the area for one to write their signature.
- Voice output measuring and household devices – various kinds of adapted appliances with speech output and/or tactual markings.
- Talking watches, clocks – timepieces with speech output.
- Talking typing instruction software – programs to assist in keyboarding instruction.
- Money management software – programs to assist in managing financial activities like balancing checks, etc.
- Beeper ball or other acoustic balls – play balls with sound-generating components.
- Light box – a device that provides lighted working surface to give higher contrast or attract visual attention.
- Signmaker – a device that helps create Braille labels to be used for marking all kinds of objects.

Functional Blindness/Blindness:
- Cane – a walking tool used for safe and independent traveling.
- Adapted cane – modified tool that enhances safety in traveling. It is used with people who have other concerns in addition to blindness.
- Electronic Travel Devices (ETDs) - electronic devices that are a secondary tool used in addition to cane or adapted cane.
- Braille compass – a directional device with a raised arrow; Braille characters indicate the four directions of the world.
- Talking GPS – positioning tools that verbally inform a person about the current position and the route.
- Manipulatives - toys, shapes, models, and other objects to support learning process. They may be used as a replacement for images.
- Adapted games - board or computer games specially designed to accommodate vision loss.
- Swing cell – a tool that assists instruction in Braille.
Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

- Talking watches, clocks-timepieces with speech output
- Talking Typing Instruction Software—programs to assist in keyboarding instruction
- Beeper balls or other acoustic balls—assist with ball interaction to sound generating components.
- Adapted games—Board or computer games specially designed to accommodate vision loss.
- Swing cell—a tool that assists instruction in Braille.
- Images—tactile, graphic, audio description or real object.
- Braille blocks—plastic box with Braille characters to assist instruction in Braille.
- Beeper Ball or other acoustic balls—balls with sound generating elements
- Voice output measuring and household devices—various kinds of adapted appliances with speech output and/or tactile markings, talking management software.

Cortical (Cerebral) Visual Impairment (CVI):
Students with CVI may not read at grade level. These suggestions may increase their access to text.

- Modified reading format—print is converted into a digital format as e-text and read by text-to-speech software or hardware.
- Changed letter kerning—increased space between characters in words, or images presented at one time.
- Reading guides—low-tech cutouts that leave one line visible at a time making the reading process easier
- Acetate filters—color transparent sheets that change the color of the page with text concurrently reducing glare and altering contrast.
- Text-to-speech software—programs that recognize digital text and provide auditory output. Some of them have a variety of features that help to follow the text as it is being read.
- Slant-board or other material positioning devices—simple constructions that reposition reading material at different angles.
- Highlighter tapes—transparent tape that easily sticks to and peels off paper to emphasize important fragments or words in text.
- Highlighters—bright color markers use to emphasize important facts or words in text.
- Talking typing instruction software—programs to assist in keyboarding instruction
- Money management software—programs to assist in functional financial activities.
- Lightbox—a device that provides lighted working surface to give higher contrast or visual attention.
- Adapted Phy Ed tools—balls, baskets, etc. modified with extra bright colors to increase their visibility or auditory cues to assist in locating them.

***All of these strategies may be helpful for students with low vision as well.
Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

- Electronic Braille note-taker – a device with numerous functionalities used to input, store, and output text either in Braille or print. Depending on the model, note takers may have Braille or QWERTY keyboard, speech only output, or speech and Braille output. The newest devices store various types of files using internal drives or memory cards. They also have Internet capabilities.
- Electronic Braille typewriters – a tool that is a combination of Braillewriter and electronic note-taker. It produces an immediate hard copy of Braille, allowing prior insertion and proofreading of text.
- Tactile images – graphical information created in tactile format that is accessible for blind people. There are a number of methods to create tactual images. Some may require specialized equipment, while others can use low-tech materials.
- Tactile-audio presentations – overlays and devices linked to a computer to output auditory information assigned to a specific area in the overlay that is put over a touch sensitive board.
- Portable reading devices - portable players that play back different types of audio that is stored on CDs or removable media cards.
- Talking software or hardware calculators – math support with speech output functionalities.
- Braille calculator – math support device with Braille display.
- Audio graphic calculator – software or hardware that gives students with visual impairments visual and auditory access to graphing.
- Math tiles – a set of Braille tiles with a magnetic board to help blind students understand different math concepts.
- Text-to-audio conversion software – programs that allow converting digital text into audio formats.
- Abacus – low-tech tool for calculation tasks.
- Math support software – programs to give access and explain math concepts.
- Audio support – software or hardware that gives information through the auditory channel in addition to the primary channel, whether it is visual, or tactual.
- Text-to-speech – software that converts digital text into audio. It is implemented in talking programs like word processors, or is part of read-aloud imported text.
- Audio graphic calculator – software or hardware that gives students with visual impairments visual and auditory access to graphing.
- Adapted cane- modified tool that enhances safety in traveling. It is used with people who have other concerns in addition to blindness.
- Electronic Travel Devices (ETDs) electronic devices that are a secondary tool used in addition to obtain or adapted cane.
- Braille compass-I directional device with a priest arrow; braille characters indicate the four directions of the world
- Talking GPS-positioning tools separately informed person about the current position and route
- Manipulatives-extra objects should be used whenever possible, shapes, models, and other objects to support learning process.
- Sign maker-a device that helps create Braille labels to be used for marking all kinds of objects
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- Manipulatives— toys, shapes, models and other objects to support the learning process. Real objects should be used whenever possible. They may complement and/or replace pictures they might not be clear or meaningful.
- Adapted games— for computer games specially designed to accommodate vision loss.
- Typoscope—a rectangular cutout used to provide borders which outline the area for one to write their signature.
- Voice output measuring and household devices—various kinds adapt. Appliances with speech output and/or tactile markings.
- High contrast or large numbered watches and clocks.
- Magnification— there are four types of magnification: relative-size (large format, bigger manipulatives), relative-distance (material presented closer to student), angular (lens-based magnifiers), and projection (camera-based electronic magnifying devices).
- Specialized lighting— lamps and lights with various types of illumination may enhance the visibility of the working surface.
- Material positioning devices— simple page holders, foldable book holders, or more sturdy book stands, and slantboards enable better positioning of the material to decrease distance, angle, or glare.
- Audio support— software or hardware that gives information through auditory channel in addition to the primary channel whether it be visual, or tactual.
- Text-to-speech— software that converts digital text into audio. It is implemented in talking programs, like word processors, or is part of read aloud imported text.
- Portable reading devices— hardware that supports various formats of audio text. Information may be stored either as audio files on media cards, or as sound tracks on CDs.
- Large key calculators— oversized tool to accommodate vision needs.
- Audio graphic calculator— software or hardware that gives students with visual impairments visual and auditory access to graphing.
- High contrast (20/20) pen— simple writing tool that makes letters more visible due to high contrast ink.
- Money management software— programs to assist in managing financial activities like balance checkbooks, etc.
- Large print or magnified screen typing instruction software/programs to assist in keyboard instruction.
- Brightly colored/high contrast balls.
- Lightbox— a device that provides a lighted working surface to give higher contrast or attract visual attention.

Blindness:
- Long Cane (see above)
- Brailler— a special typewriter that produces immediate text in Braille as it is being typed. It is the most common mid-tech device used for typing in Braille.
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- Narrator (PC), VoiceOver (Mac) – computer operating systems come with built-in voice output applications to support access.
- Third party screen reading software – full-fledged speech output program that gives full access to computer systems and menu-driven programs and applications.
- Talking Web browsers – self-voiced browsers that give access to many Websites through auditory channel.
- Braille display – hardware devices that show up to one computer line at a time in Braille. As the user moves around the computer screen, tiny solenoid pins on the display raise and lower to form the Braille character of each computer screen character.
- BrailleWriter—a special typewriter that produces immediate text in Braille as it is being typed. It is the most common mid-tech device used for typing in Braille.
- Electronic Braille note-taker—a device with numerous functionalities used to input, store, and output text either in Braille or print. Depending on the model, note takers may have Braille or QWERTY keyboard, speech only output, or speech and Braille output. The newest devices store various types of files using internal drives or memory cards. They also have Internet capabilities.
- Electronic Braille typewriters—a tool that is a combination of BrailleWriter and electronic note-taker. It produces an immediate hardcopy of Braille, allowing prior insertion and proofreading of text.
- Tactile images—graphical information created and tactile format that is accessible for blind people. There are a number of methods to create tactile images. Some may require specialized equipment, while others can use low-tech materials.
- Tactile-audio - overlays and devices link to a computer to output audio information assigned to a specific area in the overlay that is put over a touch sensitive board.

Cortical (Cerebral) Visual Impairment (CVI):

- Large or color-coded keys keyboard – modified keyboard giving better access because of the bigger size of the characters, and various colors assigned to specific groups of keys.
- Portable word processing device – a stand-alone tool for typing; its functionalities are usually much simpler than those of a computer system; it is also smaller and easier to handle than desktop or laptop computer.

Assistive Technology for Regular and Expanded Core Curriculum

Low vision:

- Long Cane- a walking tool used to support independent travel or to identify for others that a person is visually impaired or blind.
- Monocular—an optical device used for close-ups of distant objects. It may be used in classroom to read more for or presentation projected on large screens.
- Digital talking compass—a directional device that announces the directions through an audio output.
Classification of Educational Technology

Assistive Technology for Academic Areas

**Low vision:**
- Magnification—there are four types of magnification: relative-size (large format, bigger manipulatives), relative-distance (material presented closer to the student), angular (lens-based magnifiers), and projection (camera-based electronic magnifying devices).
- Specialized lighting—lamps and lights with various types of illumination may enhance the visibility of the working surface.
- Material positioning devices—page holders, book holders, or book stands, and slant boards enable better positioning of the material to decrease distance, angle or glare.
- Audio support—software or hardware that gives information through auditory channel in addition to the primary channel whether it be visual or tactile.
- Text-to-Speech—software that converts digital text into audio. It is implemented in talking programs, like word processors, or is part of read aloud imported text.
- Portable reading devices—hardware that supports various formats of audio text. Information may be stored either as audio files on media cards, or as soundtracks on CDs.
- Large key calculators—oversized numbers to accommodate vision needs.
- Audio graphic calculator—software or hardware they give students with visual impairments visual and auditory access to graphing capability.
- Large print keyboard stickers—in order to make the keyboard labels more visible stickers with large print characters can be used. They come in two color versions—white on black, or black on white.
- Built-in magnifier (PC), Zoom (Mac)—computer operating systems come with magnification accessibility features.
- Third party magnification software—a full-fledged application that increases the size of screen content.
- High contrast (20/20) pen—simple writing tool that makes letters more visible due to the high contrast ink.
- Third party combo magnification and screen reading software—combines features of screen magnifying software and speech output software giving dual-mode access to computer information.
- Hardware screen magnifiers—monitor-mounted screens with magnifying screen, used less than software magnification.

**Blindness:**
- Braille keyboard stickers—in order to make keyboard labels tactually accessible stickers with Brailled characters can be used.
- Power Chord Braille Keyboard—computer keyboard based on 6 Braille keys with additional function keys.
- SIXIN—computer software that turns six home row keys into Braille keys allowing a student who is not proficient with QWERTY keyboard to type on the computer.
### Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

#### Computer Access

<table>
<thead>
<tr>
<th>Technology for Academic Areas</th>
<th>Expanded Core Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Computer access</strong></td>
<td><strong>Reading</strong></td>
</tr>
<tr>
<td><strong>Color scheme</strong></td>
<td>Glasses</td>
</tr>
<tr>
<td><strong>Large operating system features</strong></td>
<td>Color filter</td>
</tr>
<tr>
<td><strong>Built-in Magnification</strong></td>
<td>Slantboard</td>
</tr>
<tr>
<td><strong>Fully featured magnification</strong></td>
<td>Large print</td>
</tr>
<tr>
<td><strong>Magnification with screen reader</strong></td>
<td>Optical magnifier</td>
</tr>
<tr>
<td><strong>Screen reader</strong></td>
<td>Electronic magnifier</td>
</tr>
<tr>
<td><strong>Screen reader with Braille device</strong></td>
<td>CCTV</td>
</tr>
<tr>
<td><strong>Large print measuring tools</strong></td>
<td>Monocular</td>
</tr>
<tr>
<td><strong>CCTV with distance camera</strong></td>
<td>CCTV with distance camera</td>
</tr>
<tr>
<td><strong>Screen reader</strong></td>
<td>Audio text</td>
</tr>
<tr>
<td><strong>Screen reader with Braille device</strong></td>
<td>Computer based reading software</td>
</tr>
<tr>
<td><strong>Electronic Braille notetaker</strong></td>
<td>Electronic Braille notetaker</td>
</tr>
</tbody>
</table>
Solution Generation: Tools/Strategies

As a team, brainstorm and write on chart paper any assistive technologies &/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the continuum for vision. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology.

The continuum of assistive technology for vision is broken down into several areas. Students will use a variety of tools, depending on the task. For example, some students with low vision will read short passages visually, but because of visual fatigue, may require either audio or tactile format for longer readings. Low-tech solutions may be sufficient for some types of tasks, while higher-end technology may be needed to complete other tasks.

The following chart includes continuums of options to support students with visual impairments in the standard curriculum tasks. These suggestions are divided into the three areas of identified visual impairments: low vision; functional blindness; and cortical visual impairment.
level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low and high tech AT supports.

**Sensory Considerations**
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student’s learning, identify the sensory levels in each environment the student will be in.

**Tasks**
As a team, discuss and write on chart paper the curricular and extra-curricular tasks that the student needs to do.

One of the most important questions when assessing a student’s need for assistive technology is: what tasks must be accomplished by the student in order to fully participate in a given curriculum? The following questions may provide guidance as teams begin to assess students’ assistive technology needs:

- Is this student currently reading? Is there evidence of difficulty with textbooks, worksheets, math, or chapter books?
- Is this student currently writing? Is the student able to compose sentences, fill out forms, and complete worksheets?
- Is this student currently taking notes? Does the student have a functional system or efficient medium?
- Can this student independently access distance presentations such as board work, posters, multimedia presentations, document camera presentations?
- Is this student accessing visual activities related to science experiments, graphing, etc.?
- Can this student do computer-based tasks? Is the student able to use word processing programs, visual presentation programs, e-mail and/or online research?
- Can this student prepare accessible text to match their reading medium?
- Is this student participating in gym activities? Can they see the ball? Can they direct the ball to the target? Can they run without a guide?
- Is this student taking part in extra-curricular activities?

**Narrowing the Focus**
As a team, identify the tasks that are priorities and will be most beneficial for the student to access the curriculum. You may circle or highlight them.

After the team has generated a list of tasks that the student needs to do, refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.
sufficient space cannot be offered, tools that take up less space but meet specific requirements may need to be considered.

**Classroom space**
Classroom space is also essential so that the students can freely move around without too many obstacles. Some students, despite being seated in front of the room, may need to go up to the board or other presentation areas to access information. The change in the table layout may need to be considered to clear the path to the distance information.

**Location**
The location of the adaptive equipment may also affect the choices. The student with low vision may be seated in front of the room, which means that a CCTV could be in the visual path of other students sitting behind him/her.

**Visual access of classroom presentations**
Large-group presentations and board work might be inaccessible for students with visual impairments without specially designed access tools. Students may require desktop copies. In some cases a different type of board may increase the student’s visual access.

**Type of light and level of illumination**
Type of light and level of illumination will also determine where the student can be seated. Some students may require dimmed light, while other will need higher brightness level. If students need to individually adjust the light level, they may need a table light; their table or desk should be positioned near a power outlet.

**Type of learning medium**
Access to power outlet(s) will also be necessary when students work with different electronic tools. Many modern devices have rechargeable batteries but their operation time usually does not exceed two to three hours. Therefore students will have to plug in their devices once or twice a day in to recharge the batteries. Some of the new computers do have longer battery life but the trade-off is that the screen may not be bright enough for a student with visual impairments to see.

**External noises**
Since students with visual impairments, especially those with severe low vision or blindness, rely on their hearing to gather information during the classes, it is important to ensure that any unnecessary external noises are eliminated or reduced.

**Assistive Technology: past and present**
What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference. If the student is currently using assistive technology note the AT used, location,
Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

What are the student’s organizational skills?
Keeping items organized is an especially important skill for a student with visual impairments. Many students, especially younger students, need assistance in learning to keep material organized. It should be an ongoing part of instruction.

What motor challenges does the student have?
It is important to determine if there are any other physical or related issues that need to be considered. Certain motor impairments may affect a student's ability to interact with Braille or to navigate their environment effectively.

What does this student need to focus on in their Expanded Core Curriculum?
Students with visual impairments should participate in an expanded core curriculum that includes the use of compensatory skills, orientation and mobility, social interaction skills, independent living and personal management skills, recreation and leisure skills, career and vocational education, visual efficiency and need for/use in Assistive technology. Compensatory skills include the use of tools, adaptations, modifications and behaviors that maximize the student’s opportunity to access the environment, educational activities information and basic human needs. This can include a variety of communication tools, adapted reading and writing, organizational and counting tools.

Can the student participate in extra-curricular activities?
In most cases yes, many sports are fully accessible to a student with visual impairments such as wrestling, swimming, track and field. For a student with severe impairments or blindness adaptations can be created to cue location or destination. Sports that use a ball or object that moves may need to use a ball with colors are high contrast, larger or softer shape, or some kind of sound mechanism to help the student locate it. For many non-athletic activities no special equipment may be needed, such as in front six debate or language clubs. Some activities may require cueing to location and/or destination. Materials may require adaptation to the appropriate media such as Braille or audio formats of information needed to participate effectively.

Sensory Considerations
Different environments have different levels of sensory stimulation if the team is determined that sensory impacts are influential for the students learning identify the sensory level it in each environment that the student will be in. Coping with environmental noise is a fact of life. If a student is distracted by background noises, they may need to learn coping strategies or have the environment modified as they learn how to prioritize the sounds around them. For students who are deaf blind and have multiple disabilities, see chapter 14 for additional information on sensory considerations.

Environmental Considerations
Desk space
Ample desk space is required due to the size of material and supporting tools. That space is necessary not only to fit all the material and tools but also to help students get organized. If
Student’s Abilities/Difficulties

Can the student read regular print?
Students with low vision and cortical visual impairments may require change in the print size and typeface. All of the changes will be contingent on students’ vision condition and their preferences, and should be delivered through evaluation, functional vision assessment and/or learning media evaluation.

What are the student’s most effective reading media?
Reading medium is another important consideration. Some students may use a combination of media—visual, tactile, audio or electronic (e-text)—to enhance or support the primary reading mode. AT teachers of the visually impaired will determine what learning media will be most functional.

Can the student understand pictorial information?
When students with low vision need to interact with pictorial information, they may need some type of magnification. Enlarged material may be sufficient for some students. Others will need optical or electronic magnification tools. Magnification needs are determined through low vision clinical evaluation.

Is the student’s print legible?
Writing can be problematic due to poor vision and hand-eye coordination. Some students with low vision may be able to write but the shape and size of the letters might make the handwriting illegible. In such cases, unless a student is a Braille user, typing needs to be considered.

Can the student type?
Typing is one of the most essential skills that allows for written communication. A computer or other typing device may offer large and high contrast keys, but to be an effective typist, touch-typing should be considered as a long-term solution.

Can the student navigate the computer system independently?
Students with visual impairments will require various types of operating system accessibilities to do computer-based assignments. For some, built-in accessibility features will suffice, while others will need full-fledged specialized software.

Is the student photophobic (extremely sensitive to light)?
Students that are photosensitive may require tools that allow them to adjust color schemes. Additionally, consideration must be given to students who are colorblind. Learning material may also need to be provided in preferred color combination to reduce glare and enhance contrast.

Can the student participate in gym activities?
Many games in the gym involve the use of a ball. Depending on the sport played the balls differ in size and weight. Students with visual impairment may require adapted gym tools. The way games are played may also be modified to include students with vision concerns.
### WATI Assistive Technology Decision Making Guide

**Area of Concern: Vision**

#### PROBLEM IDENTIFICATION

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Print size</td>
<td>- Desk space</td>
<td>- Reading</td>
</tr>
<tr>
<td>- Reading visual or tactile medium</td>
<td>- Classroom space</td>
<td>- Writing</td>
</tr>
<tr>
<td>- Illegible handwriting</td>
<td>- Location in the room</td>
<td>- Note-taking</td>
</tr>
<tr>
<td>- Navigating the computer operating system and programs</td>
<td>- Visual access of board work</td>
<td>- Large group distance presentations</td>
</tr>
<tr>
<td>- Identifying &amp; finding details in pictures</td>
<td>- Visual access of classroom presentations</td>
<td>- Visual activities</td>
</tr>
<tr>
<td>- Touch typing</td>
<td>- Type of learning medium</td>
<td>- Computer-assisted tasks</td>
</tr>
<tr>
<td>- Need for audio enhancement</td>
<td>- Type of light and level of illumination</td>
<td>- Converting print into electronic format</td>
</tr>
<tr>
<td>- Color blindness</td>
<td>- External noises</td>
<td>- Activities of daily living</td>
</tr>
<tr>
<td>- Photosensitivity</td>
<td>- Assistive Technology: past and present</td>
<td>- Gym activities</td>
</tr>
<tr>
<td>- Activities of daily living</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Participation in gym activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Physical or motor-related issues</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Sensory Considerations

<table>
<thead>
<tr>
<th>Tools &amp; Strategies</th>
<th>Tools &amp; Strategies</th>
<th>Implementation Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorming only— No decisions yet</td>
<td>Use a feature match process to discuss and select ideas(s) from Solution Generation</td>
<td>AT trials/services needed: Formulate specific task objectives to determine effectiveness of trial:</td>
</tr>
<tr>
<td>Review solutions in respect to type of visual impairment and the area that requires additional support.</td>
<td></td>
<td>- Training needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Date</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Length</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Person(s) Responsible</td>
</tr>
</tbody>
</table>

#### Narrowing the Focus

- Identify Specific task(s) for Solution Generation

#### Implementation Plan

- AT trials/services needed:
  - Training needed
  - Date
  - Length
  - Person(s) Responsible

#### Follow-Up Plan

- Who & When
- Set specific date now.

---

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them (i.e. on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference.
Using the SETT Process and the Decision Making Guide

The SETT process is designed to establish those characteristics in order to recommend the best possible solutions. The SETT process considers several factors that influence the choice of tools, devices, and interventions. It is imperative that the student’s strengths and weaknesses are known. The needs assessment also considers the environment in which the student receives instruction. It is also important to know about the student’s plans after high school graduation. When all of the above information is gathered, conclusive decisions can be made. It is worth mentioning that in some cases more than one solution may be implemented to obtain desired results. The process of decision-making about assistive technology can be complex and inexact, making it difficult to match one tool with a specific area. For example, to give a student with low vision better access to print, either a large print book, or regular print book with some type of magnifier can be provided.
Assessing Students’ Needs for Assistive Technology (2009)

Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision

Assistive Technology for Students who are Blind or have Low Vision

Jaroslaw Wiazowski, Ph.D.

This chapter intends to provide information regarding a process for evaluating the assistive technology of students who are blind or have low vision. Assistive technology advances at a quick pace, requiring ongoing research and awareness on the part of the practitioner. The reader will find a list of low- and high-technology devices that offer students access to the academic curriculum as well as extra-curricular activities. Although the focus of this information is on assisting students who are blind or have low vision, these tools may also be helpful for many students with other disabilities. Included are specifically designed tools to assist students both in accessing and processing curriculum. It is important to understand the necessity of teaching the underlying skills needed to be independent in the use of assistive technology, which can be equally valuable in classrooms and community. For example, Braille notetakers are useful not only for note taking in class, but also for composing and printing essays, writing notes, send e-mails, or browsing the Internet.

Assistive technology can give students who are blind or have low vision support in all academic areas as well as in expanded core curriculum. The selection of devices is contingent upon a variety of factors. To begin the process of consideration, the student’s vision condition needs to be identified. Additional information should be acquired regarding the students’ appropriate media format through the learning media assessment. For the purposes of this information visual impairment is divided into three major categories – low vision, functional blindness/blindness, and cortical (cerebral) visual impairment. Each of these groups has specific characteristics that will govern the selection of appropriate assistive tools.

Visual Impairments Defined

<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Vision</td>
<td>An ocular condition where a person’s visual acuity ranges from 20/70 to 20/200 (legally blind) after best correction, or visual field subtends the angle of 50 degrees or less.</td>
</tr>
<tr>
<td>Functional Blindness/Blindness</td>
<td>An ocular condition where a person perceives light or less, or is unable to efficiently use their residual vision.</td>
</tr>
<tr>
<td>Cortical (Cerebral) Visual Impairment</td>
<td>A neurological condition related to the visual pathway where a person has difficulty in interpreting visual information.</td>
</tr>
</tbody>
</table>
### Resources List for DL continuums

This is a sample of some resources. It is not meant to endorse any one product over another. It is meant as a starting point when looking for examples.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Meal time, cooking, clean-up</td>
<td>Transfer items, carts, tools Simplified cookbook</td>
<td><a href="http://www.sammonspreston.com/app.aspx?cmd=get_subsections&amp;id=100844">http://www.sammonspreston.com/app.aspx?cmd=get_subsections&amp;id=100844</a></td>
</tr>
<tr>
<td></td>
<td>Support for kitchen shopping and cooking</td>
<td><a href="http://www.infinitec.org/live/kitchens/Cookshop.html">http://www.infinitec.org/live/kitchens/Cookshop.html</a></td>
</tr>
<tr>
<td>Electronic feeder</td>
<td>Self feeder</td>
<td><a href="http://www.mealtimepartners.com/">http://www.mealtimepartners.com/</a></td>
</tr>
<tr>
<td>Dressing</td>
<td>Resource with multiple links to adaptive clothing sites.</td>
<td><a href="http://www.familyvillage.wisc.edu/at/adaptive-clothing.html">http://www.familyvillage.wisc.edu/at/adaptive-clothing.html</a></td>
</tr>
</tbody>
</table>
Privacy headset | $115 earphone $340 microphone | Wired privacy headset $29.95 Wireless headset $349.95 Expansion Microphone $149.95 | Pending | Optional | 2 Options $297 or $498 (GST)

Interfaces | -any learning IR transmitter -any IR transmitting EADL -GEWA Prog | -any learning IR transmitter -any IR transmitting EADL -VoiceIR Voice Controller | -any learning IR transmitter -any IR transmitting EADL -SiCare Standard, Light II, Relax III | -any learning IR transmitter -any IR transmitting EADL -SiCare Standard | -any learning IR transmitter -any IR transmitting EADL

Transmission | Analog landline | Analog landline | Analog landline | Analog ISDN | ?

Other | -can be used as standard phone -commands pre-programmed into Quickie iQ electronics. | -can be used as a standard phone -voice dialer $249.95 -same base phone as GewaTel 200 | -same base phone as Quickphone -Prism D | SiPhone is cordless SiPhone takes pictures, sends via MMS “f” version has emergency call function, requires remote button press -can be used as a standard phone | -can be used as a standard phone

The GEWATel200 and Infrared Home or Office Accessible Landline Telephone are a Konftel 200 phone with remote. These are often available through various internet retailers for a lesser cost.

Michelle L. Lange, OTR, ABDA, ATP, Access to Independence, MichelleLange@msn.com, 7/08.
**Infrared Controlled Telephones**

An infrared controlled telephone can be used by virtually any Electronic Daily Living Aid (EADL, formally Environmental Controls) that can send infrared signal. Here is a comparison of features:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo</td>
<td><img src="image1.jpg" alt="Photo" /></td>
<td><img src="image2.jpg" alt="Photo" /></td>
<td><img src="image3.jpg" alt="Photo" /></td>
<td><img src="image4.jpg" alt="Photo" /></td>
<td><img src="image5.jpg" alt="Photo" /></td>
</tr>
<tr>
<td>cost</td>
<td>$1,380.00</td>
<td>$699.00</td>
<td>To be determined</td>
<td>?</td>
<td>$360 (GST) phone only</td>
</tr>
<tr>
<td>access</td>
<td>-IR signal -Keypad</td>
<td>-IR signal -Keypad</td>
<td>-IR signal -Keypad</td>
<td>-IR signal -Keypad</td>
<td>-Single switch for answer and hang-up only -IR signal with TS Controller -Keypad</td>
</tr>
<tr>
<td>user can build #s</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>prestored #s held</td>
<td>50</td>
<td>50</td>
<td>5 speed dial Prism relies on directory in SGD Prism D adds directory of 100</td>
<td>SiPhone 200 Quickphone 50</td>
<td>20</td>
</tr>
<tr>
<td>redial</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>call waiting</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>battery back-up</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Display</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Volume Control</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Infrared Transmission

<table>
<thead>
<tr>
<th>Description</th>
<th>Features</th>
<th>Price</th>
<th>Dimensions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Mini Relax - Scanning</td>
<td>a. 1 IR cmds</td>
<td>$300</td>
<td>6 x 3.5 x 1.5</td>
<td>a. auditory and visual feedback, auto scan</td>
</tr>
<tr>
<td>b. Mini Relax with Jacks</td>
<td>b. 1-6 IR cmds</td>
<td>$325</td>
<td>82050</td>
<td>b. one switch required for each function</td>
</tr>
<tr>
<td>c. Mini Relax with X-10 Ablenet</td>
<td>c. 6 IR cmds 1 X-10</td>
<td>$400</td>
<td>82060 82070</td>
<td>c. includes X-10 radio transceiver</td>
</tr>
</tbody>
</table>

**Wireless TV Remote Enabling Devices**
- direct or 5 switches
- TV
- $142.9
- 1521
- 15.75 x 10.5 x 3.5
- 2" buttons or any 5 switches to control power, channels, volume

**TV Remote Module Enabling Devices**
- 1-5 switches
- TV
- $72.95
- 5150
- 10 x 4 x 2.5
- switch for each desired function: power, volume up, volume down, channel up, channel down

Basic EADLs send a limited amount of infrared signals to a limited amount of devices. For control of more devices and features, please refer to the Multifunction EADLs chart.
## Electrical Transmission

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price ($)</th>
<th>Dimensions</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerLink 3 Control Unit Ablenet</td>
<td>X X 0-60 0-60 2 4 $189 100-PL3D 9 x 5 ½ x 2 ¼</td>
<td>up to 1700 watts total remote switch access with AirLink ($89)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electralink Ablenet</td>
<td>X X 1-60 1-60 1 1 $200 34410 ? up to 1500 watts, 15A. Can be used with wireless Ultra One Transmitter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FreeHand Adaptivation</td>
<td>X X 1-60 1-60 1 1 $115 FH-ME 3.5 x 3.5 x 3.5 with transceiver module $145</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FreeSwitch Max Adaptation</td>
<td>X X 1-60 1-60 1-4 1-8 $299 FSM-100 4 x 6.5 x 1.8 visual and auditory scanning (speech) X10 modules required Direct access option</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless Pal Pad Adaptivation</td>
<td>X X 1 1 $95 WPP 3.5 x 4 with transceiver module $125</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Switch Single-Appliance Unit Enabling Devices</td>
<td>X X 1 1 $107.95 1490 3 x 2.5 x 2 remote up to 600 watts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Controls Enabling Devices</td>
<td>X 1 4 $149.95 591 4.5 x 2.5 x 1 Includes 2 receivers. 2 more $63.95.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Basic EADLs provide direct, latched or timed on/off switch control of battery operated toys or simple electrical appliances. For control of more devices and features, please refer to the Multifunction EADLs chart.
### BASIC ELECTRONIC AIDS TO DAILY LIVING – Battery and Simple Electrical Devices

<table>
<thead>
<tr>
<th>NAME</th>
<th>PHOTO</th>
<th>CONTROL MODE</th>
<th>SWITCH</th>
<th>SWITCH</th>
<th>COST</th>
<th>PROD. #</th>
<th>DIMENSIONS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Battery Transmission</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single SLAT Ablenet</td>
<td></td>
<td></td>
<td>0 - 60</td>
<td>0 - 60</td>
<td>1</td>
<td>1</td>
<td>$75</td>
<td>100-SSLAT 2.25 x 3.75 x 1</td>
</tr>
<tr>
<td>Choice SLAT Ablenet</td>
<td></td>
<td></td>
<td>0 - 60</td>
<td>0 - 60</td>
<td>2</td>
<td>2</td>
<td>$95</td>
<td>100-CSLAT 2.25 x 3.75 x 1 2nd device will not activate until 1st device stops</td>
</tr>
<tr>
<td>Dual SLAT Ablenet</td>
<td></td>
<td></td>
<td>0 - 60</td>
<td>0 - 60</td>
<td>2</td>
<td>2</td>
<td>$95</td>
<td>100-DSLAT 2.25 x 3.75 x 1 allows 2 people to use at one time</td>
</tr>
<tr>
<td>Tash Switch Latch Ablenet</td>
<td></td>
<td></td>
<td>2 - 52</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>$125</td>
<td>43880</td>
</tr>
<tr>
<td>LinkSwitch Adaptivation</td>
<td></td>
<td></td>
<td>1-60</td>
<td>1-60</td>
<td>1-2</td>
<td>1-2</td>
<td>$106</td>
<td>DLT-202 3 x 4.5 x 2.5 alarm mode</td>
</tr>
<tr>
<td>Switch Scanner Adaptivation</td>
<td></td>
<td></td>
<td>1-60</td>
<td>1-60</td>
<td>1-2</td>
<td>1-6</td>
<td>$159</td>
<td>SWSC 5.75 x 3.75 x 1.25 scans up to 6 outputs</td>
</tr>
<tr>
<td>5-in-1 Switch Modifier Enabling Devices</td>
<td></td>
<td>0-120</td>
<td>1</td>
<td>1</td>
<td>$89.95</td>
<td>566</td>
<td>6.75 x 2.5 x 1.5 intention mode (adjusts activation time). Includes adj. pressure switch</td>
<td></td>
</tr>
<tr>
<td>Switch Modifier Enabling Devices</td>
<td></td>
<td>0-120</td>
<td>1</td>
<td>1</td>
<td>$59.95</td>
<td>605</td>
<td>4.5 x 2.5 x 1</td>
<td></td>
</tr>
</tbody>
</table>
### Speech Generating Devices

Most high end SGDs send IR signals.

- **DynaVox M3**
- **DynaVox V/VMax**
- **DynaWrite**

DynaVox Technologies 866-396-2869  
www.dynavoxtech.com

<table>
<thead>
<tr>
<th>Each of these communication devices sends nearly unlimited IR signals. X10 commands can be accomplished with an IR/X10 converter. Each offers a variety of access methods (direct, single and dual switch, joystick, mouse), customizable dynamic displays, auditory scanning for switch access, graphics and speech output. Each learn IR signals and can store macros. Auditory scanning means that the client just has to listen to scanned options, the auditory cue can be customized to the client's needs and no reading or even vision is required. The DynaWrite is a direct access device. The DynaVox V/VMax and the DynaVox M3 have an optional PhoneIT feature for phone control ($315). The DynaVox M3 is the least expensive option (price listed) and can be used even by verbal consumers to provide reasonably priced switch accessed control of devices in the environment.</th>
</tr>
</thead>
</table>
| **ECO-14**
- **Pathfinder**
- **Springboard Lite**
- **Springboard Plus**
- **Vanguard Plus**
- **Vantage Plus**

Prentke Romich Co. 800-262-1984  
www.prentrom.com

| Each of these communication devices sends nearly unlimited IR signals. X10 commands can be accomplished with an IR/X10 converter. Each offers a variety of access methods (direct, single and dual switch, joystick, mouse), customizable dynamic displays, auditory scanning for switch access, graphics and speech output. Each learn IR signals and can store macros. Auditory scanning means that the client just has to listen to scanned options, the auditory cue can be customized to the client's needs and no reading or even vision is required. The ECO-14 has an optional Air Card to allow wireless control of a landline phone. The Springboard Lite is the least expensive option (price listed) and can be used even by verbal consumers to provide reasonably priced switch accessed control of devices in the environment. |

### Power Wheelchair electronics

Some power wheelchair electronics packages send IR through the display. Invacare and PG Drives Technology are pending

- **Quantum QLogic**
- **Quickie iQ**

| The QLogic display (generally ordered when the consumer cannot use a joystick) sends multidirectional IR signals from the back of the display. It can learn up to 288 codes and store up to 3 macros. It can control X10 devices through a converter (4 devices per converter, 256 max.). The consumer uses the directional drive switches to scroll through and choose device and function options. |
| The iQ display (generally ordered when the consumer cannot use a joystick) sends IR signals from the back of the display. It uses preset codes and can learn up to 22 codes. It can control X10 devices through a converter (4 devices per converter, 10 max.). The consumer uses the directional drive switches to scroll through and choose device and function options. |

---

IR: infrared control of audio/visual equipment, IR phone or other IR controlled device  
X-10: on/off control for lights, appliances, fan, buzzer, door opener, drapery control, more. Uses existing house wiring (powerline) and, if remote, radio (RF) or infrared (IR) transmission to a converter  
Insteon: like X10, uses powerline and RF, more reliable, can control more devices. Can be given X10 address.  
UPB: like X10, uses single band technology, powerline.  
ZigBee and Z-Wave: like X10, single band RF wireless network.  
Bed control can be accomplished with 6 X10 signals by X-10 System Electric Bed Operator #304, Jantek Home Controls, Inc., 416-620-5255, $430. Bed control can be accomplished with IR signals using the Ablenet IR Bed Control, $1000. Door Openers can usually be controlled with an X10 module. If the EADL is not portable, you cannot open the door from outside. IR Door openers are available, as well.  
Any EADL transmitting IR may be programmable to send to an IR telephone. Check with the manufacturer.

Michelle L. Lange, OTR, ABDA, ATP, Access to Independence, MichelleLange@msn.com, 7/08.

*Assessing Students’ Needs for Assistive Technology (2009)*
### Computer Access Systems

**Home Automation Packages**

Many Home Automation software/hardware packages are available that are primarily designed to set-up scheduled events in the home using X10 technology. Some of these also send IR signals. To control individual devices and functions, the consumer must be at the computer. These are not specifically designed for people with disabilities. Common examples include X10 Active Home, Hal 2000, Home Vision, Home Director and JDS Time Commander.

<table>
<thead>
<tr>
<th>EADL NAME</th>
<th>PHOTO</th>
<th>ACCESS</th>
<th>CONTROLS</th>
<th>IR Stord Irn</th>
<th>MACROS</th>
<th>PORTABLE</th>
<th>BATRY BKUP</th>
<th>DISPLAY</th>
<th>COMMENTS</th>
<th>COST/PROD#</th>
</tr>
</thead>
<tbody>
<tr>
<td>CINTEX 4 NanoPac, Inc.</td>
<td><img src="image1.png" alt="Photo" /></td>
<td>Computer access method, including voice</td>
<td>IR functions: 416 X10 functions; 255 devices</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>Phone headset</td>
<td>Computer screen</td>
<td>Bed controls and A/C optional. Phone headset options, including wireless.</td>
<td>$2190 Base C40-30</td>
</tr>
<tr>
<td>EADL IR Package RJ Cooper &amp; Assoc.</td>
<td><img src="image2.png" alt="Photo" /></td>
<td>Computer access method</td>
<td>IR functions: X10 functions</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>Computer screen</td>
<td>Option: X10/IR converter and 1 module $129 Software also runs on some SGDs</td>
<td>HW-4-6F $249</td>
</tr>
<tr>
<td>MEDIAssistant 200/200V Convergence Concepts</td>
<td><img src="image3.png" alt="Photo" /></td>
<td>Computer access method, touchscreen remote control 200V - voice</td>
<td>IR functions: X10 functions; Phone</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>Remote control screen</td>
<td>Remote control screen is very small</td>
<td>200 $3200 200V $4200</td>
<td></td>
</tr>
<tr>
<td>MotivAid 908-781-6595</td>
<td><img src="image4.png" alt="Photo" /></td>
<td>Computer access method, voice, switch scanning</td>
<td>IR functions: X10 functions; Phone</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>Computer screen</td>
<td>Dedicated computer</td>
<td>?</td>
</tr>
<tr>
<td>MultiMedia Max Multimedia Designs 888-353-3996</td>
<td><img src="image5.png" alt="Photo" /></td>
<td>Computer access method. Includes Dragon Naturally Speaking for voice input.</td>
<td>IR functions: unlimited X10 functions; 256 devices</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Computer screen: graphics of rooms</td>
<td>Includes computer, Dragon NS, hardware, software, installation, training, 1 yr. warranty. Optional bed control, thermostat, security camera</td>
<td>$8995</td>
</tr>
<tr>
<td>Progress Star Zygo Industries 800-234-6006</td>
<td><img src="image6.png" alt="Photo" /></td>
<td>Switch scanning</td>
<td>IR functions: X10 functions through IR/X10 converter</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>Laptop no</td>
<td>no</td>
<td>Progress dynamic display software uses onscreen graphic displays. Mini Progress Star does not include switch jack.</td>
<td>?</td>
</tr>
<tr>
<td>REACH Break Boundaries 513-645-4203</td>
<td><img src="image7.png" alt="Photo" /></td>
<td>Touch screen, voice, head control, switch scanning</td>
<td>IR functions: X10 functions; Phone</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>12” screen</td>
<td>Can customize screen</td>
<td>$6400</td>
</tr>
</tbody>
</table>
### Voice Access Systems

Switch back-up access is critical in case voicing is not recognized.

<table>
<thead>
<tr>
<th>EADL NAME</th>
<th>PHOTO</th>
<th>ACCESS</th>
<th>CONTROLS</th>
<th>IR Stord Ln</th>
<th>MACROS PORTABLE</th>
<th>BATRY BKUP</th>
<th>DISPLAY</th>
<th>COMMENTS</th>
<th>COST/PROD#</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWERHOUSE Home SAJE Technology</td>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>Switch: 1 Voice</td>
<td>IR functions: unlimited X10 functions: unlimited phone</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>Can use headset for computer voice commands, auditory feedback, 500’ range</td>
<td>$4500</td>
</tr>
<tr>
<td>Sicare Light II</td>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>Switches: 1 – 2 (AIO) Voice</td>
<td>IR functions: 240, 6 devices X10 functions: 64 Phone, nurse call</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>Nurse call option. UL, CSA, CE approved. Speech feedback. Plus model provides full keyboard and mouse control.</td>
<td>$9161/9162</td>
</tr>
<tr>
<td>VoiceIR Infrared Voice Controller Broadened Horizons</td>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>Direct: remote Voice: 1 – 4 users</td>
<td>IR functions: 120 X10 functions: through IR/X10 converter</td>
<td>no</td>
<td>yes</td>
<td>yes, limited</td>
<td>no</td>
<td>Optional IR phone, IR bed control, switch output. Limited battery time. Can use one in each room or power off wheelchair batteries.</td>
<td>$349</td>
</tr>
<tr>
<td>Device</td>
<td>Switches:</td>
<td>IR functions:</td>
<td>Text</td>
<td>Price</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
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<td>---------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relax II</td>
<td>1 - 2</td>
<td>II: 40, 4 devices</td>
<td>X-10 radio transceiver required. adjustable scanning (auto, hold, step). Relax III includes IR phone.</td>
<td>$600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>III: 30, 3 devices + phone</td>
<td></td>
<td>$8200</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X10 functions: 10 devices through RF</td>
<td></td>
<td>$1700</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>yes</td>
<td></td>
<td>$83000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relax III</td>
<td>2</td>
<td>II: 40, 4 devices</td>
<td></td>
<td>$600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>III: 30, 3 devices + phone</td>
<td></td>
<td>$8200</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X10 functions: 10 devices through RF</td>
<td></td>
<td>$1700</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>yes</td>
<td></td>
<td>$83000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplicity Switch</td>
<td>2</td>
<td>IR functions: 240, 6 devices</td>
<td>Nurse call option. UL, CSA, CE approved. Speech feedback.</td>
<td>$call</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quartet Technology</td>
<td></td>
<td>yes</td>
<td></td>
<td>$9164</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>no</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X10 functions: 64 devices</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>yes</td>
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<td></td>
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<td>no</td>
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<td>yes</td>
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</tr>
</tbody>
</table>
## Switch Access Systems

Choices are scanned and selected by a switch activation.

<table>
<thead>
<tr>
<th>EADL NAME</th>
<th>PHOTO</th>
<th>ACCESS</th>
<th>CONTROLS</th>
<th>IR Stord Irn</th>
<th>MACROS</th>
<th>PORT ABE</th>
<th>BATRY BKUP</th>
<th>DISPLAY</th>
<th>COMMENTS</th>
<th>COST/ PROD#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angel FX Angel ECU</td>
<td></td>
<td>Switch: 1 - 2</td>
<td>IR functions: 1300 X10 functions: 18 devices Phone, bed, nurse call</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Dynamic graphic display</td>
<td>Auditory scanning, speech output, serial and relay output. Formerly Solo Act by Taplink.</td>
<td>$6200</td>
</tr>
<tr>
<td>GEWA Control Prog</td>
<td></td>
<td>Direct</td>
<td>IR functions: 241 X10 functions: through IR/X10 converter</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Static overlays</td>
<td>15 levels, keyguard</td>
<td>$870 425700</td>
</tr>
<tr>
<td>GEWA Progress</td>
<td></td>
<td>Direct</td>
<td>IR functions: over 100 X10 functions: 256 through IR/X10 converter</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Dynamic graphic display</td>
<td>Auditory scanning with recorded speech. Different scanning options available. 30 pre-built pages or can customize, various languages, graphics based, can back-up program.</td>
<td>$5295 4253</td>
</tr>
<tr>
<td>Imperium 200H</td>
<td></td>
<td>Switches: 2</td>
<td>IR functions: 6 devices X10 functions: 256 Integrated phone Bed control and nurse call on 2nd &amp; 3rd models</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>Mobile Link option</td>
<td>Dynamic display</td>
<td>Complete version is portable using Mobile Link. Auditory scanning with prerecorded words for most commands. Bed control and nurse call optional on Basic.</td>
<td>$3580 86200 $4200 86100 $7200 86000</td>
</tr>
<tr>
<td>James</td>
<td></td>
<td>Direct</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Static paper</td>
<td>Row/column or step scanning Levels: paper display must be changed for visual feedback if level is changed Options: telephone, cell phone, bed, lights</td>
<td>$2000 3000 with phone</td>
</tr>
</tbody>
</table>
Electronic Aids to Daily Living (EADLs) control devices in the environment using an alternative method, to provide independent control for persons with physical, sensory and/or cognitive impairments.

Direct Access Systems
Remote control models and prices change frequently. Check with the manufacturer.

<table>
<thead>
<tr>
<th>EADL Name</th>
<th>ACCESS</th>
<th>CONTROLS</th>
<th>IR Stord Irn</th>
<th>MACROS</th>
<th>PORTABLE</th>
<th>BATRY BKUP</th>
<th>DISPLAY</th>
<th>COMMENTS</th>
<th>COST/PROD#</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEWA Access Prog Zygo Industries 800-234-6006 <a href="http://www.zygo-usa.com">www.zygo-usa.com</a></td>
<td>Direct One or two switches</td>
<td>IR functions: 205 X10 functions: through IR/X10 converter</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Static overlays</td>
<td>Large 36 keys</td>
<td>$1925 425602</td>
</tr>
<tr>
<td>Insteon RemoteLinc Wireless Remote Control Smarthome 800-762-7846 <a href="http://www.smarthome.com">www.smarthome.com</a></td>
<td>Direct</td>
<td>Insteon functions: 6 scenes 417 devices</td>
<td>n/a</td>
<td>n/a</td>
<td>yes</td>
<td>yes</td>
<td>Buttons</td>
<td>Remote works up to 150' from access point. Access Point required: #2443, $39.99.</td>
<td>$59.99 2440</td>
</tr>
<tr>
<td>Maxi Controller X-10 (USA), Inc. 800-675-3044 <a href="http://www.x10.com">www.x10.com</a></td>
<td>Direct</td>
<td>X10 functions: 16 devices through powerline</td>
<td>n/a</td>
<td>n/a</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>Text</td>
<td>Preset macros: all lights on, all lights off</td>
</tr>
<tr>
<td>Universal 5-in-1 Learning Remote X-10 (USA), Inc. 800-675-3044 <a href="http://www.x10.com">www.x10.com</a></td>
<td>Direct</td>
<td>IR functions: 5 devices X10 functions: 16 devices through RF and powerline</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>Backlit buttons Text</td>
<td></td>
</tr>
<tr>
<td>Vizia RF Z-Wave Programmer Smarthome 800-762-7846 <a href="http://www.smarthome.com">www.smarthome.com</a></td>
<td>Direct</td>
<td>Z-Wave functions: 256 devices Can create scenes</td>
<td>n/a</td>
<td>n/a</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Display Buttons</td>
<td></td>
</tr>
<tr>
<td>Wireless Remote Control System X-10 (USA), Inc. 800-675-3044 <a href="http://www.x10.com">www.x10.com</a></td>
<td>Direct</td>
<td>X10 functions: 8-16 devices through RF and powerline</td>
<td>n/a</td>
<td>n/a</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Text</td>
<td>To control more than 8 X-10 functions, must slide lever. Kit includes transceiver, receiver, 2 modules.</td>
</tr>
</tbody>
</table>
Assistive Technology for Control of the Environment

Electronic aids to daily living (EADLs) enable the person with disabilities to have more control of their environment. They go beyond the technologies described in the previous pages on activities of daily living as they pertain to electronic devices only. By virtue of that characteristic, they tend to be higher, more complex technologies.

When the person lacks mobility, motor, or cognitive skills that prevent them from performing even the simplest tasks, EADLs can provide them with some basic control over their daily life. Individuals control even the smallest amount of movement by using various types of switches. Text or pictures can be used to access the devices. Different types of input (direct, switch, voice) are available. The user can accomplish control by using either X-10, which is a wireless communication "language" that allows compatible products to talk to each other using the existing electrical wiring in the home (on/off control for lights, appliances, door openers, etc.), or infrared (for TVs, VCRs, infrared phone, etc.).

The following charts, developed by Michelle L. Lange, OTR, ABDA, ATP, give the reader valuable information and detail about EADLs. The multi-function electronic aids to daily living comparison charts details the type of access, controls, signal use, portability, display, and battery backup for different devices. The reader can then begin to determine the features that will best match the needs of the person with a disability.
A CONTINUUM OF CONSIDERATIONS FOR ASSISTIVE TECHNOLOGY

Self-Care

Dressing
Specifically chosen clothing (elastic waist, pull over tops, easy fasteners)
- Adapted clothing (Velcro fasteners, large buttons)
- Tools to assist in dressing (button hook, stocking aid, large zipper pulls, dressing stick)

Hygiene Self-Care
Adapted tools
- Tooth brushes-large handle, vibrating, spinning tooth brushes
- Brushes and combs long, large handle or universal cuff hair brushes or combs; hair dryer stands
- Pump style containers (toothpaste, soap, shampoo, body wash, lotions)
- Adapted bathing aides tools (washcloth mitts, long handle back scrubber, tub chair
  Transferring devices (transfer chair, lift)
- Toileting aides- (toilet back support, mobile or stationary toilet chair, bath chair)
- Accessible bathrooms including non skid surfaces, grab bars, or other environmental safety items
A CONTINUUM OF CONSIDERATIONS FOR ASSISTIVE TECHNOLOGY

Meal Time

**Food Prep**
- Adapted utensils (large handles, one-handed knife)
- Adapted tools (cutting board with food stabilizer, one-handed jar opener, mixing bowl stabilizer)
- Adapted way to transfer food, utensils (tray, wheeled cart)
- Adapted counters (wheelchair accessible)
- Adapted measuring and pouring devices

**Cooking**
- Simplified cookbooks (4 ingredient cookbook)
- Modified cookbooks (picture supported)
- Visual / verbal directions for using heating equipment (stove, oven, microwave)
- Visual directions to insure safety (what to do in case of spills, fire, 911 directions)
- Adapted timers - visual, talking, large display

**Clean up**
- Adapted directions (picture supported, verbal or voice output support)
- Adapted tools (scrub brush with soap in it, large handle scrub brush, large sponges, cleaning soap in easy to use containers)
A CONTINUUM OF CONSIDERATIONS FOR ASSISTIVE TECHNOLOGY

**Eating and Drinking**

**Eating**

- Nonslip materials to hold things in place (Dycem, rubberized shelf liner)
- Placemat templates to position utensils and dishes
- Materials to build up handles
- Adapted utensils (large handle, angled or bent forks or spoons, rocker knife, safety shield)
- Adapted devices to hold utensils (universal cuff, wrist support with universal cuff)
- Positioning of the arm (elevated surfaces, suspension arm slings or mobile arm supports)
- Adapted dishes (scoop dish, suction cup base, compartment dish, food guard)
- Electronic eating aides such as switch controlled motorized feeders
- Height adjustable eating surfaces

**Drinking**

- Regular cups (sippy cups, mugs, two handled, cups with covers)
- Cup and glasses with modified rims
- Adapted handles
- Positioning aides for stabilizing cup or glass on table surface (Cup base to place cup into)
- Adapted cups (two handles, cut out for the nose area, weighted cups, wide based cups, anti-tip rounded base)
- Straws (extra long straw, heavy-duty durable straw, built in straw)
- Lids (spouted, recessed, flow adjusted, anti-splash/spill)
Assistive Technology for Activities of Daily Living

Jill Gierach, MSE ATP, Karen Stindt OTR ATP

Introduction
Past versions of the ASNAT manual had one chapter that included Assistive Technology for Recreation and Leisure, Activities of Daily living (ADL), and supports for students with multiple disabilities in the same section. In this edition of the manual we have separated these three areas.

We have created three continuums to assist teams in looking at ADL goals in the areas of eating and drinking, meal time, and self-care. These areas are very specific and well supported by Occupational Therapists (OT). We strongly suggest that you rely on your OT for information on items in these areas. The section includes a chart on electronic aides for daily living.

At the end of the chapter is a very basic resource list of examples of the items mentioned in the continuums.
Focus on Performing Arts

National Arts Disability Center
This site has links to adaptive ideas and equipment
http://nadc.ucla.edu

American Alliance for Health, Physical Education, Recreation and Dance
http://www.aahperd.org

Vendors

Sibelius™
Software that supports music creation
http://www.sibelius.com

Switch In time™
Software to create music
http://www.switchintime.com

Dancing Dots
Software to create Braille sheet music
http://www.dancingdots.com
Chapter 10 – Assistive Technology for Recreation and Leisure

NARHA
Therapeutic Horseback Riding Association
http://www.NARHA.org

Fishing has No Boundaries
http://www.fhnbinc.org

US Adaptive Recreation Center
Focus on Olympic-type sports
http://www.usarc.org

Special Olympics Home Page
Offers information on Olympic style sports events for people with disabilities
http://www.specialolympics.org

National Center on Physical Activity and Disability
Has good links to information and organizations for “lifetime” sports
http://www.ncpad.org/lifetime

Disabled Sports USA
Provides a LONG list of web links to specific adaptive sports
http://www.dsusa.org/links-drsr-links.html

National Sports Center for the Disabled
Homepage http://www.nscd.org
(Check out adaptive equipment page, too)

Vendors

Abilitations
Adapted sports and sensory equipment
http://www.abilitations.com

Sportime
Sporting equipment
http://www.sporttime.com

Sprint Aquatics
Adaptive swimming equipment
http://www.sprintaquatics.com

Flaghouse
Adaptive sports equipment and more including beeper ball, cuff and transfer belt
http://www.flaghouse.com
Let's Play
Information about playing with switches and Universal Design for Learning and PLAY
http://letsplay.buffalo.edu

Life Skills and Social Skills board games

Adapting Board Games
http://www.ataccess.org/resources/wcp/enpdf/en03BoardGames.pdf

Simple Access Game Spinner
http://www.switchintime.com/FreeStuff.html

Games for Young Children
http://www.illinoisearlylearning.org/tipsheets/games.htm

Puzzle Ideas
http://www.ataccess.org/resources/wcp/enhtml/en16Puzzles.html

Another great site for accessible games

Video of adapted gaming
http://assistiveware.com/videos.php

Vendors

Toys for young children
http://enablingdevices.com/catalog/specially-adapted-toys

Able Net
http://www.ablenetinc.com

Video gaming accessibility
http://www.broadenedhorizons.com/videogaming.htm

Adapted Pinball game
http://www.northjersey.com/print

Focus on Sports and Exercise

Adapting Games for Children and Adults who are Deaf-Blind
http://www.aph.org/pe/art_lieberman1.html
Chapter 10 – Assistive Technology for Recreation and Leisure

Nasco Arts and Crafts
Art supplies & adaptive materials
http://www.eNasco.com

Sax Arts and Crafts
Art Supplies and adaptive equipment
http://www.saxarts.com

Tabletop Magnetic Markerboard
http://www.abcstuff.com

Ergo Rest®
Arm support
http://www.infogrip.com

Rotating supported drawing surface
http://www.dickblick.com

Clicker “Paint”
Single switch or traditional computer access
http://www.cricksoft.com

CoreFX
Leveled art program with realistic media effects
http://www.core-learning.com

KidPix 4 Deluxe
Traditional art program with stamps, easy to use
http://www.learningcompany.com

Focus on Games and Play

Able Play
Offers evaluations and guidelines for toys for children with disabilities
http://www.ableplay.org

Lekotec Resources
Provides “how to” recipes and guidelines for activities and creating adapted toys
http://lektok.org/resources/informationontoy/packets.asp

Print n’ Play Games
50 games to use for language development

Assessing Students’ Needs for Assistive Technology 13
Internet Resources/Links

Disability Resource Directory
Sports, Recreation and Leisure page
Shared lessons and activity planners (based in Oregon)
http://www.kansas.net/~cbaslock/sports.html

Inclusion Toolkit
Offers links to resources with a focus on inclusive recreation

National Center on Accessibility
http://www.ncaonline.org

Therapeutic Recreation Directory
This is a comprehensive site with links to articles, resources, and lesson plans
http://www.recreationtherapy.com

Focus on Arts and Crafts

Free computer drawing program
http://www.draw4free.com

Scratch-free
Animation and art program
http://www.scratch.mit.edu

Tuxpaint-free
Free, intuitive art program
http://www.tuxpaint.org

Vendors

Alternative cutting
www.kitchenkapers.com/i-slice-ceramic-slicer.html

Non-slipping mat
http://www.Abledata.com

Discount School Supply
Extensive arts and crafts selection
www.discountschoolsupply.com
Online and virtual recreational experiences
Online communities can provide invaluable social connectedness and leisure pursuits. Students can chat, share interests and play games with their peers on the web. Virtual worlds allow people to experience activities and to assume other characters in a way not tied to their own limitations. It can provide good practice and valuable freedom.

Solution Selection: Tools & Strategies
Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the leisure “tasks” that the student is most interested in performing. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time. Input from the student, family members and those who understand the student’s social network will provide valuable guidance in choosing the most successful path.

Implementation Plan
After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial materials, team member(s) responsibilities, start date and length of trial, training needed and any other student/staff specific issues. Be certain to identify recreation and leisure objectives and criteria of performance to determine the effectiveness of the trials. While quantifying “fun” or “enjoyment” is difficult, the willingness or eagerness of the student to participate, in addition to levels of independence and actual performance can be measured.

Be sure to include Occupational and/or Physical therapists in discussing and implementing the plan.
Specially designed adaptive equipment for golfing, baseball, basketball, hockey, fishing, kayaking…virtually any sport has adapted equipment available.

Mounting blocks, ramps, saddles with handles and trunk support, and ladder reins for horseback riding.

Bowling ramps, bumpers, holder rings, ball pushers for bowling.

Sport or all-terrain wheel chairs.

In Performing Arts, try…

- Plays written for and/or by people with disabilities.
- Specially designed musical instruments.

**Electronically or mechanically adapted equipment/utensils and electronic devices**

At higher levels of technology the somewhat arbitrary division of recreation and leisure becomes less necessary as many activities share the same tools such as switch-operated devices and toys, amplification, and light.

For Arts and Crafts:

- Switch operated devices such as paint spinners, pottery wheels.
- Focused/colored lighting.
- Motorized easel.

For Games and Play:

- Switch adapted card shuffler.
- Electronic or mechanized games and toys (possibly switch activated).

For Sports and Exercise:

- Beeping or lighted balls.
- Buzz-off bobber, electronic fishing wheels.
- Pool lift.
- Motorized wheel chair.

For Performance Arts

- Personal PA system.
- Voice output devices.
- Remote controls or switches for CD players, electronic instruments.
- Video cameras.

**Computer-facilitated or computer-based activities**

The computer is such a versatile tool that its benefits can apply across the spectrum of recreation and leisure activities. A wide variety of software is available that can teach skills, provide real games (cards, board games, sports) to play alone or with partners or groups. Computer and video games are popular and age-appropriate recreational choices that are often easily accessible to students with disabilities. Some game systems are sensitive to movement and can provide motivating and meaningful physical exercise. Touchscreens and interactive whiteboards offer different access and more physical involvement in computing.
Chapter 10 – Assistive Technology for Recreation and Leisure

In Games and Play…
- Use larger cards and game pieces.
- Outline significant areas in puffy paint.
- Put dice in a bottle, use bigger dice and/or use numbers instead of dots.
- Add magnetic tape to keep pieces (of games or puzzles) or cards in place.
- Add handles to toys that are difficult to grasp.
- Simplify directions; use visual cues.

In Sports and Exercise…
- Use adjustable height basketball hoops.
- Clarify boundaries with colored tape/chalk lines.
- Try balls of different weights and sizes and firmness.
- Add padding to hard objects and other things that might hurt to bump.
- Use fishing rod holders.
- Try sticky mitts, bigger bats, or lighter balls.
- Use flotation devices.
- Add flexible time limits.

In Performing Arts…
- Use visual cues or prompting.
- Add handles, foam or tacky tape/putty to help hold instruments.
- Add pictures and colors to sheet music.
- Choose pieces that are short and clear.
- Use scarves, body socks, wall mirrors for dance.

Specially designed utensils/equipment
Many standard equipment companies offer adapted equipment and utensils as well. In addition, many companies specialize in providing adaptive products for people with disabilities.

In Arts and Crafts try…
- Adapted scissors and other utensils.
- Universal Cuff to hold tools/items.
- Arm supports to guard against fatigue and to provide stability.

In Games and Play try…
- Adapted spinners.
- Braille or other adapted games.
- Card holders.
- Puzzles with large pieces and/or handles.

In Sports and Exercise, explore the possibility of (and don’t forget helmets and other safety equipment)…
- Transfer belts to help move or support a student in action.
- Fully adapted and accessible playground equipment.
A CONTINUUM OF CONSIDERATIONS FOR ASSISTIVE TECHNOLOGY
Recreation and Leisure

Typical toys/puzzles/balls/utensils/instruments adapted; adjustable equipment; flexible rules; add visual/auditory clarity

↓
Specially designed utensils/equipment

↓
Electronically/mechanically adapted utensils and equipment

↓
Electronic aids (remote controls, timers, CD players, speech generating devices)

↓
Computer-facilitated and computer-based activities

↓
Online and virtual recreational experiences

Typical activities, utensils and equipment adapted for greater accessibility

Often times, recreational activities can be adapted to accommodate various needs by simply adding cues or creating modifications with items that are readily available in most environments. For example:

In Arts and Crafts…

- Add something sticky or increase the handle diameter with foam to make utensils easier to hold.
- Use clay or moldable foam to shape into the form of the student’s hand to use as a grip.
- Adjust the workspace for easier access.
- Use a Lazy Susan to hold art supplies.
- Try a tabletop easel.
- Use no-skid/non-slippery surface.
- Use portion controlling caps, glue sticks or rolling glue bottles.
- Add color to the glue to make it easier to see.
- Use stamps or cookie cutters or sponges instead of brushes and pencils.
- Simplify projects.
Chapter 10 – Assistive Technology for Recreation and Leisure

c. Hold ball
d. Dribble ball
e. “Shoot” basket
f. Block other players
g. Move up and down court

Can the game be adapted so that dribbling is not required and only half the court is used?

4) Performing Arts: Activity: play percussion in marching band. Tasks:
a. Hold instrument
b. “Hit” or play instrument
c. Move in time
d. Play in time

Should the student master a simpler task such as playing in the concert band first?

Narrowing the Focus

As a team, identify by circling or other means those few tasks the student needs to do to participate in an activity that will have the most impact.

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.

Solution Generation: Tools/Strategies

As a team, brainstorm and write on chart paper any assistive technologies and/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of assistive technology.

The following continuum and descriptions of solution considerations simply provide examples of the kinds of technology that might be considered for various recreational opportunities. They are by no means exhaustive. The chart that follows provides more detailed information for specific
Chapter 10 – Assistive Technology for Recreation and Leisure

- Awareness of physical space
- Other individual specific sensitivities

Recreation and Leisure activities are rife with sensory stimulation. Unusual textures in art class, bright lights on stage, cacophony in the band room, strange smells in a barn, balance challenges on the playground, temperature extremes outside and many more sensory processing issues are likely to arise. Be sure to understand the child’s sensory profile and to consider sensory input in each environment.

Tasks

As a team, discuss and write on chart paper the recreational activities and relevant tasks that the student needs to do.

One of the most important questions when assessing a student’s need for assistive technology is: what are the tasks the student needs or wants to do? In this instance what does the student need to do to participate as fully as possible? Thinking broadly and then more specifically about “tasks” may be helpful. For example:

1) Arts and Crafts: Activity: make a collage. To better understand what assistive technology is required for this task, consider each step and the student’s ability to perform it. Tasks:
   a. Sit at art table
   b. Manipulate paper
   c. Cut pictures out of magazines
   d. Paste pictures on paper
   e. Put project on drying rack

   For a child with multiple impairments, each step may require different assistive technology for seating and positioning, grasping, cutting, pasting and moving through the classroom.

2) Games and Play: Activity: play “Go Fish!” Tasks:
   a. Sit at game table
   b. Deal cards
   c. Hold cards
   d. Look at cards
   e. Communicate “Go Fish”
   f. Pick up cards

   Does it make more sense for this student to learn to play a computer version of “Go Fish” that will facilitate the play with a switch?

3) Sports and Exercise: Activity: play basketball. Tasks:
   a. Get on court
   b. Communicate with other players

Assessing Students’ Needs for Assistive Technology
• Can the student grasp/hold on to necessary tools (a paintbrush, cards, toys, a fishing pole, a ball, a musical instrument)?
• Does the student have impaired vision or hearing?
• Do fine or gross motor skill deficits interfere with the student’s participation in other activities, and is that interference likely in this task?

Environmental Considerations
As a team, discuss and write on chart paper any environmental considerations that might impact the student’s participation in the activity such as auditory or visual distractions, temperature and weather variables for outside locations, placement in the classroom, number of and transitions between different environments or any other environmental impacts.

Again, recreational environments vary so widely that making generalizations is difficult. Some points to consider in most situations include:
• Availability of adaptive equipment (from adaptive grips to protective gear for sports to computer software).
• Group size.
• Outdoor terrain and/or physical layout of the classroom (look at accessibility and potential risks).
• Knowledge level and availability of adult support.

Assistive Technology: past and present
What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not always discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Changes in skill development, maturity, a different environment or other factors may make all the difference. If the student is currently using assistive technology note the AT used, location, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low and high tech AT supports.

Sensory Considerations
Some students are adversely affected by environmental stimulation that others can filter out or ignore. Some common factors that can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as:

• Visual clutter
• Fluorescent lighting versus full spectrum lighting
• Classroom and background noise
• Tactile stimulation
Student’s Abilities and Difficulties

As a team, discuss what the student’s abilities and difficulties are related to recreation and leisure. Please complete and review Section 9 of the WATI Student Information Guide: Recreation/Leisure (Chapter 1 page 39)

Cognitive/Social/Emotional Considerations

In the area of recreation and leisure, a student’s interests and personal preferences are particularly important to consider. Recreational choices are just that: choices. The goal is for the student to develop interests and behavior patterns that will be intrinsically motivating and, therefore, likely to continue throughout adulthood. In school settings, a specific curriculum may set limits on students’ freedom of choice, but remember that people engage in recreation and leisure activities because doing them feels good in some way.

- How will the “task” at hand make the student feel good: better health, improved self-esteem, social connections, a quality product or performance?
- Is this endeavor meaningful to the student?
- Can it be connected to past experiences, immediate goals or plans for the future?

The student’s ability to understand how and why to participate in a “fun” activity is also important to consider.

- Does the student understand the rules and expectations of the situation?
- Is the student familiar with the activity? Do friends or family participate?
- How does the student learn, understand directions and make choices best?
- How will the student communicate in this situation? If augmentative communication is used, can it be accessible (in the pool, on stage, during a hike)?

Physical Considerations

Physical considerations are very student and situation specific. Look first at what the student is able to do. Note physical challenges that may make the student’s ability to participate different than their typical peers’. Then, consider the task and what assistive technology will provide the best access for successful participation. Again, be sure to consult a physical or occupational therapist for guidance in making significant physical accommodations (adapted skis, horseback riding equipment).

- Can the student participate in the activity safely (with appropriate accommodations)? Be sure no medical conditions contraindicate participation (allergies, spinal cord conditions, seizure disorders etc.).
- Is the student independently mobile? What equipment, if any, is needed to provide safe mobility?
- What position (of the student or of the items related to the task at hand) is the best to allow for active engagement in the process?
### Problem Identification

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the student’s abilities &amp; difficulties related to the area of concern?</td>
<td>What environmental considerations impact the area of concern?</td>
<td>What task(s) do you want the student to do? (for example)</td>
</tr>
</tbody>
</table>
| • Interests, skills, familiarity, social motivation, knowledge of rules and protocols  
• Health and safety concerns  
• Physical limitations  
• Ability to comprehend expectations | • Access to necessary adaptive equipment  
• Availability of knowledgeable staff (coach, teacher, para)  
• Family and community support  
• Transition from one location to another | • Activate a musical keyboard  
• Act in a play  
• Create a picture  
• Swim w/o 1:1 support  
• Shoot a basket  
• Use playground equipment at recess  
• Play a game of cards  
• Hike on a nature trail  
• Make a snowman  
• Play team Wii bowling |

### Sensory Considerations

What sensory challenges does the student have that impacts this area of concern? (i.e., visual, auditory, tactile)

With such a wide variety of settings for leisure activities (from school gymnasium to snowy hill to quiet reading room) the importance of considering the extremely different (light, sound, temperature) and sometimes surprising (bees, cymbals, fast-moving projectiles) sensory input and the child’s ability to process that input in the each setting cannot be overstated.

### Narrowing the Focus

Identify specific task(s) for solution generation

After the team has generated a list of tasks that the student wants to do, you may choose to refine the list to limit the tasks that the team will focus on. The tasks that remain can become your new focus at a later date.

### Solution Generation Tools & Strategies

Brainstorming Only  
No Decisions yet  
Review the area continuum

### Solution Selection Tools & Strategies

Use a feature Match Process to discuss and select ideas(s) from Solution Generation

### Implementation Plan

AT Trials/Services Needed:  
• Date  
• Length  
• Person Responsible  
• Formulate objectives/criteria to determine success of trial/AT

### Follow-Up Plan

Who & When  
Set specific date now.

---

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
addition, many of the issues regarding access to appropriate recreational and leisure choices are addressed in the ASNAT chapters on Mobility, Computer Access, Communication and Activities of Daily Living.

**Using the SETT process and Decision Making Guide**

It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. Additional categories include:

- Narrowing the Focus to help identify a specific task in order to select appropriate assistive technologies.
- Implementation Plan to assign trials, dates, responsibilities and data collection.
- Follow-Up Plan to set a date for the team to reconvene and review the student’s progress.

Again, this is intended as a guide; during the actual assessment process, each topic should be written in large print where everyone can see (i.e., on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology tools and strategies for their students.
Assistive Technology for Recreation and Leisure

Laura Comer

Introduction

If, as Aristotle said, “The quality of life is determined by its activities,” then finding meaningful avenues for recreation and leisure is a key part of working toward the best life outcomes for students with disabilities. Because school has traditionally been focused on academic learning, this vital aspect of preparing students for fulfilling adult lives is sometimes pushed aside in favor of meeting academic standards. However, almost every measure of quality of life begins with health and social connectedness. Dr. James A. Rimmer of the Department of Disability and Human Development at the University of Illinois, Chicago says, “Participation in play, recreation and sport has a profound impact on overall growth and development and are essential elements for a satisfying childhood and adolescence.” (2008) He also points to improved life outcomes and better health for everyone who participates in active recreation, but particularly for those individuals whose health may already be compromised by disability (Rimmer, 2005). Unfortunately, children with disabilities are almost twice as likely to be sedentary than their peers without disabilities (US Department of Health and Human Services, 2000). Not surprisingly, a 2004 National Organization on Disability survey found that people with disabilities were 27% less satisfied with life than those without disabilities.

While the scope of recreation and leisure activities certainly goes beyond the school setting, opportunities to learn and benefit from play, sports and the arts abound in our schools. Specific classes in visual and performing arts, and physical education are obvious. Less obvious, but no less valuable, are the skills developed on the playground, or the interests engaged during field trips to museums, on nature hikes, and in gardening projects. Extra-curricular activities like sports teams, theater, band, dance, gaming clubs, FFA, and many more can provide important health benefits, social relationships, and boosts to self-esteem for students with disabilities.

The goal of this chapter is to provide a framework for identifying assistive technology needs and a range of low- to high-tech solutions for students participating in recreation and leisure activities. By eliminating the barriers to involvement (physical, social, cognitive) in these activities, schools encourage all students to find and enjoy the improved physical and mental health that come with community engagement, creativity and exercise. Of course, fun and engaging activities provide wonderful, pain-free opportunities to teach and learn, too!

With a virtually limitless array of recreational options, one chapter cannot provide specific information for every option. Online resources and contacts for specific activities are listed at the end of the chapter and will provide avenues for further research. Please consult with an Occupational and/or Physical Therapist for student-specific suggestions and safety considerations, especially for physical accommodations. OTs and PTs and Recreational Therapists are trained to provide this kind of information on an individual basis. Some of the adaptive equipment described should be used under a therapist’s supervision or direction. In

Assessing Students’ Needs for Assistive Technology

Chapter 9 - Assistive Technology for Organization


References


Writing AT into the IEP

There are many correct ways to write AT into the IEP. It must be considered on the special factors form of the IEP and a listing of AT may be included there. It may be listed in the present level of performance. It may be included as a related service and may also be included as a supplemental aid or service. Purcell, Grant, (2002, 2004, 2007) and Bateman, Herr (2003) state many examples of writing present level of performance, objectives and goals.

The following is a four step formula for writing an IEP goal.

Time Frame: In 36 weeks
Conditions: given an agenda with areas for each subject
Behavior: Eric will fill out agenda
Criterion: daily 4 of 5 days

Another example would be the following:

Given modified daily planner (condition), the student will circle the assignment to be completed (behavior) daily for each class (criterion) 4 of 5 days (time frame).
<table>
<thead>
<tr>
<th>Area of Executive Functioning</th>
<th>Interventions</th>
<th>Accommodations</th>
<th>Teaching the Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhibiting Impulses</td>
<td>• Consequences don’t work&lt;br&gt;• DO NOT WITHDRAW RECESS!!!!!!&lt;br&gt;• Provide lots of physical activity&lt;br&gt;• Provide redirection&lt;br&gt;• Provide a “wiggle ball” or other object to direct physical energy&lt;br&gt;• Use of weighted vest&lt;br&gt;• Provide cues of what to do instead of telling them what not to do</td>
<td>• Increase external controls—restrict access to settings or situations&lt;br&gt;• Increase supervision&lt;br&gt;• Proximics!—stay close&lt;br&gt;• Find ways to provide cueing without drawing attention to it</td>
<td>• “Stop &amp; Think” program&lt;br&gt;• Identify impulse to work on &amp; a competing skill&lt;br&gt;• Explain to child what you are working on and how&lt;br&gt;• Have child practice the skill in a contrived situation&lt;br&gt;• Reinforce for using the skill immediately, even if success is only moderate&lt;br&gt;• Cue the skill just prior to situations&lt;br&gt;• Ignore (when possible) disinhibited behavior&lt;br&gt;• Gradually fade cueing and reinforcement</td>
</tr>
<tr>
<td>Working Memory</td>
<td>• Avoid multi-step directions&lt;br&gt;• Reduce demands&lt;br&gt;• Expect to repeat directions&lt;br&gt;• Provide prompts for each step of an activity</td>
<td>• Provide word lists or other prompts for material needed to complete an assignments&lt;br&gt;• Recognition tests over recall tests&lt;br&gt;• Storage devices&lt;br&gt;• Cueing devices&lt;br&gt;• Natural cues in environment (placement)</td>
<td>• Digit span practice&lt;br&gt;• Teach use of concrete reminders&lt;br&gt;• Provide written cues then over time move to child writing cues &amp; you double check&lt;br&gt;• Teach memory techniques (mnemonics, chunking, visualization, repeating information, using rhythms)</td>
</tr>
<tr>
<td>Emotional Control</td>
<td>• “Get out of jail free cards”&lt;br&gt;• Teacher must stay calm</td>
<td>• Quiet place to calm down&lt;br&gt;• Anticipate, avoid, or prepare for situations likely to be difficult&lt;br&gt;• Offer choices&lt;br&gt;• Avoid reasoning or power struggles&lt;br&gt;• Give breaks when tension is rising</td>
<td>• Teach emotional vocabulary&lt;br&gt;• Teach self monitoring skills&lt;br&gt;• Teach relaxation skills, distraction skills, “anger management” skills&lt;br&gt;• Practice positive self statements&lt;br&gt;• Practice skills, don’t just talk about them&lt;br&gt;• Therapy</td>
</tr>
</tbody>
</table>
## Chapter 9 - Assistive Technology for Organization

<table>
<thead>
<tr>
<th>Planning &amp; Organization continued</th>
<th>Organization of Materials</th>
<th>Time Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>and talk out loud.</td>
<td>Develop rituals or routines for organization. Cue &amp; reinforce their use</td>
<td>Provide a schedule &amp; prompts for each step</td>
</tr>
<tr>
<td>• Provide specific prompts for child to do the planning.</td>
<td>Teach us of “launching pad” or “in/out” box</td>
<td>• Extend time limits. If a time limit is given provide prompts for how much time is left</td>
</tr>
<tr>
<td>• Provide general prompts</td>
<td>Simple organizational schemes</td>
<td>Use cueing devices such as clocks, bells, or alarms</td>
</tr>
<tr>
<td>• Have child verbalize as they plan</td>
<td>2nd set of texts at home. Assignments and materials available online</td>
<td>• Practice estimating how long something will take and then actually timing it. Discuss accuracy.</td>
</tr>
<tr>
<td>• Child plans independently and you check plan</td>
<td>Model strategies with gradually decreasing cueing</td>
<td>• Develop temporal reference points (length of a CD, song, TV show)</td>
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<tr>
<td></td>
<td>Development of these skills takes a long time</td>
<td>Develop schedule &amp; routines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teach concepts of “work time” and “non-work time”</td>
</tr>
</tbody>
</table>
### Executive Functioning Chart

<table>
<thead>
<tr>
<th>Area of Executive Functioning</th>
<th>Accommodations</th>
<th>Interventions</th>
</tr>
</thead>
</table>
| Sustaining Attention         | • Write start/stop time on assignments  
                             • Use incentive system  
                             • Break tasks up & give breaks  
                             • Use a time/challenge to increase excitement (not for the anxious child)  
                             • Do difficult tasks when most alert  
                             • Tasks need to be at appropriate level of challenge  
                             • Use “Grandma’s rule”—eat your peas before dessert  
                             • Decrease amount of work & work on quality  
                             • Model, assist, prompt, chunk assignments  
                             • Practice focusing for short periods of time and gradually increase the time  | |
| Shifting Attention           | • Visual calendars  
                             • Increase supervision at transitions  
                             • Anchor changes with known situations (remember last week when …)  
                             • Provide preparation & warnings prior to schedule changes. Provide verbal structuring  
                             • Prompts for stopping  
                             • Prompts for shifting  
                             • (“Now we are going to do something different. English is over. Math is starting. Put away…”)  
                             • Practice switching from one activity to another  
                             • Play games that require changing strategies (UNO)  
                             • Make change fun!!  | |
| Initiating Activity          | • Provide prompts to begin  
                             • Work with child to complete the first portion of task then fade involvement  
                             • Structure routines  
                             • Provide options or choices  
                             • Raising motivation. Raising anxiety  
                             • Use “Grandma’s rule”  
                             • Teach self instruction  
                             • Work with child to develop independent cueing system  
                             • Use incentive systems  
                             • Monitor amount of time from giving instructions to beginning the task. Encourage child to beat his/her own time  | |
| Planning & Organization      | • Have adult provide a plan or schedule for student to follow  
                             • Use scoring rubrics for assignments  
                             • Break long-term or long assignments into clearly defined subtasks  
                             • Create an assignment template  
                             • Provide separate grades or points for each step of a project  
                             • Teach one planning strategy that can transfer across situations  
                             • Use preferred activities to model skills as well  
                             • Have child be coach for another child on a task they enjoy  
                             • Follow child’s lead for what works for them  
                             • Break larger tasks into smaller steps  
                             • Have students use planner/organizer  
                             • Walk child through planning process many times. You plan  | |
because the student is most invested in finding a way to remediate the problem they identify as their worst area of organization.

A few people have told us that they need to fill out the inventory for different environments in their lives (home, work, school, etc.). While some problems seem to carry across environments, spatial problems, in particular, reportedly differ according to the environment the person is in and with whom they are living or working.

Executive functioning
The following charts are taken from the work of Colleen Wagner and are a way to address some of the issues that arise from difficulties with EF skills. Although they are not all necessarily AT, some may be considered AT and others are good strategies for working on deficit areas.
Chapter 9 - Assistive Technology for Organization

Assessing Students’ Needs for Assistive Technology (2009)

<table>
<thead>
<tr>
<th>39. Staying on one topic while writing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I (or my student) have/have problems with:</strong></td>
</tr>
<tr>
<td>1. Sequential Organization Problems</td>
</tr>
<tr>
<td>2. Prioritization Organization Problems</td>
</tr>
<tr>
<td>3. Temporal Organization Problems</td>
</tr>
<tr>
<td>4. Spatial Organization Problems</td>
</tr>
<tr>
<td>5. Categorical (Semantic) Organization Problems</td>
</tr>
<tr>
<td>6. Attention Organization Problems</td>
</tr>
</tbody>
</table>

| 40. Studying the most important information the longest |
| 41. Taking and organizing notes for a research paper |
| 42. Taking organized notes from reading |
| 43. Throwing unnecessary things away |
| 44. Waiting for anything |
| 45. Working in a small space or area |
| 46. Working on multi-task, long terms assignments without waiting until the end to finish them |
| 47. Working with graphic organizers that require I sort ideas into topics |
| 48. Writing on the lines or within the margins |

| **Total Checks per Category** |

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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</thead>
</table>

1 = Sequential Organization Problems
2 = Prioritization Organization Problems
3 = Temporal Organization Problems
4 = Spatial Organization Problems
5 = Categorical (Semantic) Organization Problems
6 = Attention Organization Problems

Scoring and Interpretation:
Generally speaking, we have found the following is true of the total checks per category boxes scores:

① 0-3 checks indicate a low to non-existent degree of organization problems in this category.
② 4 checks in a category can be symptomatic of problems for some people but could still be found in a person who is functioning with some degree of organizational success in this category.
③ 5-8 checks almost always indicate functional problems in this category of organizational problems.
④ Most people who have organizational problems have one category that is relatively high (7-8) and 2 other areas that are less problematic (4-7). We always suggest trying to deal with the category that has the most problems because “fixing” it can affect other areas.
⑤ If attention is the major area, regardless of its number score, start trying to deal with it first. It always affects the other categories of organization problems.

Specifically, we also have noted:
① That sometimes problems are related to learning styles. For example, someone who checked #3 and #26 may have attention problems or they may simply have problems with auditory distracters.
② Students, parents, and teachers often see problems quite differently. For older students, I try to have all three categories of people fill out the inventory for the student being evaluated. While most everyone recognizes the most problematic categories, what is seen as most problematic by the student is often not the same category reported by parents and teachers. Starting with what the student thinks is most problematic is a good way to start dealing with organization problems.
### Organization Problems Inventory

For each of the following statements, consider whether this is a problem you (or a student) exhibits. If it is, place a check mark in the white box to the right of the statement.

<table>
<thead>
<tr>
<th>I (or my student) have/has problems with:</th>
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</thead>
<tbody>
<tr>
<td>1. Being as neat as other people expect me to be</td>
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<tr>
<td>2. Completing long and complicated assignments</td>
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<tr>
<td>3. Concentrating or remembering information when I am distracted by what is going on around me</td>
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<tr>
<td>4. Deciding how to tell which tools, books, &amp; notebooks go with each task or class</td>
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<tr>
<td>5. Dividing a big job into sub-tasks</td>
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<tr>
<td>6. Doing the hard work first before I am too tired or bored</td>
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<td>7. Doing things in the right order</td>
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<tr>
<td>8. Estimating how much time is left</td>
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<tr>
<td>9. Figuring out what is wrong if I accidentally skip a step</td>
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<tr>
<td>10. Finding something if it’s not exactly where I thought it should be</td>
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<tr>
<td>11. Finding the right place (so I can find them again) for all the “things” I need to organize</td>
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<td>12. Finding things in my locker or desk</td>
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<tr>
<td>13. Finishing a long task without a checklist or outside help</td>
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<tr>
<td>14. Finishing detailed work without receiving or incentives</td>
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<tr>
<td>15. Finishing work when the assignment is too vague or when I’m not given specific due dates</td>
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<tr>
<td>16. Getting a task done without daydreaming</td>
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<tr>
<td>17. Getting my work done in the allotted time</td>
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<tr>
<td>18. Highlighting just the most vital information</td>
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<tr>
<td>19. Keeping my notebook in order</td>
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<td>20. Keeping track of assignments</td>
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<td>21. Knowing how long something takes to complete</td>
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<tr>
<td>22. Knowing which papers I should keep in my notebook/files</td>
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<tr>
<td>23. Learning new things while sitting perfectly still</td>
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<tr>
<td>24. Lining up math problems</td>
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<tr>
<td>25. Listening to long and complex directions</td>
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<tr>
<td>26. Making the best choices</td>
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<tr>
<td>27. Memorizing seemingly unrelated information so I can retrieve it for a task or test</td>
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<tr>
<td>28. Moving smoothly from one task to another without anxiety</td>
<td></td>
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<tr>
<td>29. Not just putting everything in one pile</td>
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<tr>
<td>30. Putting things in the correct folder</td>
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<tr>
<td>31. Reading clocks</td>
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<tr>
<td>32. Remembering how to do something unless I have practiced it over and over</td>
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<tr>
<td>33. Remembering how to do things without a lot of repetition</td>
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<tr>
<td>34. Remembering the final goal because I’m so caught up in the steps by step process</td>
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<tr>
<td>35. Taking in all the details that everyone else does</td>
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<td>36. Understanding how two things are related</td>
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<td>37. Understanding the benefit of doing things in a structured set of steps</td>
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<td>38. Skipping steps in a task unless they are written out</td>
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Solution Selection: Tools & Strategies

Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the motor aspects of writing tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time or require additional or significant staff training.

Implementation Plan

After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial materials, team member(s) responsibilities, start date and length of trial, training needed and any other student/staff specific issues. Be certain to identify organizational objectives and criteria of performance to determine the effectiveness of the trials.

Feature match

The concept of using a feature match approach started in AT with AAC (Alternative Augmentative Communication) devices. Since there are so many variables of an AAC device to meet the needs of the individual, using a feature match system was a way to address those individual needs. Using a feature match allows the characteristics of the device to be matched with what the student receiving the device needs. Some examples might be size, weight, use of pictures or words, ease of programmability, voice output, etc. The use of a feature match for any type of AT is paramount in giving the AT a chance to succeed. When considering AT for organization there are many factors that can influence the choice of an AT tool for organization. Some examples have been alluded to in the organization chapter such as:

- Involvement of the student in choosing or designing organization systems
- Consideration of learning styles
- Level of comfort with technology tools
- Desire to perform better (motivation)
- Previously attempted techniques or strategies

Using Judy Sweeney’s Organization Problems Inventory is another way to use a feature match with AT to support organizational skills. By figuring out which organizational areas are difficult for the student, problem solving, task analysis, using techniques, strategies or AT may help identify and/or improve the student’s deficit areas.

Students moving from place to place via wheelchair or walker may have difficulty transitioning themselves and their materials in the short time available for class transfer. They may also have difficulty carrying the books, notebooks and materials needed for classes. Knapsacks, storage bags and baskets may not be easily accessible to a student with motor issues. The team needs to consider which option works best for the student to transport and access their materials. If they do not find an acceptable solution it is important to work with the regular education teacher to see if a second set of materials can be kept in the classroom or be available in the special education or home environments.

**Strategies for Material Management**

**Use of multiple sets of materials**
There are several reasons that using multiple sets of materials may be recommended. For a student with a physical disability, having an additional set of materials in each room could allow them to independently ambulate from class to class and prevent them from having to carry books home. Students with poor organization skills can also benefit from an additional set of materials.

Environmental challenges may be a reason to recommend use of multiple sets of materials. The transition time between classes might be as short as 5 minutes. Consider a student with physical disabilities adding the mix of physical challenges and sensory processing issues to grab all the right things quickly, and you can see the student’s challenge. Several environmental changes could help the students’ performance dramatically. These might include a time study to figure out the issues, moving their locker to a more accessible area, having an additional storage space nearer to the lunchroom, or even permission to leave the lunchroom early. Consulting the student about which of these changes he would be most willing to try or use will help him to be successful in following through with the changes.

**Using materials as reminders**
Some students may use materials as a visual cue or symbolic representation for the work that needs to be done. Sometimes a student may leave their pencil out to remind them to finish a work sheet or turn a paper sideways in a folder to remind them that it needs to be completed.

**Materials to and from school**
Some special materials may be needed from home which raises another challenge for some students, especially if their parents are unable to read the notes sent from school. Ruby Payne (2003) talks about this challenge of home-school communication. English Language Learners (ELLs) or students who have parents who can't read have difficulty following through on the notes that go home. Payne notes that these children will often return without a permission slip or needed materials. Some parents will just sign what comes home, not understanding that a swimming suit is needed for gym or a lunch needs to come with the child on a field trip. This can result in some frustrating experiences for a child and their teacher. Some schools are using verbal communication systems such as a *Message Mate™* or online resources zones where a parent can access material lists with auditory or visual pictures to assist in their understanding.
Electronic files like their paper counterpart may also need to be sorted into files or topic folders. Help students create a filing system that makes sense for them. Teach them how to make files to store their Internet finds and documents so that related documents are stored together. A key is to regularly delete files that are completed and no longer needed. Periodic cleanouts may also be needed. The ease of saving and the lack of a physical pile can lead to e-folders that get too full to find things. Digital options do not take up more physical space, which is nice, but when the bookmark lists get too long it may be hard to find the sites you need. A nice feature of digital bookmarks is tagging. Unlike bookmarked favorites that are only listed one time, tagging allows the document to be sorted by code words and/or “attached” to multiple locations for easier retrieval when it is needed. Digital files allow speedier/ easier access. There is no searching through filing cabinets. Digital files are automatically cataloged in several different ways, by file type, by date completed, and by topic if folders were created. Access is also more mobile with digital files accessible at home, the coffee shop or anywhere Internet access can be found. Of course all of this depends on the student’s ability to access digital options out of the computer lab or through the school’s firewalls and protections.

**Portable Tools:** Handhelds and cell phones may offer new toolsets in the area of electronic storage and filing. As they increase their capabilities to connect with the Internet, work with word processing files, and download from various sites, they offer new ways to access digital materials. Built-in photo taking may help visual learners remember materials they might need. This photo capability may also help students who need paper text changed into digital text that can be read and listened to on the phone. This tool could be especially helpful for a non-reader or poor reader when they need to fill out job applications or complete classroom assignments.

**Computer-based tools:** There are many tools on the Internet, which can help students to organize their digital files. Bookmarking tools such as delicious or diggo can tag these sites in multiple locations. Internet front pages can be designed to bring needed information to the student each time they turn on the computer. These pages can house web addresses the student may need to complete assignments. Some teachers are creating learning blogs for their classes with free Internet-based software tools. These sites allow a student to check their assignments, drop-down missing worksheets or look for additional resources on the current topic in class. Tracking software can help keep track of the websites a student visits as they search for information to complete a topic. This way they can cite their work based on information at the sites.

**Transportation of materials**

Materials often need to travel with students to different locations. The shifting between classes and home brings with it a new organizational challenge. Having the right materials at the right time is imperative. Tools that need to arrive with the student when they shift from one location to another may include a variety of books and reading materials, writing and studying tools, and other project components. For some students it may work better to have multiple sets of materials to go in various locations where they are needed. It may reduce the stress for some students to determine what materials need to be mobile and what materials stay in a certain location.
useful or successful for that student. Consider the students learning style. For a student with visual strengths, color-coding notebooks and folders may help. For a student with kinesthetic strengths, creating a bin system in the desk or creating a shelving structure in the locker with a shelf for each class may work better. Using a pocket pager or portable voice note, to remind the student to bring colored pencils class may help an auditory learner.

**Low-tech organizers:** Bins, boxes and closeable bags are examples of low-tech organizers. It is easy to overlook these tools for students who are working with small tasks and locker spaces. But they can be extremely helpful in containing critical tools in the same locations such as using a pencil box that captures pens, pencils and erasers. Once the box is shut, these items are all in one place and can be easily grabbed from a desk or locker. Other bins can contain tools such as glue, tape or pencil sharpener. Some people use bins to organize by class such as keeping the colored pencils with the geography folder, notebook and textbook. Make sure that the bins or boxes chosen fit the space and move easily within that space.

**Locker or desk checklists:** Checklists for materials stored in lockers or desks can be helpful for some students. A simple map that outlines the zones of storage in a desk can be used as a reference during scheduled cleanouts. Locker checklists might include a materials list for each class so the student make sure they take the colored pencils or markers needed and social studies or the right set of notebooks for science and math.

**Everything box, Trapper Keeper, all in one folder:** Paper can be quite prevalent in the school environment. The first challenge is not to lose the papers that are needed. For some students having one large folder or storage box can be helpful in training the first step of paper management. That step is “don’t lose what you need”. Papers quickly add up, so frequent cleanouts are needed for this system to work.

**Coding systems, color or see through folders, box sorts, home and school pockets:** The second step in paper management is to get papers in the right places and to sort out what is no longer needed. It is common to suggest using colored folders to match class notebooks. But colors may not work for every student. Some students need to see the papers inside a folder so that they don't “visually” lose them. Transparent folders can help with this problem. Some students may prefer a tray system and put materials from one class into each tray. Many younger students are given home and school pockets on the back of a chair or on the side of the desk to help them sort the papers that can go home from those they will need again.

**Electronic filing and storage:** The explosion of electronic information has created a similar management issue as paper. As information stacks up, easy retrieval is the key. Students may need to keep track of websites they visit or access resource information and online activities to complete projects. There are number of web-based organizing tools that can help students track Internet sites; organize bookmarks by folders or tags which allow bookmarks to be stored in multiple categories. Online learning areas such as Blogs or Wikis may also need to be accessed by students. These areas may have been developed by teachers to share course resources, handouts, worksheets and reminders about field trips or materials needed for special projects. Some schools are even posting daily assignments and other information online allowing access from any place the Internet is available.
home. Morgenstern suggests getting items into zones or homes as important for being able to find them later. The C stands for Containers. The trick here is to find a container that really works in the space. And finally E stands for Equalize. This requires planning for and executing the cleanout strategies on a consistent basis, perhaps every week or two so that materials don't pile up. Her book is filled with a number of strategies and suggestions for helping all of us organize our spaces.

Schools create a constant stream of paper that must be sorted into levels of importance. Early elementary teachers may use a mailbox or sorting tool attached to the chair back to get finished work and permission slips out the classroom door. Older students may use trapper keepers or multiple folders to store or sort out papers from various classes. At this level, the sorting task is not just what goes home or what gets thrown away. There is a third level of paper called resource materials. These are materials needed for a short time to complete particular projects.

**Containment**

Containment systems are often a starting point. Some students can use a trapper keeper, a large binder that can hold multiple folders and notebooks. It can be closed or zipped shut to contain papers. Students may use color-coded folders to match their notebooks, the color helping them to match folder to class so only the right papers get in the folder. Some students may find the colors confusing, and struggle to find papers that may have been lost in transit. One idea is to use clear or translucent folders, well marked, helping them visually sort their folders by what is inside them. Providing sorting bins and/or time for sorting can help. Practicing organization can help reign in the chaos of a desk or locker. Sorting and classifying paper into the appropriate actions of throw or keep are great; however, one-size-fits-all classification categories do not work. Organizing strategies need to be flexible enough to match a range of student preferences and learning styles. Understanding student preference is critical to student performance in this area.

Work and storage spaces may provide a challenge for some students. Some students like a filing system with neat, organized folders to hold materials. For others, this type of filing system is a large black hole, where papers go in and may never reemerge. Desks and lockers are common catch-alls for student books, papers and materials. It is common in the early grades for teachers to help students by having Friday cleanups. Some middle schools may also work with students to help them organize their lockers. Be aware that some children may need a flat space to sort their materials on. Locating the desk near a worktable area may be a helpful strategy.

**AT for Organization of Materials**

Teachers are easily able to identify when students are in need of assistance with organizing their materials. However, even when given structured plans for organizing, some students are still not able to manage their materials. Struck (2004) would suggest that involving the student in the prescriptive or planning stages of any assistive technology it is more likely that the assistive technology tools will get used and not abandoned. This may explain in part why a single system doesn’t work for all students. Learning styles also affect the students’ choice of an organization system. Teachers tend to choose the organizational system style that works the best for them. If this system doesn’t match the learning style of the student, the organizational system may not be
Material Management
Managing the “stuff” that enters and moves through a student’s world can be especially challenging for those lacking in organizational skills. There are papers, and resource materials, projects in process or completed and tools needed for the work tasks of school. At least the “stuff” gets to stay in one room during the early grades. But in just a few years most students will begin moving from place to place needing to have the right materials at the right time. They will have to learn which stuff to keep and which can leave. They will need to do this within the limited space of their desk and locker areas. Without consistent and proper cleanouts disorganization will reign. There are various systems to manage materials, including SPACE and containment systems.

S. P. A. C. E.
Julia Morgenstern, a professional organizer offers some insight to the problem in her book, Organizing from the Inside Out (1998). Morgenstern addresses problems such as not enough space, unassigned homes for key items, inconvenient storage, or confusing systems that can make organizing one space a challenge. Morgenstern helps individuals organize using two strategies. The first considers personal preference by helping a student analyze what's going on with their space. It's important to know what's working and what is not, what items are critical for everyday use, what will work as a motivator to keep things organized, and anticipate potential problems that can hold a student back when they are attempting to organize their space.

Her second strategy focuses on the principle of S. P. A. C. E. for attacking the spaces that need to be organized. The S stands for Sort. Sorting looks at grouping similar items, identifying categories and identifying what's important. The P stands for Purge. This is when we toss what is not needed. Store only critical materials in the small spaces provided. A stands for Assign a
Portable, Adapted Time Keepers with Visual/Auditory/Kinesthetic Feedback
Students may use a clock, watch or cell phone to alert them at certain times of the day. All three have visual as well as auditory alerts and some even have vibration modes to use as alerts. Watch and clock faces with the hour and minute hands can give some visual cues of time passage. There are a number of different types of clocks and watches that students can access based on sensory or physical needs. High contrast, Braille, and talking clocks may help a student with visual impairments read time. There are clocks that use a tactile component such as vibration to alert a student at certain times. Some watches, such as the Watchminder can be programmed to give messages to the wearer. These messages can be text or verbal. For example, a Watchminder (watch that has programmable alarms) may be used to cue a student to go to the nurse’s office for medication. Sources for these types of watches and clocks can be found in the resource section.

Some students may need a visual or auditory representation of time passing. A popular version of time passing in visual representation is the TimeTimer™. A red section slowly disappears as time passes. An ordinary kitchen timer can be used to help students learn about time. These systems have worked well to help students “visualize or feel” time passage. This can really be helpful for a student learning to work independently for periods of time.

Electronic Reminders
Alert systems can be used as personal electronic reminders and can cue a student to tasks they need to do or switch to independently. A timer, pager or watch can be set to go off. For students with visual impairments, the alert may be auditory. For students with hearing impairments the alert system may be visual, with the watch flashing at key times. Please check the chapters on visual and hearing impairments for more resources in this area. Some students may need cueing for certain activities that are time sensitive. They may set the alarm on their watch to queue them to go to the nurse’s office for medication or know that it’s time to go to the office to meet their parent for an appointment. These systems can also be digital and used to track long assignments and obligations.

Digital Planners
Digital planners are gaining in popularity, especially those that are carried in a pocket, such as a PDA or cell phone. Having critical information like calendars, contacts and resources in one place, readily accessible, and able to be integrated, can help a student plan their time, organize their work-load, and connect with those that can help them succeed. The speed at which these items are developing has been incredible. Many of the organizing features once found only on a computer can be loaded into these convenient portable devices, so that a student can have instant access to their calendar or datasets. Because these items are usually with the student at all times and are highly prized, they may prove to be useful tools in getting information back and forth between home and school as well as helping students organize their time through reminders, contacts, or access to digital sites.

Web-based Planning Tools
Wikis, Google Calendar and other web-based environments allow students to access tasks and progress on projects.
Schedules (visual)
Any type of schedule helps to frame the events that will happen in a day. Items like class times, transitions, and special events can be shared with a student so that they can anticipate or plan for the various activities. These schedules can help students who do not transition well or who are upset by routine changes. The schedule is reviewed with the student throughout the day to help them anticipate what comes next. There are several formats for these schedules dependent on what a child needs. Some schedules may just use words; others may use pictures, symbols or videos. The schedule can contain a general overview of each day, or step a child through chunks or difficult sections of the day.

To understand the sequencing aspects of time, a teacher may want to create a visual schedule that is reviewed with a student to help them prepare for transitions or for what is coming next. Social stories may help a student successfully navigate a routine on their schedule. A kinesthetic component can be added by having the child move pictures to a “finish” box on a picture schedule as they complete each task. Consistent review of the day’s schedule can help students prepare for what will happen next. Even a student who is unable to read can use a list of pictures of their daily activities to make note of the activities they have accomplished in a school day. They can then use this list to communicate with those at home to show what was done at school.

Picture-based schedules may be used to assist a child who does not understand verbal or word based schedules. Real pictures from the classroom or symbols may be used to represent various parts of the schedule. Some versions have the child remove pictures as they complete the task. Others are more static. The choice to use pictures or symbols must also be considered. A picture can be confusing if there are a lot of extraneous details in it.

Images from Silver Lining Multimedia, Inc
http://www.silverliningmm.com/
Used with permission.

Combining pictures and symbols may also be helpful, especially for a child using a communication device or symbol systems to communicate. Using symbols in the schedule can help them build vocabulary as well. In general, it is easier and faster to generate symbols, and those symbols can be applied in multiple ways.
a task takes. The student estimates how long they think a task will take and then use the stopwatch to see how long it actually takes. Many students in middle school, in particular, are surprised by the time it takes to complete tasks. Estimations may be based on completing the task without any interferences, glitches, or interruptions.

**AT for Time Management**
The student’s ability to manage time is an important aspect of organization that greatly influences success in the educational setting. The following are devices and techniques that can assist with the student’s ability to manage their time.

**Checklists**
Checklists work as the first step of integrating time management and task completion. Generating a dated checklist can help a student stay on track for assignment completion as they identify the task to be done and the date that it is due.

**Planners - paper or electronic**
As the child moves into late elementary, assignments may grow in length and complexity. Planning the steps and time needed to complete the task may be facilitated by a task analysis of the activity and creating a project checklist. Paper planners, calendars or assignment notebooks can help define, plan, or visualize the time needed to finish work tasks. Graphic organizers as simple as a calendar can be used to plot out how much time is left before a project is due or to set interim goals. This is not an intuitive skill for most students so instruction in breaking big projects down into smaller components can be a real help to successful completion.

Personal daily planners, portable calendars or notebooks can be used to keep track of what needs to get done each day. Reference information that is needed frequently may be added to these systems such as phone numbers, website links, reference materials or e-mails are just a few bits of information that may be added. One digital tool is the *Pocketmod System*, which uses a piece of paper as the base for a simple portable organizing tool. It can be found at the following web site: [http://www.pocketmod.com/v2/](http://www.pocketmod.com/v2/).

Graphic organizers, either the paper or digital varieties, can help students visualize the smaller steps and organize those steps into a sequence. Examples of digital graphic organizers include: Inspiration, bubbl:us (located at [http://bubbl.us/](http://bubbl.us/)), *Spark Space* or *C-map*.

Perhaps the most widely recognized graphic organizer is the calendar. Students may need a calendar program to organize the day, week or month. Paper versions can come in handy as students plan out when they will complete multiple assignments and long term projects. They may also need to schedule appointments and after school activities. Paper is often used in the early stages of this type of organizing but students may also utilize computer digital options that allow more flexibility in adding or subtracting new events. One common version is *Microsoft Outlook*, which offers not only a calendar feature that can be accessed at home or school, but can be integrated with phone and email contacts. *Outlook* can also send reminders to a student’s screen when they turn it on in the morning. Another calendar resource is available at [http://www.calendarsthatwork.com/membership.php](http://www.calendarsthatwork.com/membership.php).
Time Management
Time is an abstract concept that can be difficult for a student to understand. At a construct level, time is a way to sequence events, bring visual or kinesthetic expression to the chunking of routines throughout the day, demonstrate how a routine can be measured into systematic and expected units, understand that those units are known as “time” and build the duration a student may need to sustain attention, work, or stay in their seat for a period or “unit” of time.

Using Task Analysis to make tasks more manageable
Use of task analysis may help determine how time fits into the required activity. There is a tendency for students to underestimate how long project components can take. Task analysis is not necessarily an intuitive skill but is essential for learning time management not only for school projects but for the work tasks students may be asked to take on later in life. Task analysis asks the student to take a project and break it down into small, sequential tasks. To use a garden analogy, if the goal is vegetables in August, a student would need to prepare the soil, plant the seeds, weed and mulch, water, and weeks later harvest the results. There won’t be any vegetables if they forget to plant and water.

Helping students learn to break larger tasks into smaller more manageable phases of the project with intermediate deadlines can be helpful. Just like study guides help students read for meaning, task analysis helps a student gain understanding on what needs to be done and how long it will take. Students learn that big projects are just a series of little steps sequenced together and that smaller steps can make a project feel more manageable.

A student’s understanding of how much time each step really takes is another challenge in learning how to manage time. One strategy that may assist is to use a stopwatch to time how long
3D view that can help students with strong visual spatial skills. Additionally there are 2 free organizers, C-Map and Bubbl:us, that allow access to graphic organizing on the web.

Payne (2003) found that students could use digital graphic organizers, such as Inspiration and Kidspiration to capture their circular thinking in the diagram mode and then connect those thoughts in the outline mode to create an informational linear document a teacher would expect (p 49).

Lynne Anderson-Inman (n.d.), in her research on electronic study tools, found a connection with improved student performance when she used digital graphic organizers with students. The students could move the information pieces surrounding a topic in order and then switch the data into another view called outline mode. She found that the students using outline mode could see the gaps in their information and take corrective action.

**Online formatting:** The goal of these programs is to ease the pain of referencing projects by helping students keep track of their sources or to assist in the formatting. The following are some tools that are readily available.

- End notes in MS word [http://www.endnote.com/](http://www.endnote.com/)
- Ref Works, Bibliographer in Read and Write Gold

**Online Manipulatives, Interactives, Tutorials and Animations:** These tools allow students to interact with content material in a format that fits their learning style. To find these, use Internet search engines and the key words such as animations, interactives, manipulatives or tutorials. Thinkfinity and Nettreker offer streamlined searches to look for these types of websites.
argument and the program asks the user to answer questions that can guide their thinking on the topic.

- *Rubistar* is a web-based tool that templates study rubrics and is customizable to project needs.

Here are some other study guide templates with read aloud support
  - [http://ksdl.ksbe.edu/writingresource/typeswriting.html](http://ksdl.ksbe.edu/writingresource/typeswriting.html)

**Online search tools:** *Nettreker, Thinkfinity, or Awesome Library* offer age appropriate as well as protection from inappropriate sites while searching the Internet for information. Online search tools can be used by students to gather information or by the teacher to find alternate forms of the information that may better meet a student’s particular learning style.

**Online web trackers:** Online web trackers track where a student has traveled during a web search. Useful for later referencing of sites, it helps when a student forgets where they found something and helps teachers leave a trail of sites for students to visit.

**Online Sorting File Tools:** In addition to online tracking software, file storage may be needed as a student works on a specific project. Teaching students to create files to store their information is common. Unfortunately there is a tendency to over bookmark and save files, just like we do with paper. This can make finding what you need tedious. Social bookmark sites such as Delicious ([http://delicious.com/](http://delicious.com/)) allow the information to be tagged in multiple locations.

**Digital Graphic Organizers:** Graphic organizers can help students organize bits of information into summarized units. These organizers help students capture information in a format that can be sorted and then moved to the linear format. *Inspiration* is a common program in many schools that follows this concept and then allows the outlined to be exported to a word processing document for finishing. *Spark-Space* ([http://www.spark-space.com/](http://www.spark-space.com/)) adds a rotational
students identify and organize important information and help the students learn to think about and ask questions to support their comprehension while they are reading text.

**Task analysis:** Students may need paper or digital worksheets to help them analyze bigger projects. The purpose of a task analysis is to break down bigger elements into smaller more manageable chunks and to identify potential problem areas a student must navigate to complete the project. For sample sheets see the Resources section at the end of this chapter.

**Digital highlighters and sticky-notes:** Digital versions of highlighters and sticky-notes, often freeware or inexpensive software, allow students to highlight a webpage. Some of these highlighters will allow the highlighted text to be extracted to a word processing document or a digital graphic organizer such as *Inspiration* for future sorting. Sticky-notes are also available in digital form allowing a student to add their thoughts as they read from the web. These notes can also be sorted and added to a graphic organizer. These are built into programs like *WYNN*, *Solo*, or *Microsoft Word* (see Chapter 7 – Assistive Technology for Reading).

**Handheld scanners and electronic extraction:** Handheld scanners and electronic extraction can be used to convert paper documents into digital formats. A typical scanner would convert the document into a picture, but some of these tools are even able to convert a paper text document into a digital text format using OCR (Optical Character Recognition- see Reading CH. for more information). This may help the student access the text via a text reader or to highlight, cut-and-paste, or move text into a graphic organizer. The systems mentioned below are small enough to fit in a pencil case or pocket for on-the-go use.

- *Infoscan*
- *Kurzweil Knfb reader*
- *Docupen 800* (OCRs with paper port) - [http://planon.com/docupen_rc800.php](http://planon.com/docupen_rc800.php)

**Electronic organizing:**
There has been an explosion of web-based tools to support organizing information gathered on the Internet. Tools range from the development of study grids and task checklists to an array of online search, interact and track features. There are tools that can highlight or clip key information. Other tools may help track information as it is collected for later referencing. Web tracking software captures the sites a student is using. Other sites can help a student identify the type of form that is needed to complete a project with an outline of that format. This form can help guide the student through the creation process. There are even sites that can format references and resources.

**Study grid generators, grading rubric:**
A study grid helps students organize the search for information by identifying key concepts or questions a student may have as they read a text. These questions guide student to develop the internal thinking needed to extract meaning from information they read.

- Don Johnston’s *Solo* product has ready-made templates and space to develop a study guide as part of a reading assignment. The product also has a read-aloud support feature to help students struggling with decoding.
- *Report Writer Interactive* is another tool that provides a study guide concept around reading/ writing activities. Identify the desired end product such as an essay or persuasive
map section, appendices, a dictionary or vocabulary definition section or the last page accessed. Removable book tabs can be put in the book to help students locate these sections quickly. The tabs can also be used to mark the questions at the end of the chapter, selections that contain pertinent information or any other place that needs to be referred to frequently.

**Sticky-notes/index cards:** Sticky-notes may be used as temporary book tabs to mark where they stopped reading or to mark a chapter they need to reference. Another use of index cards or sticky-notes is to gather information as it is found in resource materials. The student writes the key points that they needed for their project onto the sticky-notes or index card. These can then be moved around on a desk or wall as a portable paper graphic organizer. Students can start to learn to chunk pieces of information that are similar or to look for patterns in the ideas they have noted from the information they have read. This organizational step is often missed by struggling students and is a very concrete way to start organizing a project.

**Highlighters:** Highlighters offer another way for students to interact with the informational text they are reading. The student may use a highlighter that is erasable or use a regular highlighter to mark handouts or worksheets. Highlighting offers a visual reminder about the text having some importance for the student. Some students may use a range of colors to mark text by category, i.e., all items that address timeline issues during the Civil War are in blue and all items that talk about causes of the war are in pink.

Steps for highlighting include:
1. Read the passage to obtain general idea of the material.
2. Reread and look for key words and concepts.
3. Highlight important information.

Students often do not follow all of these steps as they involve multiple reads of the information and they may have difficulty reading through it once or have issues with analyzing or synthesizing skills. This may be why they highlight too much information. Providing keywords to look for may help them start to learn how to identify important information. Highlighters come in several formats: erasable, some have built-in caps, which help keep all the pieces in one place, or highlighter tape.

**Hand held recorders/Pocket minders:** Digital or audio recorders may be used to capture thoughts and ideas verbally. A student records a message such as “I need to remember to bring flour for the papier-mâché project tomorrow” or “Read chapter 8, answer the study guide and questions on p.44 and 45.”

**Keywords:** Understanding key vocabulary is critical to organization of projects that are going to be written. Marking in a book or creating keyword sheets can work as a quick reminder about what the words they are using actually mean.

**Study Guide:** A study guide can help students navigate print and digital information and aid a student’s comprehension. It can provide a framework for learning tasks and classroom expectations. The study guide design can incorporate leading questions, to drive the process of information gathering, and shape the supports a struggling student may need. It can help


**AT for Information management**

In the school setting students are expected to acquire, retain and use information. Managing information can be a challenge. Technology can help students manage and sort information to facilitate communication and comprehension. For the purposes of this section we are going to look at tools that can help a student manage and utilize information to complete required tasks.

**Tabs:** Most students in middle and high school have large textbooks that they need to navigate. These textbooks may have key sections the student may need to reference frequently such as a
Fidgets
Fidgets include small objects that can be compressed, stretched, manipulated, or moved. These may include a small rubber ball, silly putty, small fine motor toys, add-on pencil erasers that have a squishy or movable component or toys that fit in the hand but can still move. Fidgets are used to add movement in a non-obtrusive way. The movement may be needed to help the child maintain attention or to relax an anxious student. The challenge for these tools is to ensure that they are not misused and become more of a distraction for the individual student or peers than a tool for helping the student focus on tasks. Rules for use of these items are needed.

Auditory Tools
**Music:** Music can be a useful tool in self-regulation. Think of your own experiences. What kind of music do you listen to when you're happy? What music do you choose when you're sad? Is the music you choose on Friday night as you are going out to meet friends, the same music you would study to on Sunday evening? For most people, the answer for each of these questions would be different. Music theory has looked at the beats per minute as one means of moderating sensory experiences[^1]. A Stanford study used functional magnetic resonance imaging (fMRI) technology and found that music engages the areas of the brain involved with paying attention.

**White noise:** some students may benefit from a headset that uses white noise as a block or filter for environmental noises that are distracting them. The white noise works to block the distracting background noises.

**Hemisync:** There has also been brain research on using music to help the brain achieve a higher level of attention, concentration or relaxation. Some students may benefit from certain types of music while they work. Hemisync is just one example of this type of specialized music; they also have a CD recording of white noise.

**Noise reduction headsets:** Noise reduction headsets can be used to block out all external noise to help students maintain a focus on school tasks.

Visual Tools
**Social stories, paper, symbol or visual clean video**
Social stories were designed to help students anticipate changes or particular situations they might encounter during the day. Some students may have difficulty reading the subtle cues a teacher or classmates send to prepare for transitions in their day, such as going out to recess, changing classes or getting ready to go home. The social story is created to step them through what will happen during the transition using a simple structure that explains what needs to happen, give the steps needed and acknowledge feelings.

Social stories can take several formats. Some students may need real pictures, showing step by step what they need to do. Others may have picture schedules generated from a symbol library such as Boardmaker© or Picture It©. These systems are usually paper-based. Sometimes there are removable pictures that the student takes off as they complete the expected routine. With the emergence of video, some students may benefit from short video clips demonstrating what they are expected to do. These video clips are becoming more easily accessed through handheld devices. They can also be reviewed multiple times at school or at home for as long as is needed.
A Continuum of Considerations For Assistive Technology-
Self-Management

Sensory regulation tools

Movement and deep pressure tools

Fidgets

Auditory

Visuals

AT Tools for Self-Management

**Sensory Regulation Tools**
Talk with your occupational therapist about resources to learn more about sensory processing tools that can regulate student sensory systems. Sensory Diets are quickly gaining popularity in many schools, especially for students with an autism spectrum disorder. While general suggestions such as deep breathing, heavy work, motor breaks, fidget toys, white noise or music are useful tools to help a student regulate their attention, it is important to work with an occupational therapist trained in these types of interventions while putting programs in place. Sensory stimulation activities can be very prescriptive. Swinging, deep pressure, heavy work and brushing/joint compression programs can be very effective tools in self management, but need to be monitored regularly by someone who understands the neurological ramifications of what is being done to the child. Misinterpretations of a child's behavior can have a negative impact on their school performance.

**Movement and Deep Pressure tools**
Movement tools may include Activa Disc, Disc O Sit as well as Move-n sit cushions, ball chairs, swings, bikes or rocking chairs. The student uses the movement to help them maintain attention. The cushions, ball chairs and rocking chairs may provide in-class tools a student can use to move less obtrusively while maintaining attention. Swings provide rhythrical or arhythical movements for a child who needs to regulate their sensory system. It is important to work with a trained occupational therapist when using this type of tool. Some students may need sensory breaks that allow them to move outside of the classroom. Bikes and playground equipment such as swings or merry-go-round can help calm some children. Movement may be paired with a heavy work activity such as carrying the full milk crate back from lunchroom or wearing a weighted or pressure vest. Heavy work and deep pressure tools are also used as calming activities.
A child with a physical disability may miss out on some of the experiences that peers take for granted. A child in a wheelchair may not get to experience the social connections that his classmates get sitting at their worktables. The tool for mobility impacts the social and access components of learning. The wheelchair may make it difficult to pull up to the table or motor issues may make getting on the floor to play with a friend difficult. A child with communication difficulties, whose only means of expression is a simple picture board, does not get the same practice using words that a talking peer, affecting the development of conversational skills, play with words and sentence structure. The reality is that a student arrives at school with a set of experiences and a system that processes sensory information in a way that is unique to them. Sometimes it is important that we step back and help them to learn and navigate with new skills they may not have encountered before. It is never too late for a child to develop cognitive strengths and there are tools that can help these students navigate the school experience with more success. The question from an AT perspective is how we can use technology tools to support sensory systems, learning styles and cognitive strengths in the school environment.

**Sensory Engagement**

Eric Jensen in *Tools for Engagement* (2003) talks about strategies that tap into sensory strengths to increase student engagement. He uses simple routines (similar to motor feedback loops) repeated constantly to help clue young students into the actions, such as upcoming transitions, returning attention to the teacher after group activity, or drawing the children’s attention into learning experiences. Simple strategies that can be employed to help children focus include: deep breathing to calm and focus an excited group or calm a tense situation; simple call back games; or playing certain types of music.

**Use of Motor activities to reengage**

The popularity of *Brain Gym* or *Yoga for Kids* may be due to the use of a motor feedback loop between movement and attention to help students stay focused. Tapping into any of the sensory loops can be effective for “brain access”. Sensory diets and fidgets may be used to help a student stay in an attentive state. One example would be to use a wind chime as the call-back mechanism after group activity. The pleasant sound draws student attention gently and the teacher’s beatific smile reward the students’ quick response and attentive behavior.

Judy Sweeney, a professional and specialist in the area of assistive technology, found sensory processing played a role in technology tool selections depending on the student’s preferred learning style. She found that visual schedules and *Time Timers* worked well for students with visual preferences, while print schedules and alarm sound features worked better for those who preferred auditory feedback. Sweeney created an Organization Problem Inventory which can be viewed at her website [www.onionmountaintech.com](http://www.onionmountaintech.com) It is also at the end of this chapter.
Working memory
Working memory is the ability to hold information in your mind while you complete a task. A student must be able to keep information needed to complete a task in their mind. The student must also be able to hold and move between different sets of information long enough to use them. This also encompasses the ability to draw on past learning and apply this to situations in the present and the future.

Emotional Control
Emotional control is the ability to manage emotions in order to achieve goals and complete tasks. The ability to control one's emotions is a significant factor in achieving executive functioning. Students who have difficulty with emotional control may go into a fight/flight mode about an issue and are then unable to focus on the task at hand. Teachers may note that the student comes to the classroom already in an emotional state and that it is very difficult for the student to move beyond the emotional state to address the learning that is to take place.

Self-Management

Sensory input as a basis for self-organization
A student needs to sort through a constant stream of sensory information and needs to employ self-regulation strategies to help decide what needs to be attended to and what extraneous information is. Much of our early learning experience is triggered by what we process at a sensory level. For some students, especially a student with sensory processing limitations, the skill set of learning may be skewed.

How does a child with visual impairments learn that there are objects to reach for and in the process develop the arm and hand functions needed for reaching? How does a child with motor problems learn the joy of catching something rolled or tossed their way? What happens when they miss the early social interactions of throwing the object back and forth with a parent or sibling? How does a child with attentional difficulties focus on the important sensory information (auditory/visual) required to comprehend the directions or information from their teacher when there are many environmental sensory distractions?

Acquisition of Information
The brain creates a “filing system” that expands constantly to accommodate new sensory information. That experiential filing system plays a critical role during a student’s school career, as new information to be learned is often compared or tied to what they already know. For some students, the filing system they have created may not match up with the expected experiences needed for successful school performance. Programs such as Birth-to-Three Interventions, Head Start and Early Childhood are designed to increase the early experiences of children so they are ready for the demands of school and life. Even with these programs in place, some students may not arrive with the filing tools they need. It is important to assess and perhaps take a step back and build the cognitive strengths needed for later learning tasks.
Inhibiting impulses
The ability to control impulses is an important part of determining what needs to be attended to as well as the ability to appropriately stop one’s own behavior at the proper time. Lack of impulse inhibition allows the student to attend to information beyond what is important. The inability to tune out extraneous information is often observed as distractibility. Students may appear distractible because they have difficulty stopping themselves from responding to distracters. The capacity to think before acting and the ability to resist the urge to say or do something long enough to evaluate the situation and how our behavior might affect it will also influence the ability to follow through on organizational tasks through the school years.

Initiating activity
Another component of EF is the ability to initiate activity. This is the ability to begin a task or activity without undo procrastination. It also encompasses the ability to independently generate ideas and the drive, desire, or motivation to complete work.

Planning and organization
Planning and organization is the ability to prioritize and develop steps necessary to complete a task. It often involves multiple steps and components to complete a task, and without the proper planning and organizing many school-based activities are not successful. Many times a teacher is able to note that the student has difficulty in this area, but they (both student and teacher) are unable to figure out the steps, where the difficulty is occurring, or the type of difficulty that is causing the lack of success with planning and organizing.

Organizing of materials
The organization of materials is often an area easily identified by the teacher as an outward picture of lack of organization. This is the ability to keep one’s workspace, play areas, and materials orderly. It also encompasses the ability to determine what materials or resources are necessary for a task and have them readably available. Students who have difficulty with organization may lose materials and/or fail to turn in completed work. Organization of materials does not always equal neatness. Many people are able to have a system of organization that on the surface appears messy. However, the true test of an organization system is whether materials, information or any other needed item can be found in an efficient manner.

Time management
Time management is an area of Executive Functioning (EF) that is also easily observed by teachers in the classroom. It encompasses the ability to estimate how much time a task will take. The student must have the ability to estimate how much time one has, how to allocate it and how to stay within time limits and deadlines. It is the simple fact that the student recognizes time is important. Often when time management is an issue, the use of a parking lot will allow an extraneous idea to be acknowledged and set aside or ‘parked’ on a separate paper to be addressed at a later time. This allows the student to acknowledge that the other information may be important but that it is not part of the current project.
Background

Organization is a complex process requiring many components. This skill is important to overall student success. Throughout a student’s educational career multiple methods and systems of organization are required. Many students struggle with how to use organizational skills to improve their work. Numerous components are involved in the organization process. These include: self-organization; information management; time management; or materials management. Understanding the components required to complete a task is paramount and helps us to provide assistive technology that supports a deficit area. Having background information in an area of study known as executive functioning helps staff to understand its role in supporting and contributing to organizational needs of students.

Executive functioning

Organizational skills are components of a broad set of skills often referred to as executive functioning (EF) skills. Currently there is no standard definition for EF, but the following definition outlines EF: executive functioning is a neuropsychological concept referring to the cognitive processes required to plan and direct activities, including task initiation and follow through, working memory, sustained attention, performance monitoring, inhibition of impulses and goal directed persistence (Dawson & Guare, 2004). Authors and practitioners (Dawson & Guare, 2004) (Warner, 2008) acknowledge several different categories of these skills, agreeing with the following 10 types of executive functioning (EF) skills: sustaining attention, shifting attention, inhibiting impulses, initiating activity, planning and organization, organization of materials, time management, working memory, and emotional control. All of these executive functioning skills work together to support self-organization, information management, time management and materials management.

To understand the underlying skills needed for organization, a brief explanation of EF taken from Warner (2008) will delineate the components of EF and their relationship to the different areas of organization in this chapter.

Sustaining attention

The proponents of Executive Functioning (EF) literature would suggest that sustaining attention is a significant precursor to organization. Sustaining attention is the ability to hold one’s focus on the task at hand long enough to complete it. It is a pre-requisite to other executive function skills. It is difficult to stay with or stick to an activity without sustained attention, so even the best organizational methods can’t be utilized if the student can’t attend to the teacher explaining the task, the organization or any other information.

Shifting attention

Shifting attention is the ability to move freely from one situation, activity or aspect of a problem to another. This includes the ability to respond to feedback by letting go of an idea or strategy that is proving ineffective. Flexibility in solving problems, making transitions, and coping with unforeseen events is also part of the concept of shifting attention. Students may have difficulty making transitions because they are “stuck” on activities due to anxiety, perseveration or compulsiveness. Students may also have difficulty “settling in” once they enter a new classroom or start a new subject.
Chapter 9 - Assistive Technology for Organization

Narrowing the Focus

As a team, identify by circling or highlighting those few tasks the student needs to do for organizing that will have the most impact.

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.

Solution Generation: Tools/Strategies

As a team, brainstorm and write on chart paper any assistive technologies and/or strategies you think will assist the student in successfully completing those tasks you identified.

At this point, the team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for organization. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology. Subsequent to the continuum is a more in-depth description of select tools.
• Is the student’s organizational performance variable?
• How structured is the work environment?
• Does the lesson structure include strategies that support students with cognitive strengths difficulties?
• Are there enough materials, time, and work spaces?

Sensory Considerations
Different environments have different levels of sensory stimulation. If the team has determined that sensory issues influence the student’s learning, identify the sensory levels in each environment that impact the student’s ability to organize.

Assistive Technology: past and present
What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference. If the student is currently using assistive technology note the AT used, location, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low and high tech AT supports.

Tasks
As a team, discuss and write on chart paper the organizational writing tasks that the student needs to do.

One of the most important questions when assessing a student’s need for assistive technology is: what are the tasks the student needs to do? These are some questions to consider:

• Does the student arrive ready for learning?
• Does the student arrive on time?
• Does the student arrive with materials needed for class?
• Does the student organize papers and materials independently?
• Is the student able to organize their work area?
• Does the student retrieve needed materials in a timely manner?
• Does the student arrive with projects completed successfully?
• Is the student able to generate a multi-step plan for longer project?
• Is the student able to identify or articulate emotional issues that may cloud or interfere with attention needed for organizing?
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What sensory challenges does the student have that impact organization?

Do they like or dislike certain textures, visual information or clutter? For example folders or book covers that have various surfaces: shiny, smooth, bland.

Does the student have the ability to explain why they need to use fidget toys or other types of self regulating strategies?

Does the student have tools and strategies to assist their own sensory regulation as it relates to self-organization?

Do they prefer flat storage or upright as in a locker?

Do they use a separate container or a holder inside the notebook to store pencils or other small items?

Other Considerations
Each individual student has specific skills and areas of concern. Be certain to address those as you capture the particular traits of the student in this part of the SETT process.

Some questions to consider:

- Does the student have tools that can assist their cognitive strengths?
- Does the student have and/or use materials that meet their learning style?
- Does the student have specific tools to help focus their attention on educational tasks?
- Does the student have organizing strategies that match their needs?
- Has the student/parents been interviewed about current organizational challenges and strategies that have been tried in the past?

Environmental Considerations

As a team, discuss and write on chart paper any environmental considerations that might impact the student’s organization such as auditory or visual input, placement of the student in the classroom, number of different environments or any other environmental impacts.

What environmental considerations impact the area of concern?

Are these common barriers interfering with the acquisition of organizational skills?

- Is there time to teach organizational skills?
- Are organizational skills built into the curriculum?
- If the student has to move between classes, is there enough time between classes?
- Are time and space management still emerging skills for many elementary and middle school students?
- Does the teacher struggle with his or her own organizational issues?
- Is there sufficient physical space to organize materials?
- Are study rubrics, scaffolding or learning grids available to help students break large tasks into smaller units?
- Does the student have cognitive strengths deficits that may be impacting their processing? Is there time to back track and work on these underlying skills?
Chapter 9 - Assistive Technology for Organization

Student’s Abilities and Difficulties

As a team, discuss what the student’s abilities and difficulties are related to organization. Please complete and review Section 8 of the WATI Student Information Guide: Organization (Chapter 1, page 38).

Indications of difficulties of organization are demonstrated in many ways. The student needs adequate support and skills to perform educational tasks. To help the team to better understand the abilities and difficulties there are questions that may be asked to elicit the child's current level of functioning with regards to organization.

What are the student's abilities and difficulties related to organization?
- Is the student able to self-regulate?
- Does the student have fully developed cognitive strengths?
- Does the student struggle to organize information?
- Does the student struggle to organize their time?
- Does the student struggle to organize their materials?

What evidence of organizational problems do we see in the classroom?
- Does the student have difficulty managing time?
- Do they miss deadlines, have difficulty managing work time or are they frequently late?
- Does the student have difficulty managing materials and workspaces?
- Does the student have work areas\desks\lockers that are a mess?
- Does the student have difficulty organizing information for projects or completing longer assignments?
- Does the student have difficulty getting started on projects, and extracting important or pertinent information?
- Does the student have difficulty prioritizing work tasks?
- Does the student have trouble handling multiple or multi-step assignments?

Sensory Considerations

Some students are adversely affected by environmental stimulation that others can filter out or ignore. Some common factors that can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as
- Visual clutter
- Fluorescent lighting versus full spectrum lighting
- Classroom and background noise
- Tactile stimulation
- Awareness of physical space / personal space
- Other individual specific sensitivities

Below are factors that are not directly related to organization, but can impact the student’s ability to focus on instruction and learning. Consider the following:
## WATI Assistive Technology Decision Making Guide

### Area of Concern: Organization

#### PROBLEM IDENTIFICATION

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
</table>
| What are the student’s abilities & difficulties related to organization? Does the student have strengths or learning styles that could facilitate an organizational system? Identify specific issues:  
- Organization of time, information, or materials?  
- Self-regulation?  
- Cognitive strengths?  
- Classroom issues?  
- Managing time?  
- Missing deadlines?  
- Poor use of work time?  
- Frequently late?  
- Messy work areas/lockers?  
- Difficulty getting started or prioritizing work tasks? | What environmental considerations impact the area of concern? Are any of these barriers interfering:  
- Time to teach organizational skills?  
- Organizational skills in curriculum?  
- Time between classes?  
- Sufficient physical space?  
- Study rubrics, learning grids?  
- Structured work environment?  
- Sufficient materials, time, and work spaces?  
- Performance variable?  
- Does the teacher struggle with their own organizational issues? | What task(s) do you want the student to do?  
- Arrive on time?  
- Arrive ready for learning?  
- Have materials needed for class?  
- Organize papers and materials independently?  
- Organize their work area/locker?  
- Retrieve needed materials in a timely manner?  
- Complete projects successfully?  
- Generate a multistep plan for longer projects?  
- Develop their own organizational system? |

#### Sensory Considerations

Hypersensitivity or hyposensitivity to stimuli such as: visual clutter, different lighting; classroom and background noise; tactile stimulation; awareness of physical space / personal space; other individual specific sensitivities

#### Narrowing the Focus

i.e. Specific task identified for solution generation (such as) one from the list of tasks above

#### Solution Generation Tools & Strategies

- Brainstorming Only
- No Decision

#### Solution Selection Tools & Strategies

- Discuss & Select Idea from Solution Generation

#### Implementation Plan

AT Trials/Services Needed: Date/Length/Person Responsible

#### Follow-Up Plan

Who & When-Set specific date now.

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### Important

It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Using the SETT process and Decision Making Guide

It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. Additional categories include:

- Narrowing the Focus to help identify a specific task in order to select appropriate assistive technologies.
- Implementation Plan to assign trials, dates, responsibilities and data collection.
- Follow-Up Plan to set a date for the team to reconvene and review the student’s progress.

Again, this is intended as a guide; during the actual assessment process, each topic should be written in large print where everyone can see (i.e., on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology tools and strategies for their students.

Disclaimer: this is a brief introduction to an understanding of organization not meant to be all-inclusive, but to give the reader a basic understanding of organization to better select appropriate assistive technology supports.

For a review of the literature related to organization and articles addressing a multitude of organizational information, refer to the reference section at the end of this chapter.
Organization is the name commonly applied to an underlying skill set needed to be successful throughout the education process. It is often not a targeted component of the curriculum but plays a significant role in the achievement of curricular goals. Definitions may vary but for the purposes of this chapter and the assistive technology tools and techniques, we will discuss skills in the areas of self-organization, information management, time management, and materials management.

**Introduction**

Lack of organization can be a barrier to student’s performance of everyday tasks and assignments. Although specifically not addressed as a subject area for instruction, different methods of organization are taught throughout the educational process. As early as their first educational experience, students are expected to follow the organization utilized in the classroom: using a cubby or locker to store their belongings; following a daily schedule to delineate when there are different classes; and recess and lunch times. As the students move up in the grade levels, other techniques and tools are used to help students stay organized: folder and notebook procedures to distinguish between what goes home and what needs to come back to school; daily planners or organizers to write down and remember assignments; templates for assignments, etc. Some schools have begun to move their organization of information to a digital format, listing class assignments, scores, grades on their web site which is accessible to their students anywhere anytime. Yet despite these structures put in place for them, some students still struggle with various aspects of organization.

This chapter is organized in accordance with the Decision Making Guide following the SETT format (Student, Environment, Task and Tool). The **Student** section will assist you in determining skills and abilities exhibited by the student to perform the organizational skills necessary for functioning in the academic environment. The **Environment** section poses questions to consider concerning the impact of the students environment, the teachers expectations, and how the environment might impact on the choice of assistive technology for organization. The section on **Tasks** for organization poses questions to help determine what is required of the student in order to appropriately choose an assistive technology solution. Following Tasks is a section on **Tools** beginning with the continuum of assistive technology to be considered. The continuum is organized from low to high technology. A more extensive listing of tools and strategies under the continuum subtitles follows. The chapter concludes with a discussion of a feature match process and steps for implementation. Chapter appendices include sample IEP objectives, references, resources, and product charts.
Chapter 8 – Assistive Technology for Mathematics


References


Chapter 8 – Assistive Technology for Mathematics

Math Workshop Deluxe, grades 3-6  
http://www.smartkidssoftware.com/ndbro40.htm

The Math Work shop  
www.themathworkshop.com

Math Problem Solver, Curriculum Associate, grades 1 - 8 & Adult Ed, teaching/reinforcing key concepts  
www.mathway.com

Math simulation games  
http://www.techtrekers.com/sim.htm

Microsoft Math is a purchasable add on program that creates graphs and provides a nice adv. feature online calculator  
http://microsoft-math.en.softonic.com/

**Voice recognition Math software**  
Math Talk Works with dragon products to write math  
http://www.mathtalk.com/

General Web Resources

FDLRS/TECH, frequently updated web options in many areas  
http://www.paec.org/fdlrstechnology/math.html

Select Math Program with Boston Public Schools  
http://boston.k12.ma.us/teach/technology/select/index.html

The Math Forum at Drexel, Ask Dr. Math  
www.mathforum.org/te/index.html  
http://mathforum.org/math.tools/

Online tutor or help sites for various math concepts:  
www.math.com  
http://www.aaamath.com/  
www.shodor.org  
http://mathforum.org/math_help_landing.html  
http://illuminations.nctm.org/

Online utilities for writing upper level math notation  
http://people.hofstra.edu/Stefan_Waner/realworld/utilsindex.html
Math Playground (Elementary concepts)
www.mathplayground.com

Virtual Cuisenaire Rods: http://www.arcytech.org/ (Select educational java programs

Algebra Tiles: http://my.hrw.com/math06_07/nsmedia/tools/Algebra_Tiles/Algebra_Tiles.html

Geogebra: Virtual tools for algebra, geometry and calculus
http://www.geogebra.org/cms/

Virtual Fractions:
www.virtualfractions.com

Visual Fractions:
www.visualfractions.com

Real Money
www.attainmentcompany.com

Math Educational Java Programs simple money, time manipulatives
http://arcytech.org/java/

Math Software and Web Simulations:
Gizmos
www.explorelearning.com

Operations/Tutorials
Clear Math (Edutron Corp.) - algebra I & II and pre-algebra topics; self-paced
www.clearmath.com

Hey Math! E math lessons based on Singapore Math
http://www.heymath.com/main/howitworksschool.jsp

IntelliMathics - (IntelliTools, Inc.) - interactive math manipulative program with a variety of manipulatives, e.g., base ten blocks, Venn diagrams, attribute blocks; for middle school concepts not learned.
www.intellitools.com

Simulations:
Real World Math
www.realworldmath.org

Math for the Real World, Davidson, grades 5-6 Real world experiences with time and money
Chapter 8 – Assistive Technology for Mathematics

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IntelliTools: Math Pad and Math Pad Plus
www.intellitools.com

Onscreen keyboard magic: Onscreen keyboard with enhanced features
http://oskm.ifastnet.com/

Virtual Pencil digital pencil for writing math
www.hentermath.com

PDA Probes
www.pasco.com

Moneycalc
Coin Abacus
www.tfeinc.com

Flashmaster portable digital math facts generating tool
www.flashmaster.com

Virtual Manipulatives:

Web search Engines:
www.nettrekker.com
www.thinkfinity.com
www.awesomelibrary.com

National Library of Math Manipulatives
http://nlvm.usu.edu/en/nav/vLibrary.html

Smart Notebook software has a large number of interactive tools to “visualize” math concepts including money, several premade activities as well. http://www2.smarttech.com/

Promethean Boards also have math related interactive tools
www.prometheanworld.com

Shodors www.shodor.org/interactivate/activities/

Illuminations: Interactive online/ manipulatives/ lesson plans. Excellent set of fraction activities
http://illuminations.nctm.org

Computing Technology for Math Excellence
http://www.ct4me.net/math_manipulatives.htm#Calculators
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Equation Editor: tool within MS Office for typing math symbols

Math type: Win/Mac equation writer with advanced math symbols
www.dessci.com

Online Unit Conversion
www.onlineconversion.com

Virtual Ruler
http://www.desktopruler.com/products-dr.htm
http://www.svet-soft.com/ruler.shtml
http://www.spadixbd.com/freetools/

MathML Readers:
Kurzweil
http://www.kurzweiledu.com/
Read and Write Gold
www.texthelp.com/
Mathplayer
GH Player
www.gh-accessibility.com

Graph creators:
MS Excel has the capability of graphing coordinates

Kid Zone Create a Graph
http://nces.ed.gov/nceskids/createagraph/default.aspx

GraphSight Junior 1.0 highly rated freeware for drawing 2 D graphs
http://www.freedownloadscenter.com/Utilities/Automation_Utilities/GraphSight_Junior.html

Geometer Sketchpad: Drawing tool for geometry figures
www.dynamicgeometry.com

Scientific Notebook Tool bar for writing scientific notation
www.mackichan.com

Online higher level math/ graphing tools
http://people.hofstra.edu/Stefan_Waner/realworld/utilsindex.html

Alternative Keyboards and Portable Math Processors
Calcuscribe portable keyboard
www.calcuscribe.com
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Giant onscreen calculator
http://mrjennings.co.uk/teacher/maths/calc.html

Graphing
http://www.webgraphing.com/
http://www.coolmath.com/home.htm
www.calculator.com
http://www.math.com/students/calculators/calculators.html
www.middleschool.net
www.independentliving.com

Scientific: The Sci-Plus 300 large display scientific calculator with speech output
www.tfeinc.com

Audiographing calculator
www.tfeinc.com

Audio Graphing Calculator
www.tfeinc.com

Online calculators and converters
http://www.gamequarium.com/onlinemathtools.html

Calculator Practice site:
http://everydaymath.uchicago.edu/educators/samplegames.shtml

Time:
Time Timer: color display for time passage
www.timetimer.com

Talking time pieces:
LS& S:
http://www.lssproducts.com/
American Printing House for the Blind:
www.aph.org

Watchminder: messages can be added to the watch
www.watchminder.com

Digital Access Options:
Math Dictionary

Alt codes list for math
Math Smart Chart, Math Scripts:
Touch math: Multisensory program for teaching and working with numbers
www.touchmath.com
Math folder, smart chart
www.reallygoodstuff.com
Percentage and upper level math charts
www.helpingwithmath.com

Graphic Organizer
Inspiration/ Kidspiration/ Inspiradata
www.inspiration.com
http://www.inspiration.com/Examples/Inspiration#Math

Elementary Middle school math graphic organizers
http://www.teachervision.fen.com/graphic-organizers/printable/6293.html

Higher level math organizers
http://math2.org/

simple equations to calculus
http://www.sw-georgia.rea.k12.ga.us/Math.html

Adapted Measuring Tools:
Talking calculators, large print calculators, talking or large print watches, clocks and measuring tools
LS&S:
http://www.lssproducts.com/
Attainment:
www.attainmentcompany.com
American Printing House for the Blind:
www.aph.org

Calculators:
Large Screen
www.independentliving.com

Talking:
www.independentliving.com

Talking Graphing: Grid comparing talking graphing calculators:
http://www.tsbvi.edu/math/talk-sci-calc.htm

Online calculators:
Large number, talking desktop calculators:
www.independentliving.com
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Resources

Math Manipulatives:
General manipulative
www.lakeshorelearning.com
www.beacon-ridge.com

Adaptations for Algebra and Geometry for VI students
http://www.tsbvi.edu/math/tools-blind.htm

Unifix cubes and Cuisenaire rods: snap together manipulative
http://www.onlinetoymworld.com/search

Directions for making various math manipulatives
http://mason.gmu.edu/~mman/mkus/Handson/manipulatives.htm
http://www.mathcats.com/mathtoolbox/

40 Easy to Make Math Manipulatives, a book of how to make by Carole Resnik (see references for full citation)

Low Tech Physical Access
Math Lottie Kit: contains an array of low tech access tools to try with students
Finger grip ruler
www.onionmountaintech.com
Balance Scales, Stencils
http://catalog.beacon-ridge.com

Number stamps: Stationary stories, several outlets online

Abacus, math line:
Math line http://www.howbrite.com/
Master ruler/Math Fraction http://www.themasterruler.com/ 908-859-1788

Adapted math paper:
Free online printable graph paper
www.printfreegraphpaper.com

Incompetech: variety of math paper
http://incompetech.com/graphpaper/

Math bits: look under student resources for graph paper, high school math
www.mathbits.com

Science graphing paper
http://geolab.seweb.uci.edu/graphing.phtml
probability and statistics in a virtual lab. Other online sites track student progress, provide tutorials on subjects not understood, generate the geometrical shapes or patterns a student may be studying in geometry, or show the fluid movements of calculus. Again, digital search engines can help locate what you need by topic and level.

**Voice Recognition Software**
For students who use voice recognition (VR) for their writing assignments, entering equations and science notations can prove challenging. *Math Type* is a software program designed to add this capability to the popular *Dragon Naturally Speaking* line of VR software.

**Solution Selection Tools and Strategies**
Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the reading tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time or require additional or significant staff training.

**Implementation Plan**
After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial materials, team member(s) responsibilities, start date and length of trial, training needed and any other student/staff specific issues. Be certain to identify reading objectives and criteria of performance to determine the effectiveness of the trials.
Virtual Manipulatives - The digital version of manipulatives adds movement and interactivity to math concepts. They also increase the potential for adaptation and access. Online manipulatives offer a greater array of problems and the full spectrum of complexity, which is hard to mimic with real manipulatives, especially at the middle and high school levels. There are digital forms of Cuisenaire, Geoboards, counters, tangrams and algebra tiles. There are more complicated versions including an abacus, fractals and vectors. The National Archive of Virtual Manipulatives houses an amazing number of interactive manipulative to meet the K-12 grade level content needs. Use a Google search to find interactives for the desired math concepts. Key words like simulation, model, interactive or tutorial should generate the visuals or manipulatives that you need. Educator-friendly search engines like Thinkfinity, Nettrekker or Awesome Library can find leveled, interactive activities that have been “kid” checked by teachers.

SMART Notebook software offers a nice choice of math interactive tools that can be built into lessons and activities. They have a number of pre-made activities. One of these includes a rolling dice. A simple addition activity can be created where students roll the dice a couple times and the amounts are added or multiplied. Promethean boards also offer some of these interactive tools.

Palm/ PDA technology provides students with a portable math notation tool. Being mobile means accessible computing power can go out into the world and help students explore math in a whole new way. Various probes can provide data for research projects or the student can gather data from experiments in the field that help ground abstract math concepts into real life experiences. They can also add drawings to their work on these devices.

Math Software and Web simulations:
Math graphic organizers can help a student systematically organize their solutions to math problems. Macinni and Gagnon (n.d.) in their article Math Graphic Organizers for Students with Disabilities found that three types of organizers worked well with math: hierarchical diagrams, sequence charts, and compare and contrast charts.

Hierarchical diagrams can be created in word processing or graphic organizing software such as Inspiradata or Inspiration. They are used to document entities and their relationships, with the constraints that bind them. The relationships can be linear or branching. In other words, if we were looking at an algebra problem we might want to know how polynomials work. We can break polynomials into multiple categories; indicate the relating notation and any equations that challenge that level of thinking. The process of hierarchical structuring is used heavily in computer software generation and in creating visuals of various business models. Advanced versions can be used to create visualization diagrams. Students with strong visual skills may be able to understand concepts better in these visual formats that hierarchical formats create.

Sequence charts use visuals that should flow in one direction. They tend to follow the more typical procedure type instruction plans seen in math classrooms today. Venn diagrams, a type of compare/contrast chart, can help students visually categorize by offering spaces to sort out similarities and differences in a problem.

An emerging opportunity is the new tidal wave of math- and science-based digital labs/ simulations. Like virtual manipulatives, these programs can put math concepts into real life perspectives. There are simulations to run businesses, track the stock market or play out
Another great set of tools for organizing are math graphic organizers. There are several online sites that offer samples that can be printed out or used online to solve an array of math questions. *Inspiration*/*Kidspiration*, a popular software program commonly used to organize literacy projects, can be used to build a math graphic organizer as well.

**Digital Access**

**Math Toolbars** - There are a couple of great digital math dictionaries that explain various math-related vocabulary items and include interactive models that explain various math concepts. There is a nice listing of math-based <ALT> key commands that can insert math notation on the fly. See the Resources section for these. If a student needs to write equations or solve math problems on the computer, use the built in *Equation Editor* in *Microsoft Office* (if you have it).

*Math Type*, an advanced, easier-to-use version of *Equation Editor* is available for purchase. *Scientific Notebook* offers math notation as one of its built in features and may already be available in high school computer labs. These toolbar-based programs offer the typist the symbols they need to use to write equations. *Mathpad* and *Mathpad Plus* (by *IntellITools*), makes math assignments easier to do on the computer, especially when computing multiple digits. These types of problems are typically solved moving right to left, starting with the ones column. Most word processors work the other way when you type. Mathpad holds the correct format for solving these types of problems. Programs such as Excel and Geometer Sketchpad offer a way to digitally create graphs and geometric objects by adding coordinates or parameters. These programs are also common in regular education. The Department of Educational Statistics has created an online tool for generating a variety of graphs. Their website is [http://nces.ed.gov/nceskids/createagraph/default.aspx](http://nces.ed.gov/nceskids/createagraph/default.aspx). There are several online drawing and graphing sites if students need a digital format to create graphs. For those that need a math text reader, *Read and Write Gold*, *Math Player* and *GH player* are able to read mathematical Markup language (MathML). OCR conversion of printed materials involves a lot of labor. Students who need assistance with working through the steps of the problem may want to check out online supports like [http://www.webmath.com/](http://www.webmath.com/)

**Onscreen calculators** - There are onscreen versions of calculators available. One is built into the Microsoft operating system, several are web-based/online calculators, and there are some available for purchase. An onscreen calculator is useful if the student is already using a computer to write.

**Alternative Keyboards/ portable math processors** - Alternative keyboards provide access to the computer and provide computational experience with mathematical concepts. The *IntelliKeys* keyboard can be tailored by key size, pressure needed to activate a key, and the amount of key choices. The keyboards look/layout can be modified to ease access and/or the number of keys can be reduced. Activation areas can be big enough for a student to press. *On-screen Keyboard Magic* is an MS utility that creates an onscreen keyboard that can be accessed through a touch window or pointer. *Calcuscribe* works like a portable word processor that can handle math notation and then connect to a computer for download into a variety of text documents.
output; and tactile input. The number of functions can range from a basic addition/multiplication version all the way to graphing and college level calculators. There are special calculators for figuring out percentages and money. Some calculators offer a print out, useful for tracking steps used or as a tape that can be glued into a worksheet space. Calculators can also be found that convert a variety of items such as metric-to-US measurements for weight, length, area, liquid volume, cubic volume and temperature (Radio Shack English/Metric Conversion Calculator). The Coin-U-Lator is a calculator with keys shaped and sized exactly like coins and a dollar bill. It adds or subtracts money amounts and has voice output. The MoneyCalc is a standard calculator and money calculator in one device. It also features one touch figuring of tax and tips as well as help with unit pricing. Both of these calculators are available from Onion Mountain Technology. The Math Keyboard and Fact Master are portable low-tech push the button to get the answer type gadgets for students practicing or needing quick answers for math facts.

![Math Keyboard](image1.png) ![Flashmaster](image2.png)

**Adapted Measuring Devices** - Talking measuring tapes, thermometers, scales and other devices help children who have trouble seeing or reading the numbers or amounts. The Master Ruler from Onion Mountain Technology helps to teach length, measurement and their divisions. The ruler has transparent overlays that can go over a white one-inch incrementing ruler showing ½”, ¼”, 1/8” and 1/32” increments. Because these different layers are transparent, the student can see the other layers and understand the relationships between different units of measurement.

**Adapted Time Tools** – There are a number of watches that can give verbal feedback. Some like the Watchminder can have messages programmed in while others will say the time with the push of a button. There are watches that show digital and analog readouts on their face piece, decreasing the confusion of telling time from just a clock face. Onion Mountain Technology offers a special set of clock stamps to add a time element to schedules that allow you to add the minute and hour hands. A Timetimer (right) uses a visual face of disappearing red to convey the passage of time for a student who is not ready for numbers on their clock faces. The Timetimer comes in watch and stand alone models.

**Math Smart Charts/ Scripts** – Math smart charts/scripts work as reference guides. They contain math facts, conversions or process steps for solving tasks challenging a student. They can encompass multiplication tables, geometric functions, conversion tables such as inches-to-metric and Fahrenheit-to-Celsius, fraction and decimal procedures, percentages etc. These charts can easily be created on your own, found and printed from online sources such as [www.wati.org](http://www.wati.org) or at several of the teacher sites, or purchased from manufacturers like Really Good Stuff.
peers. Enlarging or shrinking these tools as needed is another common access strategy. For some students the management of little parts and pieces is distracting. Moving to online or contained units can help. Check out mathlines and virtual manipulatives in the resource section.

**Low Tech Physical Access** – Selecting manipulatives with an easy grip is important for access. If a student needs more assistance, foam or wood pegs can be added to aid pick up. An array of low-tech number, thermometer, fraction and clock stamps, easy grip rulers, and other low-tech math tools can be found at *Onion Mountain Technology* as part of their *LOTTIE Math Kit* or are available individually. Stencils can be used to create basic or more intricate shapes. Students can explore number relationships at a pre-algebra level with an algebra balance.

**Abacus/Math Line/Master ruler/Master fractions** – An abacus or Math Line products offer a physically contained counting system for calculating/counting early math problems. They come in different sizes with up to 100 rings for counting. Each time you move a set of rings, the number they represent is exposed on the math line. They are color-coded to assist counting by fives and tens. There is even one in Braille and one with tabs for easy manipulating using a head pointer or a mouth stick. The master ruler breaks measuring down into layers. Items can be measured first in inches, then viewed in smaller units by turning the “pages” to smaller unit measurements that define the measurement more accurately. Math Line also offers a similar product to help break down time and fractions from part to whole in layers. The Master Fraction is a three-part set for teaching fractions. The white plastic base of each shows four different shapes. Each clear layer divides these shapes into progressively smaller fractions (halves, thirds, fifths).

**Math Line Products**

**Adapted Math Paper** - Math work sheets, graph paper, or assignments can be enlarged on a copier. Font, grid size, and/or colors can be manipulated before printing an assignment. A range of printable or digital graph paper and dot paper (used for Geoboard, area and perimeter concepts) can be found on the web. The choice of styles allows the adapting and printing to meet student needs. Regular notebook paper can be turned sideways for aligning vertical math problems. Add color coding on the math columns, such as green for ones and red for tens. Glue or *Wikki Stixs* can be added to paper to help define textural boundaries for writing or to outline shapes on the paper.

**Adapted Math Tools**

**Adapted Calculator** - Calculators come in an abundance of forms: large displays; large keys; small keys; lighted or talking displays; graphing and audio graphing functions; scientific; speech
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On-screen calculator

Alternative Keyboards/Portable Math Processors
(e.g., CalcuScribe, IntelliKeys®)

Virtual Manipulatives

Math Software and Web Simulations
(physical access, computation, visualization, scripting)

Voice Recognition Math Software

Low Tech Tools for Reading/Writing

Math manipulatives - Math manipulatives act as physical representations of math concepts such as numbers, shapes or place holders. They can include base ten blocks, coins, clock-faces with moveable hands, colored or textured shapes of varying sizes, pattern blocks, tangrams, spinners, rulers, fraction bars, Cuisenaire, Algebra Tiles, Geoboards, moveable number lines, geometric plane and solid figures. Blocks or small plastic toys may be used to teach 1-to-1 correspondence, counting, addition and subtraction. Colored blocks that snap together or number rods can correspond to place holders for units of tens or hundreds. Shape blocks or tangram pieces may be used to explain or explore early geometry concepts of shape or symmetry, while pie pieces correlate part-to-whole concepts of fractions.

Students with fine-motor or visual-motor issues may be a struggle to even interact with the manipulatives. The struggle to control the manipulatives may come down to the size and type of manipulative used. Kathie Snow (2008) identified with this idea when working to adapt math for her son. Her son couldn’t pick up the traditional little beads and buttons. So Snow used a Thomas the Tank Engine set her son enjoyed as a large motivating manipulative. The type, size and relevance of manipulatives can make the difference for a child learning math or being labeled a “failure.” There are a lot of choices of small plastic or foam toys that could be used.

Increasing the size of the counting toy may make it easier to grab. To ‘add’ toy pieces together for concepts such as addition and subtraction, consider adapting blocks with Velcro so they stick together or adding handles so they can be easily be manipulated. Texture codes may be added to symbolize colors for students with low or no vision. They might also be used for a student that learns better kinesthetically can work a pattern activity similar to the colored versions of their...
A CONTINUUM OF CONSIDERATIONS FOR ASSISTIVE TECHNOLOGY

Math

Low Tech Tools for Reading/Writing

↓

Math Manipulatives

↓

Low Tech Physical Access

(Rulers, stamps, adapted manipulatives)

↓

Abacus/Math Line

↓

Adapted Math Paper

(Enlarged worksheets, graph paper, guideline paper)

↓

Adapted Math Tools

(Calculators, adapted measuring devices, adapted time tools)

↓

Math "Smart Chart", Math scripts

↓

Digital Access to Math

↓

Math Tool Bars

(Equation editor)
Decoding the meaning from story problems is often a first step. When a solution requires multiple steps the student may struggle to break the problem into the smaller solvable units, a little like highlighting key points when reading a text. Graphic Organizers may help support students through the step making process.

**Narrowing the Focus**

As a team, identify by circling or other means those few tasks the student needs to do for reading that will have the most impact.

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.

**Solution Generation: Tools/Strategies**

As a team, brainstorm and write on chart paper any assistive technologies &/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for reading. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology.
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concepts of math facts (process) and struggle with procedural steps or not. It is the understanding piece that is important for higher level math skills. (Hyde, 2008) The same challenges may arise when a student is measuring or telling time.

Laskerzewski and Susi (2008) used fractions to delineate this challenge of student understanding of math process and procedure. Students were given a fraction pretest. Questions focused on process math, i.e., given a circle prompt and asked to represent fractions such as ½ or ¼. Teachers were surprised that students did poorly on the pretest because they had already covered fractions and the students “knew” them. Upon review, the researchers found that a math procedure was taught for fractions. The teachers typically provided the lines dividing the circle in half or fourths, then asked the students to fill in the sections to represent the fraction. In the pretest, no lines were given. The students needed to understand the process of fractions. Take a whole, divide into parts and then select enough parts. To help students the researchers found the Chicago Reformed Approach (CRA) model worked well for most of their students. CRA-based instruction starts in concrete manipulatives and activities, then moves to drawings and finally on to the more abstract numbers and symbols. Some students have difficulty switching between these formats or applying different functions in the same problem, whereas other students may take longer than their peers to acquire understanding of abstract ideas. Different strategies are necessary to help students understand more abstract ideas when they are still at the concrete level; Every Day Math and Math Experience are examples of the reformed approach.

Multiple steps
Math “language” follows the steps we see in the literacy continuum when we look at problem solving. The student reads the problem and then organizes the strategy (equations) needed to solve the problem. Several authors suggested students highlight key words in a story problem and then associate those words with their math equivalent. Below is an example using the underlining technique with a math graphic organizer.

Story Problem: Millie must fly from New York to Minneapolis. The distance is 1227 miles and takes her 2 hours and 37 minutes. How fast was she flying?

Graphic Organizer:
What do we need to know? - Speed

How do we notate speed? - Miles per hour

Do we have miles and time information? – Yes but time is in minutes and hours

How can we make time all one type? 60 minutes = 1 hour so 2 hours and 37 minutes is 60 + 60 + 37 = 157 minutes

How can we make a math sentence for this? - Speed equals miles per hour (one hour equals 60 minutes per hour)

Can you write this using math notation? Speed = 1227 miles/157 minutes x 60 minutes/1 hour
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Task considerations
Visual Processing
If a student has visual perceptual, visual spatial or visual motor difficulties, he/she may struggle with:

- Aligning elements on the page, vertical numbers, working left to right versus up to down, drifting margins and writing on the lines when paper is unlined.
- Drawing from perspective or conceptualizing 3D object from 2D images on paper.
- Locating graph coordinates.
- Completing paper and pencil tasks after creating a model using manipulatives.
- Fitting numbers into answer spaces.
- Copying from the book or board.
- Accurately reproducing a model.
- Difficulty creating patterns, fractions, etc.
- Visual impairments may also make it difficult for the student to read the textbook.

Physical Issues

- Writing legibility.
- Fatigue while writing.
- Fitting writing into small answer spaces.
- Accurately drawing shapes or models.
- Managing manipulatives (blocks, pop beads, etc.).
- Managing measurement tools.

Lack of arm and hand strength, fine motor skill and dexterity may affect the student's ability to successfully complete math assignments. Math concepts are often taught by using manipulatives, such as blocks, especially in the early grades. If student is unable to physically engage in these activities, they miss out on the hands-on learning aspects of the instruction and may lose out on the concept that is being taught. Poor hand skills can affect measuring with a ruler or scale, manipulate a protractor or a compass, pressing buttons on a calculator or using various tools to draw geometric structures. Marking map coordinates or writing in small answer spaces may provide additional challenges. Finally, a student’s writing speed may be too slow when writing longer, multi-step equations.

Visual Issues
There are several visual components to math to consider. The color of manipulatives as placeholders or used as a pattern marker has little meaning when a student can’t see it. Understanding what shapes and structures look like can take on new meaning for a student with a visual impairment.

Math facts
Traditionally math facts were handled with a fair amount of drill and practice. While the strategy works for some students, teachers need to be aware of alternatives. A student may struggle to memorize or not be able to recall basic math facts even though they have drilled and practiced repeatedly. Sometimes attention issues lead a child to make mistakes, missing steps or working too quickly. Common supports such as a calculator or smart charts may help the student keep up with their peers, but it is important to ascertain whether they understand the underlying
critical. Studies suggest the intense administrative focus on literacy shortchanges the time needed for math. One study found students were pulled from math and science to gain extra work time for literacy activities. This presents a challenge for students whose strength may be in this area or the functional math student who will need time to solidify the math skills needed for various work opportunities. Another study found that while schools offered a plethora of development options in literacy there was a lack of professional development opportunities for math and strategies for accommodation and modification.

5. **Common Environmental Barriers**
   - Students are not enrolled in classes they need.
   - Struggle with concepts because they are taught procedure instead of process.
   - Minimal or no support for poor math fact recall.
   - Instructional content not related to real world.

6. **Common Environmental Myths**
   - Students should memorize math facts before moving on to upper level math skills.
   - Over-reliance on calculators.
   - Upper level math is hard to support.

**Tasks**

As a team, discuss and write on chart paper the reading tasks that the student needs to do.

One of the most important questions when assessing a student’s need for assistive technology is: What are the tasks the student needs to do? In this instance what does the student need to read and then what does the student need to do with the information read? These are some questions to consider:

**What Tasks do you want the student to do?**
- Gain fluency in “reading” math
- Understand math processes
- Gain mastery of math facts
- Organize steps to solve the problem
- Align and apply steps
- Draw or write mathematical notation

**Sensory considerations**
- Visual Processing
- Visual Perception
- Ability to work in 3-D
- Ability to sequence
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Environmental Considerations

1. **The recent shift in the way math instruction is handled means older students missed the new way and younger students are coming into a support system designed for the old.**
   The math curriculum has experienced significant changes in its delivery at this writing. The focus has shifted from multiple problems of a similar nature to a more inquiry-based approach. It is important to note that many of the older students’ (middle and high school) early training differs greatly from the experiences of younger students. The focus has shifted to making math feel more life applicable. The impact of the change in instructional focus hasn’t worked completely through the K-12 system so the impact/outcome for upper level instruction is not known. The dramatic change means that regular and special education instructors may need to revisit some of the earlier concepts and maintain communication with elementary and middle school regular education on the need for a different set of accommodations and modifications.

2. **Access to materials**
   Since the change in instruction is so dramatic, staff should be aware of the need for accessible tools for manipulation and construction. These tools may be hands on or digital. Staff may need time to explore and learn how to use these new tools. An explosion of computer programs and online support activities are available but students need to be able to access them easily. This may be difficult in a busy classroom with only 1 or 2 computers. Students who need mathematical text read with a text reader face an interesting challenge. Current text readers were not designed to convert print math notation through their optical character recognition (OCR) to digital text or to recognize the symbols and math notations used to write equations. The error rate can be high making the conversion process slow and there is usually a greater amount of time needed for staff to do editing. Mathml is an emerging tool that may simplify this process of print to digital conversion. Companies are aware of the problem, so watch for newer version text readers that can handle the task better. Some of the current text reader programs can handle reading math text that is already in digital format, such as math found in online sources with minor hurdles in reading notations like fractions and math symbols. It is good to try this out before working with the student. To reiterate, adapting math materials so that a text reader can read them is currently very time consuming. Choosing online sources may save time and improve accuracy of current readers. A final challenge is having enough student work stations available if more than one or two students need access the digital text. Most regular classrooms are not set up for multiple users.

3. **Teachers need time** to integrate new concepts in math instruction, to create or find materials that work, to teach support staff the new system, to develop alternative manipulatives and measuring tools, and to scan math text when needed. If a teacher’s or paraprofessional’s expertise in math is limited, there is an increased need to have time to work with the math instructors. It may be difficult to make the necessary adaptations with limited expertise or comfort level with the material.

4. **Administrative Support**
   The intense focus on literacy for state testing may lead some to a feeling that math is not as
mathematics concepts, use reading and thinking strategies adapted to math”. He felt this helps students gain process understanding so that they would know what procedures to apply. Marilyn Burns found that real life connections, building comfort with math vocabulary and tracking thinking through math writing help struggling students catch up.

**Multiple Steps/ Operations**

Students can struggle with calculation, attending to the operational sign, applying multiple operations, following the steps in the correct order or sequencing the appropriate steps to complete a math problem, missing the carried number in an addition problem, or the regrouping of numbers during subtractions. These challenges often emerge in the elementary grades where computation is heavily stressed. When working a word problem, students may need to apply more than one operation. Using a math graphic organizer may help them plan out the sequences they will need to solve a problem. There are several good websites that carry printable and digital organizers. *Inspiration/ Kidspiration*, a software commonly found in the school environment, offers several examples of math graphic organizers at their website.

**Reading and Writing Math language**

Mathematical and scientific notation offer an entirely different vocabulary set to learn. Number, Symbol- and image-based, it may be helpful to add a vocabulary instruction component to the math lessons. There is a wonderful interactive math dictionary at [http://www.teachers.ash.org.au/jeather/maths/dictionary.html](http://www.teachers.ash.org.au/jeather/maths/dictionary.html) that offers definitions and graphics to help explain various math terms.

Finding and typing the math symbols and sentences on the computer is not intuitive on the keyboard. *Microsoft Word* does have a toolbar called Equation Editor that can be used to do this type of notation. It can be accessed by “Insert Object”. If you have trouble finding it use the help menu. There are higher end versions of this type of software for purchase. Check out the Resource section at the end of this chapter.
Chapter 8 – Assistive Technology for Mathematics

Visual Processing, Visual Spatial or Visual-motor Integration Challenges: This grouping looks at how a student’s brain perceives, manipulates or navigates visual information related to math. Coordinating these challenges with motor actions needed to draw or represent math notations can also be impacted.

The student with difficulty in this area may have problems counting a group of items. They may visually lose their “place” as they count or labor to differentiate numbers like 6 and 9, 2 and 5 or 7 and 1. The student may stumble on operational symbols like < or >, miss the placement of a decimal point, struggle to visualize 3 dimensional shapes on a 2 dimensional medium or correctly perceive a color/shape pattern. They may have a difficult time reading or completing charts or graphs correctly, work from left to right or “see” the axis points of a parabola. Add the spatial component and they may struggle to work right to left (which is opposite of reading), up to down, correctly align the numbers in a vertical math problem, work a number line or correctly find coordinates on a grid or graph. Add in the motor components and they may struggle to copy problems from the chalkboard or textbook or draw an intricate geometric design. They may also be challenged when they need to fit a number into a small space on the worksheet.

Physical Access
Students with physical issues may struggle to engage with the tools used in the math curriculum. Even mild forms of decreased trunk control, shoulder and arm strength and fine motor/ hand skills may affect performance. The child may have difficulty writing numbers or equations legibly and in the spaces on the worksheet. They may find that their writing legibility decreases as support muscles fatigue. They may lack the finger strength, control or dexterity to work with manipulatives, pull the tape measure, align the ruler or generate the graphics needed to depict a math problem. Students with visual impairments may struggle with the color coding of manipulatives and gaining understanding of visual representations of math concepts such as how shapes look in 2, 3 or multiple dimensions.

Math Facts
A significant amount of research suggests that students are having difficulty remembering math facts or using them at speeds necessary for functional computation. While a calculator can help a student generate the answer needed to work a problem through routine procedures, the literature suggests that understanding the process behind those math facts is critically important to further math progress. This may be a challenge to determine in the individual student but is important to note that there is a growing body of literature [Hasselbring( n.d.), Campbell and Stuart( n.d.), Suydam and Brosnan (n.d.)] that does not support holding a student back if they understand the facts process but haven’t mastered the memorization math facts demand. If they get the concept of multiplication, division but get mixed up writing the steps, get out the calculator and move on!

Math literacy: Math offers a new set of language skills for students to acquire. Math terms, numbers and symbols are, in a sense, the alphabet. Some teachers actually go so far as to call math a language of numbers and like other literacies must be navigated in similar challenge steps such as reading math notation, organizing the steps needed to solve the problem, writing math notation and sharing the completed project which in a math context may be some type of geometric structure, graph, or equation set. This may contribute to the challenge of word problems for many students. Hyde found “to help develop a deeper understanding of
Student’s Abilities and Difficulties

- Struggles to read math problems and notation.
- Doesn’t understand the language or vocabulary of math.
- Difficulty identifying and organizing the steps to a problem.
- Notation errors such as aligning numbers and forming shapes.
- Math instruction does not tap into visual strengths.
- Understands math facts and can use a calculator but is not allowed to move on.

What do we see in the classroom?

- Struggling with vocabulary
- Confusion with word problems and what to do next.
- Poor recall of math facts.
- Mismatches between problem and notation.
- Missed steps.
- Poorly aligned work.

Common myths related to math performance:

Teacher

- We have to work on math facts until they get them.
- Special education students can’t handle upper level math.
- If they can’t do math facts quickly they can’t do higher level math.
- If they don’t get the times table they don’t get moved on.
- With limited time during the school day, it is more important to work on reading than math.

Student

- Math is hard.
- I am never going to use math in real life.
- I am never going to get this.
- I don’t “see” it.

In reality the student may have difficulty with the math curriculum for a variety of reasons. Poor visual processing can affect how they align numbers or work with geometrical shapes, interact with manipulatives and add data points to a graph. Difficulties with language may impact their understanding of math, draw out the key points of a word problem or interpret meaning from a chart or graph. Slow or inaccurate computational speed may convince the student or others that they are not ready for higher level math concepts; writing struggles may impact their ability to write symbols and fractions in small answer spaces. These are just a few of the challenges they might face. It is important to figure out what is the underlying cause of a student's difficulties, before choosing the tools or techniques for intervention.
## Area of Concern: Math

### Problem Identification

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the student’s abilities and difficulties related to the area of concern?</td>
<td>What environmental considerations impact the area of concern?</td>
<td>What task(s) do you want the student to do that relate(s) to the area of concern?</td>
</tr>
<tr>
<td>• Learning Strengths</td>
<td>• Curriculum approach is different than previous approach</td>
<td>• Gain fluency in reading math</td>
</tr>
<tr>
<td>• Understands math concepts and mathematical notation</td>
<td>• Are materials accessible?</td>
<td>• Demonstrate ability to perform math computations</td>
</tr>
<tr>
<td>• Does not understand steps to solving a problem</td>
<td>• Manipulatives and e-text versions available</td>
<td>• Align a problem and apply steps</td>
</tr>
<tr>
<td>• Difficulty reading</td>
<td>• Teacher or aide available to adapt curriculum</td>
<td>• Write or draw a mathematical notation</td>
</tr>
<tr>
<td>• Does not know how to recognize a problem</td>
<td>• Support for staff development in math</td>
<td>• Apply math skill in context (purchasing, filling online form, check writing and balancing accounts)</td>
</tr>
<tr>
<td>• Ability to handle multiple steps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Physical difficulties, fatigue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Visual processing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Other concerns</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Sensory Considerations

What sensory challenges does the student have that impacts learning? (i.e. visual, auditory, tactile)

### Narrowing the Focus

i.e. Specific task identified for solution generation

### Solution Generation Tools & Strategies

Brainstorming only
No Decision
Review Continuum

### Solution Selection Tools & Strategies

Use a feature match process to discuss and select idea(s) from Solution Generation

### Implementation Plan

AT Trials/Services Needed:
- Objectives to determine effectiveness of trial
- Training needed
- Date
- Length
- Person(s) Responsible

### Follow-Up Plan

Who & When
Set specific date now.

---

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
The challenge providing assistive technology to accommodate and modify math experiences is much more than decreasing a problem set. The bigger picture is how to assist students in gaining an understanding of the language of numbers and apply what they know to the problems they are encountering. Diane Bryant (2004) calls this new focus “the shift from mechanics to meaning.” Teaching mathematics can no longer focus just on teaching procedures, students need to know why they are doing what they are doing. They need to understand the process of math. Assistive technology can then assist the students in gaining or demonstrating this understanding.

This chapter will utilize the ASNAT process to look at assistive technology tools to support students with disabilities in the area of mathematics. Included will be an overview of some of the issues in the current system of mathematic instruction that challenge students with disabilities to succeed. A continuum of tools and strategies and resources will be provided to support further inquiry into the subject.

**Using the SETT process and Decision Making Guide**

It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. Additional categories include:

- Narrowing the Focus to help identify a specific task in order to select appropriate assistive technologies
- Implementation Plan to assign trials, dates, responsibilities and data collection
- Follow-Up Plan to set a date for the team to reconvene and review the student’s progress

Again, this is intended as a guide; during the actual assessment process, each topic should be written in large print where everyone can see (i.e., on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology tools and strategies for their students.
Overview

Building mathematical skill has lifelong implications for students but can be easily overlooked. Basic life tasks such as paying bills, balancing a checkbook, creating budgets, arriving at work on time, and measuring can be the make or break point(s) for a student to move out of the house and live independently. More advanced skill(s) may determine the type and pay of a student’s employment. Skills such as measuring in the building trades, estimating the amount needed in inventories, budgeting business expenses and reading stock charts and graphs for investing or insurance purchases also use mathematical skills.

The performance level of math for the average American student is not spectacular. The National Center for Education Statistics 2003 found only 32% of fourth graders and 29% of eighth graders scored at or above the proficient level in math. Lynn Steen (n.d.) in her article *How Mathematics Counts* noted two studies: “1 in 3 students who enter college must remediate major parts of mathematics as prerequisite to taking such courses as college Algebra or Statistics” and “College students in the natural and social sciences had trouble conveying the meaning of data they were looking at” This data comes from the regular education research.

The special education picture is grimmer. Very few special education students advance into upper level mathematics.

Statistics suggest that many special needs students who struggle with the early computational focus of elementary math elect not to take upper level classes where they may actually excel in the theoretical applications of math that these classes explore. This choice affects their college or technical school preparedness and needs to be considered as students prepare their transition plans. A small percentage of these students find their way back to the math curriculum at the tech or college level, but a greater number of them do not. (Stefanich 2007)

Educators need to help students look forward and to help them prepare marketable skills for an increasingly technical workforce. Students are often surprised to find that many college and technical college course of studies require math and algebra as prerequisites. They end up paying expensive fees to take classes they could have completed for free in high school had they only known they needed them. Even students who choose not to continue their education may need to look at charts and graphs to interpret meaning. They may need to measure with precision. They will need to manage their budgets, understand the impact of various mortgage choices and manage their retirement portfolios. They will need more than math facts, they will need to interpret math data and may even need to present gathered information in acceptable mathematical formats to others. This means that at least a percentage of special education students currently absent from upper level math classes may need to reconsider.
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Tech Matrix
NCTI and CITEd sponsor technology matrices that compare different features for a number of products. Search by areas such as “Providing Electronic Resources’ or “Providing text in alternative formats”, etc.) The site also contains a comprehensive literature review of the impacts of technology on students with reading disabilities. “A Review of Technology-Based Approaches for Reading Instruction: Tools for Researchers and Vendors”.
http://www.techmatrix.org/

The Industry Profile on Education Technology: Learning Disabilities Technologies and Markets
A comprehensive profile of educational and assistive technology, products for students with learning disabilities in reading, writing and math.

Wayne RESA (Regional Area Service Agency)
Wayne Co., MI resource page has a number of pdf. documents that can be downloaded including digital text lists, online books for reading, tips and supports for struggling readers and writers and more.
http://www.resa.net/teacherresources/materials/

Zamzar
A free online file converter for pdf files to documents. With the free version, you submit the pdf file and Zamar emails the document to you, generally within 24 hours.
http://zamzar.com/
and comprehension. Teachers can follow the full 40-week scope and sequence of lessons or tailor materials to individual students' learning needs. The expansion and evolution of the site will be guided by an Advisory Board of leading reading researchers. [http://freereading.net/index.php?title=Main_Page](http://freereading.net/index.php?title=Main_Page)

**Learning Through Listening**
From Recordings for the Blind and Dyslexic. Educators can download subject/grade level lesson plans, research articles and other materials for free even if the school doesn’t subscribe to the service. [http://ltl.rfbd.org/](http://ltl.rfbd.org/)

**Literacy Profile for Students with Physical Impairments**
The purpose of the Literacy Profile for Students with Physical Impairments is to provide a guide to the teacher of students with orthopedic impairments in making literacy decisions. [http://education.gsu.edu/PhysicalDis/mono.html](http://education.gsu.edu/PhysicalDis/mono.html)

**Never Too Late: Approaches to Reading Instruction for Secondary Students with Disabilities**

**Nonverbal Reading Approach**
The Nonverbal Reading Approach is a reading strategy designed for students with severe speech and physical impairments. It provides nonverbal students a strategy to sound out words. It also provides a way for teachers to assess if the student can read targeted words. [http://education.gsu.edu/PhysicalDis/mnon.htm](http://education.gsu.edu/PhysicalDis/mnon.htm)

**Project Forum**
Identified 15 critical topics within the field of special education and conducts policy analyses on these topics. NIMAS and Reading First initiatives are topics in 2007. [http://www.projectforum.org](http://www.projectforum.org)

**Project LITT: Literacy Instruction through Technology**
Focuses on the role that technology can play in improving the reading skills of students with learning disabilities, specifically “talking books”. [http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/16/13/66.pdf](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/16/13/66.pdf)

**Reading Rockets**
From LD online. Takes teachers and parents through a series of questions about a student’s reading problems. Describes the process & explains it from the student, parent and teacher perspective. Then gives tips for all three how to help. [http://www.readingrockets.org/helping/target](http://www.readingrockets.org/helping/target)
CAST (Center for Applied Special Technology)
A resource for NIMAS, NIMAC, Universal Design for Learning, and a support for school teachers and administrators through professional development, consultation, publications, and online resources.
http://www.cast.org/index.html

CAST Strategy Tutor is an online multimedia program that provides adolescent learners with customizable mentoring and support as they conduct Internet research, and teachers with supports for using Web-based resources more effectively in the classroom. Strategy Tutor helps students read, research, collect and understand information better and more efficiently.
http://cst.cast.org

CITEd
Home of the TechMatrix 2.0, an initiative of the National Center for Technology Innovation and the Center for Implementing Technology in Education. Users create a customized matrix by subject and/or learning support such as access to multiple representations of text, notation and symbols or access to electronic resources, means to organize and plan, opportunities to learn concepts and other reading, writing, math and assistive technology supports.
http://www.techmatrix.org/

DAISY
An introduction to DAISY books and what they are.
http://www.daisy.org/about_us/

ECB (Educational Communications Board) Educational Resources: Surf Report
Public resource for Wisconsin Educators. The Literacy Center is full of ideas and strategies for developing literacy skills. There are some e-books, but primarily the site is a good resource for supplemental reading activities which may or may not need adaptations for access.
http://explore.ecb.org/surf/surf_report?subject=0

F.A.C.E.S. (Functional Academic Curriculum for Exceptional Students) Curriculum
The primary purposes of the F.A.C.E.S. curriculum are to teach meaningful, age appropriate skills within school and non-school settings and to systematically evaluate students' progress within those settings. Functional literacy skills are included in the curriculum.
http://www.esc12.net/faces/documents/LanguageArts/default.html

Florida Center for Reading Research
This research site includes a chart that describes types of reading programs (core, supplemental, tech based, remedial, implemented by tutor); reading components; empirical research, and misc. notes. Each of the reviewed programs included a pdf narrative.
http://www.fcrr.org/FCRRReports/reportslst.htm

Free Reading
An open source Website where teachers can access a free, sequential, research-based reading intervention program for grades K-1. Free-Reading.net offers a complete intervention program in phonics and phonological awareness for grades K-1 with plans to expand to include vocabulary
PACER Simon Technology Center
The PACER Simon Technology Center has compared four scan and read software programs to help consumers and families choose which program best suits their needs. This information is current as of November 2008, but is subject to change. It is not intended to endorse one product over the other.

TechSolutions
Offer a scanning service where they will copy and make text files "Kurzweil ready," offering a proofing and editing service. This includes spell checking the underlying text as well as zone editing the documents. TechSolutions has also started a library of scanned documents, making some books readily available. For more information call (1-866-538-9984) or go to http://www.tech-solutions.org

Text Reader with Study Skill Support

Talking Dictionary
Talking Dictionary is a speech enabled encyclopedic dictionary that can be used with or without a screen reader. This free talking dictionary is based on the Wordnet 2.1 database and contains over 250,000 words.

UDL Editions by CAST
Cast has combined digital text with the Texthelp Toolbar to provide text to speech, highlighters, other study skills and leveled supported reading strategies.
http://udleditions.cast.org/

Professional Resources

AAC-RERC
The AAC-RERC is a collaborative research group dedicated to the development of effective AAC technology. Augmentative and alternative communication (AAC) refers to ways (other than speech) that are used to send a message from one person to another. Research Project R1-A: Literacy Support Technologies for AAC Users has a number of resources outlining types of literacy supports for AAC users.
http://aac-renc.psu.edu/index-61327.php.html

BrainConnection
The concepts important for teaching reading in the classroom have been revealed by decades of research in both education and cognitive psychology. What are they and how can a better understanding of how they connect with one another improve reading instruction?
http://brainconnection.positscience.com/library/?main=eduhome/reading-language
PowerTalk
Free download for reading PowerPoint ® slideshows/books. You can add in page-forward buttons requiring an action from the reader (switches, touch screen, mouse, headmouse) or leave it to "flip pages" on its own.
http://fullmeasure.co.uk/PowerTalk/ReadMe.htm

Readthewords.com
A free and versatile online text-to-speech service which allows the user to enter text with the keyboard, to copy and paste it, or to upload text files in a variety of formats from the computer or from other websites. Speech is generated quickly, with a choice from 15 high quality voices whose reading rate can be varied easily. Users can listen online, download an mp3 file for use offline. ReadTheWords.com offers text-to-speech in French and Spanish as well as in English.
www.readthewords.com

ReadPlease
A free text reader (also one for purchase) for Windows. Reads any text out loud that you can select and highlight.
http://www.readplease.com

Spoken Text
This free resource allows you to record PDF, Word, plain text, PowerPoint files, RSS news feeds, emails and web pages, and convert them to speech. You can download your recording as an iPod book or mp3 file. Every member gets a personal podcast URL , which they can use to download recordings to iTunes or their iPods.
http://www.spokeintext.net/

WordTalk
Free download that works with MS Word. It highlights each word as it is read, and it has a talking spellchecker and talking thesaurus.
www.wordtalk.org.uk

WebAnywhere
A web-based, self-voicing web browser that enables blind or other print disabled web users to access the web from almost any computer that can produce sound without installing new software.
http://webanywhere.cs.washington.edu/wa.php

Scanner with OCR with Text Reader

Badger Accessibility Services
This service at UW-Madison offers a scanning service for a fee. They will convert with or without “optimization”. Quick turnaround for small amounts of text.
http://www.bas.wisc.edu/documentconversion.htm
Text Reader

Adobe ® Reader
Use Adobe Reader to read pdf documents. These are documents that are frequently downloaded from web sites. Once the document is open in Adobe Reader, go to the View menu then to Read Out Loud.
http://get.adobe.com/reader/

AMIS
AMIS is a free software program that you can use to read DAISY books. AMIS is a multilingual player for reading books complying with DAISY standards.
http://www.oatsoft.org/Software/amis

Awesome Talking Library
Awesome Talkster combines a browser, directory, search engine, and text-to-voice technology. This allows you to select online text and have it read to you. Children can have the Web pages read to them slowly, but adults can have pages read at normal speed.
http://www.awesomelibrary.org/Awesome_Talking_Library.html

Click, Speak
A free download extension that enables text to speech in the Firefox ® web browser
http://clickspeak.clcworld.net/

DSpeech
A free Text-to-Speech program (Windows) that allows you to save the output as a .WAV or .MP3 file. You can select from different voices.
http://dimio.altervista.org/eng/index.html

Google™ Directory of Desktop Readers
A directory with links and brief descriptions of simple text readers.

HELP Read™
HELP Read™ is FREE software that reads along with you while you do the reading.
http://www.oatsoft.org/Software/help-read

Orca
Orca is a free, open source, flexible, and extensible screen reader that provides access to the graphical desktop via user-customizable combinations of speech, braille, and/or magnification.
http://www.oatsoft.org/Software/orca-1/

NaturalReader
The free version of this text reader uses Microsoft ® voices. The fee version uses natural “human” voices.
http://naturalreaders.com
The Key

*The Key* is a newspaper written for new but not beginning older readers. It provides reading material for adults with limited reading skills. These include adults who have not completed their high school educations, those learning English and those with learning disabilities. All material in *The Key* is copyright free for nonprofit, education purposes.

http://www.keynews.org/

Modified Electronic Text

**BookBuilder**

Use this free site to create, read, and share digital books for students. Your universally designed books can engage and support diverse learners according to their individual needs, interests, and skills.

http://bookbuilder.cast.org/

**Classic Book Shelf**

An awesome collection of the classics. Choose your best font, size, even color with a mouse click and the book redraws itself at once using the new font. Do you like parallel margins? Justify or don't, it's up to you. Each time you change an option or turn a page the book redraws itself. It bookmarks where you are in the book when you stop reading and will send you an email with a link that takes you right back into the book and retains your color and size changes.

www.classicbookshelf.com

**eStoryMaker**

A simple means for assembling text, picture and sound files into an e-story that supports multiple access means.

http://www.oatsoft.org/Software/estorymaker

**KidBook**

Available as downloadable freeware from Switch in Time. It enables users to convert all standard books into electronic documents that can be highlighted, magnified, colored, and speech-synthesized.

http://www.switchintime.com/

**WordFlashReader**

This is an open source program that flashes one word or a chunk of text on the screen at a user-determined rate. The appearance is completely customizable. It can be set up to cover the full screen with giant words in whatever font or color preferences needed. WordFlashReader allows the user to pause, rewind, fast-forward...all very important if the reader needs to review for comprehension or just because they blinked or had to look away from the screen. For emerging or fluent readers who want to increase their reading speed.

http://wordflashreader.sourceforge.net/
National Center for Supported Electronic Text
The Center has created a Delicious site:
This list has been vetted and has descriptions to help you locate text.
http://delicious.com/Supported_etext

One More Story
An online library (subscription) with contemporary and classic children’s literature.
Professionally narrated, highlights word by word, or student can use “I can read it mode” to only hear individual words read as needed.
http://www.onemorestory.com/

Project Gutenberg
E-texts and e-books that are over fifty years old and are part of public domain. There is no charge for these books.
http://www.promo.net/pg/

Recording for the Blind and Dyslexic ®
RFB & D is the nation’s largest audio textbook library. They offer audio books for school, recreation and professional reading in addition to playback equipment and software. Schools pay a fee and must provide documentation of student’s print disability.
http://www.rfbd.org/

Resource Room Hi-Lo Reading
Lists of books which librarians & publishers have gathered 'for reluctant readers,' and sites with books specifically written with "hi-low" readers in mind.
http://www.resourceroom.net/older/hilow_sources.asp

Route 66
A beginning reading instructional tool for adolescent and adult learners, particularly those with significant developmental disabilities. Access features as well as essential components of literacy development are built into the program.
http://www.benetech.org/literacy/route66.shtml

Storyline Online
Well known actors read books using different voices for characters, good expression and more. The books are in a movie format so you hear the actor reading but you see pictures from the books, however the words to the books are not shown.
http://www.storylineonline.net/

Teacher Taps: Electronic Books and Online Reading
A comprehensive listing of sites for electronic books. It lists sites for age levels Pre-Adult. It also includes a legend identifying which sites are easy readers, have audio, require Macromedia Flash, etc.
http://eduscapes.com/tap/topic93.htm
HighTech Redwoods
This website is dedicated to creating accessible documents of all types. This link has tips and the process for creating accessible podcasts.
http://hightech.redwoods.edu/accessibility/podcasting

International Children’s Digital Library
A digital library of outstanding children’s books from around the world.
http://en.childrenslibrary.org/

Just Free Books
JustFreeBooks searches the content of more than 450 web sites. With JustFreeBooks you can find public domain texts, open books, free audio books, ad-supported books and more
http://www.justfreebooks.info/

Librivox
Librivox uses volunteers to record chapters of books in the public domain, and then release the audio files back onto the net (podcast and catalog). Their objective is to make all books in the public domain available, for free, in audio format on the internet. They are a totally volunteer, open source, free content, public domain project.
http://librivox.org/

Lit2go
All of the Gutenburg books available in Mp3, html and pdf format. So, you can listen and read the book at the same time! It nicely done with great chapter summaries.
http://etc.usf.edu/lit2go/

Literactive
Literactive provides reading material for pre-school, kindergarten and grade 1 students online. The program is comprised of carefully leveled guided readers, comprehensive phonic activities and a wealth of supplemental reading material which gradually develop a child's reading skills in a sequential manner. Developed and approved by teachers and parents across the United States. Many of the "talking books" can be read with a mouse click. All the material is available for free from this site but you need to register.
http://www.literactive.com/Home/index.asp

Microsoft ® Reader
Create eBooks from Microsoft ® Word version 2002 or 2003 files. The Reader in Microsoft ® Reader (RMR) add-in enables you to convert any Word document into a Microsoft ® Reader format eBook. It is free and has many features found in more expensive programs: text to speech, alter font sizes, annotations color coded bookmarks, notes, colored highlighting, extraction of annotations.
http://www.microsoft.com/reader
AudioBooks for Free
MP3 and DVD audiobooks (adventures, detectives, horrors, classics, children, non-fictions, philosophy, etc.) for you to download. You can listen to their mp3 audio books on your computer, SmartPhone, PDA, CD-MP3 or portable MP3 player. Convert their mp3-files into ordinary CD-audiotracks. Some packages are available for a cost.
http://audiobooksforfree.com

Baen Books
A publisher of science fiction, will provide its books to “fans who are blind, paralyzed, or dyslexic, or are amputees, in electronic form free of charge.” Application for the free ebooks will be processed by ReadAssist http://www.readassist.org/, a volunteer group devoted to helping disabled readers find the books they want in the form they need.
http://www.baen.com/

Bibliomania
This site contains many of the classics, like Little Women, poetry, fiction and nonfiction, and even full-text Shakespeare. Since the content is purely textual, it is easily accessible for students with sensory impairments or learning disabilities who are using screen readers, text readers, or simply text-to-speech software programs.
http://www.bibliomania.com/

BookShare.Org
Bookshare.org gives print disabled people in the United States legal access to over 31,000 books and 150 periodicals that are converted to Braille, large print or text to speech audio files. As of Fall 08, registered users will be able to download Read:OutLoud, a text reader with study/comprehension supports.
http://bookshare.org/

Digital Content in the Classroom
A resource page available at the CAST website. An extensive list of links to digital text resources.
http://www.cast.org/teachingeverystudent/toolkits/tk_resources.cfm?tk_id=41

DMFC - Daisy Multi Format Converter
The Daisy Multi Format Converter allows conversion of DAISY books between different formats.
http://www.oatsoft.org/Software/dmfc-daisy-multi-format-converter

E-text Resources
This site is through Freedom Scientific & lists all sorts of electronic text resources, free and subscription based.
http://www.freedomscientific.com/LSG/resources/industry_links.asp#elec
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**Gliffy.com**
Free online graphic organizer can help students create a visual representation of text to assist in comprehension.
[http://gliffy.com](http://gliffy.com)

**Literacy Support Pictures™**
A free resource of pictures from Slater Software. Simply enter the word into the search window. Copy the picture and insert it into the document for picture supported text.
[http://www.slatersoftware.com/PixLibrary.html](http://www.slatersoftware.com/PixLibrary.html)

**News-2-You ®**
A weekly online newsletter with picture supports. Subscribers can download newsletters with differing degrees of difficulty and pictorial support.

**Symbol World**
Everything has symbols attached to it. Newsletters, stories (for older students also), Nursery Rhymes, personal care and more.

**Visuwords™**
A free online visual dictionary. Diagrams demonstrate word meanings and associations with other words and concepts.

**Visual Thesaurus ®**
A dictionary and thesaurus with an intuitive interface that encourages exploration and learning.

**Electronic Text**

**Accessible Book Collection**
A non-profit corporation that provides high interest/low vocabulary and other digital books to qualified individuals and schools for a modest fee.
[http://www.accessiblebookcollection.org](http://www.accessiblebookcollection.org)

**Assistive Technology Training Online**
This module identifies software features and programs that enhance independent reading opportunities. Includes descriptions, resources, links to programs, e-text and more.

**AudibleKids**
Actors read stories which can be loaded to MP3/Ipod. There is a fee for the books
downloaded as slide shows in PowerPoint, Impress, or Flash format. You may also write your own books using their tools.
http://tarheelreader.org/

**Handheld Device for Reading**

**Children’s Illustrated e Tales**
Handheld application of children’s books

**iPod eBook creator**
Convert text files to iPod Notes, download existing eBooks from the eBook library. Conversion of web pages and copy & pasted texts is available. Conversion of RSS feeds to iPod Notes is available for registered users.
http://ebookhood.com/ipod-ebook-creator

**Many Books**
Free eBooks for your PDA, iPhone, or eBook reader.
http://manybooks.net/

**Memoware**
Free ebook titles for Palm
http://www.memoware.com

**Palm ebook Studio**
Creates eBooks that can be read by the eReader and eReader Pro software on Palm OS ® or PocketPC handhelds.
http://www.ereader.com/ereader/software/product/15001_eBookstudio_win.htm

**University of Virginia eText Library**
Free ebook library for the Microsoft ® Reader and Palm.
http://etext.virginia.edu/ebooks/

**Use of Pictures/Symbols with Text**

**Boardmaker ® Books**
A list of many books that have Boardmaker symbols already made for them from the Baltimore City Public School System.
http://www.bcps.k12.md.us/boardmaker/Results.asp

**bubbl.us**
A free online graphic organizer for students to create a visual representation of text to assist in comprehension.
http://bubbl.us
Internet Reading Resources (based on the Reading Continuum)

**Standard Text**

**Reading A-Z**
An excellent source of literacy materials that can be printed or adapted. A free 30 day trial is available. Colored online reading materials from RAZ-Kids.
http://www.readinga-z.com
http://www.raz-kids.com/

**Starfall Learn to Read**
A free website featuring a multitude of stories appropriate for Early Childhood through second grade.
http://www.starfall.com/

**Seussville Story Maker**
Users can create a three-scene story selecting from "Dr. Seuss" backgrounds, characters, and music. You add your own text. When the story is played, the text appears in "conversation bubbles" but is not spoken.

**Tumblebooks**
An online collection of books for young readers up to middle and high school aged. Picture books have been adapted with sound, music, narration and animation. Those for older students have adjustable text, highlighting options and audio narration. They include chapter books, high interest, classics and English and American literature. Free trials available.
http://www.tumblebooks.com/

**Books Adapted for Access**

**Accessible Book Collection Wiki**
This Wiki has templates from Clicker 5 and IntelliTools Classroom suite that are designed to meet the needs of as many students as possible. Download the templates and books that others have created and share books that you have done.
http://accessiblebookcollection.wikispaces.com/

**Books2burn**
A Macintosh program. You copy and paste text to makes audio books with chapters and everything! Can be transferred to MP3 files, etc.
http://books2burn.sourceforge.net/

**Tar Heel Reader**
Tar Heel Reader is a collection of free, easy-to-read, and accessible books on a wide range of topics. Each book can be speech enabled and accessed using multiple interfaces (i.e. switches, alternative keyboards, touch screens, and dedicated AAC devices). The books may be
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<td>Playaway® audio books</td>
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### Products Mentioned in Chapter 5

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Chapter 7 – Assistive Technology for Reading


Marfilius, S. (2008, December). Text Story: Accessible Instructional Materials 101. What Wisconsin Teachers, Local Education Agencies and Families Need to Know about NIMAS “to infinity and beyond”. Presentation at the Wisconsin Assistive Technology Initiative Leadership Institute, Stevens Point, WI.


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References


reading/writing skills. Additionally the program has built in access features such as single switch accessibility. A promising program still under development is the *ABC-Link*. It asserts that it will be a reliable and valid reading assessment tool for use with students who have complex communication needs (CCN). Students will have to be able to respond yes-no, select from a field of four, and have access to the alphabet. In its final form, *ABC-Link* will yield individualized instructional plans. The goal is to guide instructional decision-making for students who experience CCN. Standard, percentile, and other types of scores will not be generated as a result of completing the assessment because *ABC-Link* is intended for use as a guide to good instruction rather than as a tool for accountability, program placement, and/or eligibility. Other reading based programs such as *Simon S.I.O.*™ and *WordMaker*® track student progress and identify areas for further work.

**Response to Intervention (RtI)**

Response to Intervention (RtI) is a general and special education initiative that combines best practices in both fields. As staff work together to analyze those students who continue to struggle to develop reading skills despite skilled differentiated instruction, we should see Universal Design for Learning (UDL) and AT mesh together so that all staff and students use multiple means of expression and representation. That may mean that a school district has a text reader installed on all school computers so that any student can hear digital text read back to them by the computer. It may mean that teachers regularly represent textual facts, characters, timelines, etc. using a graphic organizer and encourage their students to do the same. It may mean that all staff and students know how to manipulate digital text to increase readability by increasing font size, word, line and margin spacing or change background and text color. Talking and standard handheld dictionaries might be available in all classes and media centers. There will still be those students who need more intense and individualized intervention and resources including very specific assistive technology, but our hope is that those distinct lines between students who are using AT and those who are not will start to blur.
the expectation of the task after the passage is read. She also stresses the importance of teaching AAC users to build meaning using the existing vocabulary already in their communication system rather than teach text specific vocabulary in isolation.

**Solution Selection: Tools & Strategies**

Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the reading tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time or require additional or significant staff training.

**Implementation Plan**

After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial materials, team member(s) responsibilities, start date and length of trial, training needed and any other student/staff specific issues. Be certain to identify reading objectives and criteria of performance to determine the effectiveness of the trials.

**Assessment**

As the team completes the SETT process, questions may arise about the student’s ability to perform certain reading tasks. Standardized reading assessments or teacher observations may answer those questions; however, adapted, specialized or alternative assessments are occasionally in order.

**Adapted Phonemic Assessment**

Phonemic Awareness is the ability to hear, think about, and work with the individual sounds in words. It is an auditory skill and does not involve words in print or sound symbol relationships. However, it is one of the building blocks of beginning reading skills because it involves the isolation and manipulation of sounds. Because it is auditory and oral in nature, phonemic awareness is difficult to assess in students with complex communication needs. Standard phonemic assessments such as The Phonological Awareness Test can be adapted using Boardmaker picture communication symbols. Students are presented with symbols (with no text label) representing words/phonemes that demonstrate a student’s phonemic awareness of segmentation, isolation, deletion, substitution and blending. Students could select the symbol using a preferred selection method (e.g., pointing, picture exchange, eye gaze) instead of vocalizing the sound or word.

**Commercial Alternative Assessments**

Some skills are more accurately assessed using a commercial product designed for a specific population of students. Stages is a seven-level developmental framework that assesses a student’s cognitive and language abilities. Stages 4, 5 and 7 assess early reading and
to “say the sound aloud” no matter what approximation of the sound the student was able to make. This helped ensure active participation on the part of the student.

Next, the student was instructed to “sound out the word in your head without stopping between sounds” as the instructor verbally blended the sounds aloud. Finally, the student was told to “say the word fast in your head.”

When the student was initially assessed on a word, the instructor showed the word and pointed to each letter (or used a card) as before. The same steps were followed when a word was first introduced, except that the instructor did not say the sounds or word aloud. Three or four choices were then provided, either written or oral, from which to choose the correct response. The diagnostic distractor array was carefully selected to provide possible alternatives that were close in pronunciation or visual appearance to the correct word to determine if the student really knew the word.

Student errors were documented and later analyzed to determine any patterns or types of errors being made. Identified errors led to additional instruction and practice or adaptations, depending upon the type of error. Diagnostic distractor arrays were specifically designed to include the words with letters that the student had previously confused so that it was possible to assess whether or not the student had learned the correct response.

This study indicated that the combination of internal speech, diagnostic distractor arrays, error analysis and assistive technology are an effective approach for teaching reading to students with SSPI. One of the keys to using this technique effectively is to attend carefully to the words and pictures used as distractors. They must be carefully selected to test the student’s ability to discriminate between very similar letters, sounds, letter combinations, or meanings. Highly dissimilar words or pictures would not be effective in assessing specific knowledge.

Silent reading using an augmentative or alternative communication system

The ability to read, specifically to read silently with comprehension, has a positive impact on school success, employability, independence, and autonomy, as well as providing a means for lifelong learning, entertainment, and introspection. For people who use augmentative and alternative communication (AAC), this ability carries each of these benefits, as well as enhanced face-to-face communication and the added ability to participate in asynchronous communication…Although many (AAC users) successfully learn to read words in isolation and understand text when someone reads it to them, estimates are that no more than 10% can read with comprehension above a second-grade level (Erickson, 2003).

Students who use AAC need to integrate and use all of the skills “typical readers” employ, but for the most part do so internally or silently. They must use their inner voice to “hold words” in their working memory long enough to process and understand the text. They must understand the structure of written language and have background knowledge about vocabulary and the topic. This is in addition to the physical aspects of reading such as coordinating eye movements involved in reading. Erickson (2003) says that it is especially important to build background knowledge with this group since so many of these students have limited experiences. Set a purpose for reading the passage so that the student understands clearly the reason for reading and
Error Analysis—The ability to analyze the student’s responses in order to determine the need for specific instruction is dependent upon a well-constructed distractor array.

A well-constructed diagnostic distractor array will target the errors the student has been found to make. These diagnostic distractor arrays will help determine if the student is really reading the word. Analysis of the errors will enable the teacher to determine the student’s specific problems and provide appropriate remediation. Poorly constructed distractor arrays provide little information and can give the impression that the student knows the word, when, in fact, the student does not. For example, if the student is learning the word, ‘ball” and the choices are “cat,” “ball,” “dog,” and “tree,” the selection of the word “ball” only tells us that the student can accurately select the correct first letter (b) of the word, but may not know the word “ball” from the word “big” (Heller, et al., 1999, p. 7).

Assistive Technology—A variety of assistive technologies may be needed to present the content and to allow the student to respond. Students with SSPI who already use voice output AAC devices may be able to utilize these devices to indicate their responses if the vocabulary is appropriate and the student’s level of competency with the device does not interfere. Some students may be able to respond when the material is presented on a computer. Others may need to have letters and words displayed on cards so that they use eye gaze to look at their choice. Some students with SSPI will be able to direct-select an answer by gazing at it, pointing to it or activating a computer or AAC device. Others will need to utilize scanning techniques. Scanning may be done with low-tech materials by having the teacher point to each item in the array and wait for the student to indicate his choice. It may also be accomplished with a single switch to select a choice on a computer or AAC device. It can be as simple as writing words, phrases, word endings, etc. on a small “wipe-off” board, note cards or even “sticky notes” so that the student can indicate their choice in their preferred manner. Low-tech options allow for the teacher to quickly monitor the student’s understanding and provide content “on the fly”.

However there are times when it is necessary to program a student’s communication system with content vocabulary for increased participation, checking for understanding, book study or any other instructional reasons. To read more about using an alternative communication system, please refer to Chapter 3 – Assistive Technology for Communication in the manual.

Using the Nonverbal Reading approach
When teaching a word, the instructor first showed the word, then pointed to each letter or moved a card across the word revealing each letter as it is sounded out. The student was instructed to say the sound “in your head” while the teacher said the sound aloud. The student was then asked
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Student Specific Solutions

Using the Nonverbal Reading Approach to Teach Reading to Students with Severe Speech and Physical Impairments (SSPI)

Teaching reading to students who are unable to speak is possibly the most challenging of all instructional tasks. Reading is essentially a process where students decode letters and words or recognize familiar words by sight. They demonstrate those processes by speaking the words aloud. When the student cannot speak due to a severe physical disability it is very difficult both to identify current level of performance and to monitor progress. Consequently students with severe speech and physical impairments (SSPI) often experience significant reading and writing difficulties.

Many factors may contribute to the literacy difficulties of students with SSPI, including:
- Lack of experience with literacy activities.
- Difficulty holding or manipulating books and other materials.
- Limited language experiences due to the lack of speech.
- Reduced expectations for the development of literacy skills by both teachers and parents.
- Restricted participation in “typical” literacy activities in school and home.
- High levels of absenteeism from school due to health issues.

Research
AAC-RERC is dedicated to the development of effective AAC, including a project researching effective literacy instruction for students using AAC. Summaries of their progress thus far, webcasts, Maximizing Literacy Skills of Individuals who Require AAC (Light), and publications are available on the website http://www.aac-rerc.com. Heller, Fredrick, and Diggs (1999) demonstrated the effectiveness of the Nonverbal Reading Approach to teach reading to three students with severe speech and physical impairments (SSPI). The Nonverbal Reading Approach uses internal speech, diagnostic distractor arrays, and error analysis in conjunction with individualized adaptations including assistive technology. Part of that study will be summarized here.

Internal Speech—When students are unable to verbalize phonemes when sounding out a word, they can be taught to use internal speech (Bigge, 2001). Internal speech is the process of silently speaking to oneself.

Distractor Arrays—Because these students are not able to verbalize an answer, they must be provided with an array of choices from which to indicate an answer. Heller et al. (1999) describe the importance of the distractor array.

“A distractor array is a list of alternative choices provided to the student, either orally, or in writing (on paper, computer or AAC device). Distractor arrays are diagnostic when the alternative choices are carefully selected to include the correct answer and two or more additional items that can indicate a student’s misunderstanding. For example, if the student is learning the word, “ball” and
It should be noted that all of the “scan and read” programs listed previously also have the capability of reading tests or worksheets and most can have text added to them by using specific features or scanning/conversion methods. However the OCR software may compromise the format of the printed page.

Text Reader with Study Skill Support

Research supporting the use of electronic study tools

Studies have found that proficient readers automatically use comprehension strategies to help them bring meaning to the text as they read. Struggling readers, on the other hand rarely use common comprehension strategies as they are reading, even though their understanding of the text is poor. “There is good evidence that struggling readers can improve reading comprehension skills by learning the strategies of proficient readers and putting them into practice” (Don Johnston, Inc., 2005). A study reported in the Journal of Special Education Technology by Lange, Phillips, Mulhern, & Wylie found that the following study tools—the speech synthesizer, spellchecker, electronic dictionary, and the homophone tool in Read & Write GOLD—all made a significant difference in reading comprehension for secondary students with literacy difficulties (Lange, Phillips, Mulhern & Wylie, 2006).

Many assistive reading programs have built in study skill support tools. Highlighting tools of different colors are available in supportive text readers, Read:OutLoud and Microsoft Reader and all of the scan and read programs (WYNN, Kurzweil 3000, Read&Write GOLD, Premier Assistive Technology Accessibility Suite and the mobile versions of both). Students or their support staff can highlight key vocabulary, main ideas, supporting details, important dates/places, organizational structure of the text, etc. with different colors from the toolbar. Those highlighted details can then be extracted into separate or combined study guides. Important passages a student needs to return to for clarification can be bookmarked so that the student can easily navigate to the desired page. Text notes can be added by teachers with explanatory information, to prompt a “think aloud”, ask a pre-reading question, or provide a summary of the passage. Students can use text notes or voice notes to record questions about text as they read or as the computer reads to them. Talking dictionaries provide explanations of key vocabulary often in the context of a sentence. Most of the programs offer either graphic organizers or outlining supports so that students can extract highlighted or bookmarked information. The extracted information can provide study guides, an outline for further research, vocabulary lists and other supportive information.

Hearing and seeing text read as it is by the computer may help the comprehension of many struggling readers, but providing and using study support tools increases student engagement with the text. Furthermore, the Don Johnston Inc. (2005) study showed when at-risk students learned and used effective strategies, those students generalized the strategies to other reading tasks and continued to use them after the instruction ended.
“Scan and Read” programs are a different class of OCR software. These are sophisticated software programs that allow the student to create “user profiles” which adjusts the digital text to personalized reading settings. These programs easily allow the student to change the spacing between words and lines, add voice notes, typed notes and much more. Two examples of these are WYNN (What You Need Now) and Kurzweil 3000. Both of these programs include their own OCR software that converts scanned images into their own formatted text. Students can view the image on the computer as it looks on the page and have the text read to them. They can also add text, hear definitions, use powerful study tools, change the format of the text, select reading speeds, styles, voices and other customized settings. Additionally these programs will read the text on web sites.

Some slightly different programs, but within the same class are Read&Write GOLD and Premier Assistive Technology’s Accessibility Suite. These programs work with standard applications on your computer such as word processing, email, web browsers, and spreadsheet and media presentation software. Read&Write GOLD adds an additional toolbar to your programs with its own reading supports. The Accessibility Suite has a variety of programs that can provide reading supports for different documents. Both of these programs and Kurzweil 3000 also have mobile versions installed on flash drives. The Key to Access is a flash drive with the accessibility programs from Premier Assistive Technology Suite while Read&Write GOLD MOBILE includes a portable version of Read&Write GOLD. Students who have a flash drive containing this software are able to access digital text and all of the other reading supports regardless of the school, home or community computer that they are using.

The last scan and read program to consider which is slightly different than those previously mentioned is the more economical Colligo Scan N Talk. The scanner is included as part of the program. It combines full OCR scanning options with accessibility features such as scanning to Braille, DAISY, Large Print, Audio, accessible pdf in addition to scanning to a word processing document. Scan N Talk uses AT&T Natural Voices™ and has some limited study supports.

All of these programs are worth considering if you need to scan large amounts of text for students. As with all assistive technology software, each program has unique strengths. It is well worth the time to explore each program with students to identify which one is the best match for students and district technology requirements. All of these programs have the ability to be trialed before purchase using vendor-provided demo CDs, trial downloads or through vendor grants (Premier Assistive Technology). Readers can also refer to product comparison matrices such as those developed by NCTI and CITEd’s Tech Matrix http://www.techmatrix.org/index.aspx.

Test Talker™ is a program from Freedom Scientific designed to assist with test taking, worksheet completion, and study of written materials by highlighting and reading the text. TestTalker maintains the integrity of the written test by not modifying the test, but providing the accommodation of a bimodal presentation of the written information. TestTalker supports true/false, multiple choice, fill-in, and extended answer tests. It includes a PDF converter so teachers can simply open an existing PDF file in TestTalker without needing to scan it to the computer.
offer good options include *TextAloud* and *TextAssist®* for Windows and *AbleReader* for Macintosh. A program by Premier Assistive Technology, *PDF Equalizer* reads PDF files, including text in graphs, fancy lettering, etc. without converting. It also includes a “notes” function and the ability to convert to MP3 format. Do consider the “lower cost” programs as many of them are very capable and may offer the supports your students need. They are oftentimes a good option for families.

Many school districts already have talking word processing programs such as *Write:OutLoud®* or *IntelliTalk®* for supporting struggling writers. While these programs are designed primarily for writing, any digital text can be copied and pasted into talking word processing programs and set to read sentences, paragraphs or the entire document.

When downloading e-text, you may see the term DAISY (Digital Accessible Information SYstem) as an option to select. DAISY is an international standard for formatting ebooks. There are six different types of DAISY books. Four of the types offer improved access and human voice delivery. They are navigable which enable readers to move from heading to heading, page to page, paragraph to paragraph, phrase to phrase and/or word to word. Pages can be bookmarked so that students can easily return to the last page read, search for words, go to a selected page and have the ability to speed up and slow down the audio playback without distorting the sound. DAISY books have both audio and text files but not all text readers are compatible with them. DAISY books can only be read with a DAISY reader or DAISY software which is embedded into many text or screen reading programs such as *JAWS®, ReadPlease®, Kurzweil 3000™, WYNN™, TextHelp Read & Write Gold, AspireREADER™* and others. As DAISY books become the standard, expect to see most text reading software to be DAISY compatible.

**Scanner with OCR and Text Reader**

In order to use a text reader or even talking word processing software such as those listed above, the text must be in a digital format that text readers recognize as print. It can be from a CD, downloaded, scanned into the computer using a flat bed scanner or a copy machine with scanning capabilities or entered into a document by “traditional” methods. If the text is scanned into the computer, it must be converted by Optical Character Recognition (OCR) software before it can be “read” by any type of text or screen reader. OCR software recognizes print as text and inserts it into word processing programs or other text formats. Most scanners come with “light” versions of OCR software which will convert the text and allow you to manipulate it, copy it into a word processing or text document and use it with other programs. The full versions of OCR software such as OmniPage Pro, FineReader Pro or TextBridge Pro generally retain the format of the document that was scanned in, including graphs, tables, graphics/pictures and the specific formats found on worksheets or tests. It must be stated that the quality of the scanned text is largely dependent on the quality of the printed material. If you are scanning a print document that is a second-generation copy of the original, on low-grade paper, has faded ink or is of marginal quality, the scanned text will likely have numerous OCR errors. Whenever possible, scan documents from high quality, original sources.
reader project. Data indicated that there might have been an initial adverse effect on student’s performance while they were learning to navigate within the software. However, as they became more familiar with the program, their performance improved. Week 13 was the tipping point when students move from the acquisition process to the implementation process and their comprehension scores improved. The final results of the three-year study indicates that students accessed twice the amount of material (160 words per minute using the computer vs. 79 words per minute using paper probes) using text reader software rather than conventional means (2008). Additionally, while the student’s comprehension of the paper text declined as the text difficulty increased, they were able to maintain and even improve comprehension levels using the text reader with the more difficult text. It should be noted that rates of satisfaction and greater gains were observed over the second year for both students and teachers.

Text Readers as part of the computer operating system
Prior to purchasing or downloading a free text reader, look at your own computer operating system. Macintosh OS® has long had text-to-speech (TTS) built into their operating system. TextEdit is a simple text-editing program with built in speech or the speech settings in the system preferences can be set to speak highlighted text when you use a keyboard command (i.e., control + T). Windows XP and Vista™ OS for Windows has the equivalent TTS with “Narrator” built into the system. Systems running Windows XP with Office 2003 can use built in TTS in MS Word®.

Free Text Readers on the Internet
Another free program that includes TTS is one that works with the Internet browser Firefox®. Click, Speak adds text to speech capability to the browser so that students can hear text spoken while they are on the web. Adobe Reader is a free download that reads many pdf documents. A pdf document is often the type of document downloaded from web sites. Many standard text readers cannot read them, however Adobe Reader, v. 7 or higher can read, although it has navigational and other limitations. Zamzar is a free online document converter. You can convert a pdf document into a document your text reader can read and highlight. PowerTalk is a free program that speaks the text in any presentation in Microsoft PowerPoint for Windows. Another free resource for anyone that uses MS Word 2003 on a Windows machine is WordTalk. It highlights each word as it is read, and it has a talking spellchecker and talking thesaurus.

Simply entering a keyword search for “free text readers” in your Internet browser should create a listing of available resources for you including ReadPlease, Natural Reader, Microsoft® Reader, iSpeak and more. Many of these programs offer versions with more options for a minimal fee.

WebAnywhere is a web-based free screen reader that can read whatever appears on the computer screen. WebAnywhere is a web-based, self-voicing web browser that enables web users to hear the text that is on web sites from almost any computer that can produce sound. It works in the browser and speech is generated remotely, then delivered to the computer, all without installing any software. This service resides on the University of Washington server.

Commercial Text Readers
There are many text readers that are available for purchase with pricing generally dependent on number of functions, capabilities and voice quality. Some of the lower cost programs that still
Text Reader

Research Supporting Text Readers
Using a simple text reader has been an accepted accommodation for students with reading disabilities. Educators have been using text-to-speech (TTS) software and TTS functions of computer operating systems for a number of years. But what does the research say? It’s been assumed that converting text-to-speech will improve the reading abilities and comprehension of students with reading disabilities. Silver-Pascuilla, et al. reviewed the research about the effectiveness of TTS with students with disabilities. They report that

- TTS helps special education students improve comprehension, fluency, and accuracy and enhances concentration (Leong, 1992; Lundberg & Olofsson, 1993).
- Word recognition skills also improve with this technology (Olson & Wise, 1992).
- Being able to immediately decode a word by hearing it spoken within the context of a passage helps students build word recognition and vocabulary without disturbing the flow of comprehension (Califee, Chambliss, & Beretz, 1991).
- Comprehension is augmented by supporting decoding, thereby freeing the listener to focus on the meaning of the text (Wise, Ring, & Olsen, 2000).
- These technologies provide a supportive reading environment and increase a student’s ability to read interesting and appropriate grade-level materials by minimizing the need for decoding skills and maximizing the student’s ability to comprehend (Silver-Pascuilla, H., Ruedel, K. & Mistrett, S., p 24).

Elkind and Elkind (2007) interviewed secondary and college-aged students about their use of text readers. They found that

- 93% of the students with learning disabilities reported that reading was easier, less stressful, and less tiring.
- 91% of students with learning disabilities said that they were able to increase the time that they could sustain attention to reading before their attention wandered or they needed a break.
- The average duration of sustained reading reported by students with attention disorders increased about 60%, from 30-40 minutes to 50-60 minutes.
- The combined effect of faster reading speed and longer reading durations can result in a dramatic increase in the amount of material that a slow reader can read in an extended reading session of several hours. Some slow readers saw improvements in the number of pages read by factors of 2 or 3.

Research about using Text Readers
The Iowa Assistive Technology Text Reader Project (Maurer, Dimmitt, Hodapp, Judas, Munn & Rachow, 2006) was a statewide project that studied the impact of using a text reader on student achievement and attitudes. The Iowa Study specifically used Kurzweil 3000 as their text reader; however the effects of using text-reading software could be generalized to any of the previously mentioned programs. The study documented improved reading fluency and comprehension as well as very positive subjective responses from the students and teachers implementing the text
Create your own modified electronic books

You can create your own electronic books and text by using many software programs. Creating personalized books that students can relate to can be motivating to reluctant readers or students with emerging literacy skills. *Kid Pix*, *HyperStudio*, *IntelliTools Classroom Suite*, *My Own Bookshelf*, *CAST UDL Book Builder* (a free online program), *PowerPoint*, *Buildability*, *SwitchIt Maker 2* and *Clicker* are examples of software that can be used to create electronic books for beginning readers or advanced readers who need accessibility features built in. *Clicker* and *IntelliTools Classroom Suite* also have online resources such as books and activities that other educators have created and are available to download. *KidBook*, a free download for Macintosh is available from *Switch in Time’s* website. The program is appropriate for all ages and literacy levels. It enables users to convert all standard books into electronic documents that can be highlighted, magnified, colored, and speech-synthesized. Another simple way to create digital books is to literally take a picture of each page of the book using a digital camera, the built in camera available on some computers or an inexpensive “web cam”. After the digital picture has been transferred to the computer, it can be imported or copied into any of the programs listed above. Add text and recordings to create your own electronic book. Many of the software programs have switch accessibility built in or the program can be modified so that it will work with a switch.

Modified text for the Hearing Impaired

Many students with hearing impairments have a difficult time learning to read English. In fact, at the time of high school graduation, the average Deaf/HH student reads at or below the 4th grade level even though they understand and use sign language at a much higher level. (There are many reasons for this occurrence that can be found in Chapter 13 – Assistive Technology for Students who are Deaf or Hard of Hearing). For these students, written English is a second language that they don’t have the luxury of hearing or practicing. Students who are deaf or hearing impaired can benefit from specialized software that uses 3-dimensional signing “avatars”. These realistic animations provide students with sign language translations of vocabulary and assist with comprehension and fluency. *Sign Smith™* products from Vcom3D provide signing translations within a dictionary, a studio program and signing animations, all of which can help students learn word meanings and make the connections between English text and American Sign Language (ASL).

Modified text for the Visually Impaired

Computer operating systems have accessibility features built into them. Accessibility features are generally found in the Control Panel and/or the Accessories and Settings menus. The display can be set with a higher contrast so that text stands out more clearly against the background. Magnification options enlarge the entire display or portions of it. Resolution and display settings make icons on the desktop bigger. If students need enlarged text on their web browser pages, go to [http://www.saltmeadow.com/large.html](http://www.saltmeadow.com/large.html) where you can find instructions for enlarging the text on any web browser. Please read Chapter 12 – Assistive Technology for Students who are Blind or have Low Vision about other modifications for students with visual impairments.
4. In the Type of Summary area, specify which of the four summary types you want to create.
5. In the Length of Summary area, indicate by using the Percent of Original drop-down list exactly how long you want the summary to be.
6. Click on the OK button.

Remember to show students other helpful features of Microsoft Word such as inserting bookmarks for easy navigation (to glossary, chapter questions, table of contents) or returning to the last page read, using different “Views” like the “reading layout” and using the Thesaurus and Dictionary (right click on Windows, Control + click on Mac) as they encounter unfamiliar words.

Instructional staff can insert comments as pre-reading or summary questions or definitions in the text to assist a student’s comprehension by using the “Review” Toolbar. Click on “New Comment” and insert a question, definition, definition or statement to encourage student reflection of the text.

One software program that can create most of the above-mentioned modifications for e-text is CueLine ED from Onion Mountain Technology. It allows you to control the presentation of electronic text on the computer screen. You can change font, background and margin (cue line) colors, adjust the font size and alignment, decide the number of lines per screen, the distance between those lines, and the number of words on each line. A left click takes the student to the next page, and a right click reads the text on that page to the student. Color cues can be attached to the left side of the screen to visually cue the student to sweep back to the left side.

Visual Thesaurus® is an online interactive dictionary and thesaurus with a display much like a semantic map. The graphical map displays the connections between a word and its definitions and synonyms in a unique display that can increase understanding and comprehension.

Modified text can come in a variety of types, formats, genres, and ability levels. Route 66 is a website that contains modified high-interest low-vocabulary text for beginning adolescent and adult readers with significant disabilities. An “e-tutor” assists the reading partner in supporting the student in reading, writing and word study.

Classic Book Shelf allows students to adapt literature “classics” to a more readable format and presentation. Students can adjust font size and type, colors, margins and more. Students can even bookmark pages and later return to read.

Symbol World has modified newsletters, stories and more with pictures and rebus symbols for students who need picture supports.

Please review the Internet Reading Resources pages at the end of this chapter for more listings of online resources.
the “Find” window and “Replace” it with the same word, except change the format font to a colored one or highlight selected words and change the text color.

Some students need the text simplified for them. If the document is in Microsoft Word® 2003, you can “cognitively reformat” the text by using the AutoSummarize function in the “Tools” menu. Select the type of summary (highlight key points, executive summary, new document or hide everything but the summary) and the percentage of the original document included in the summary. As with any curricular modifications, you or the content teacher may need to adjust the summary to insure that it matches curricular objectives and benchmarks.

The AutoSummarize feature is still present in Microsoft® Office 2007, but is in a different menu location.

The AutoSummarize tool now appears on the Quick Access toolbar which may need to be installed. Directions to do so can be found in the Help menu. To create a summary of the document:

1. Open the document you want to summarize.
2. Click the AutoSummary tool on the Quick Access toolbar.
3. Choose Auto Summarize from the submenu that appears.
Some fonts (such as Verdana 14pt) may be easier for students to read than others, so the student may use the same procedure (“Select All”) to change the font type to one that is easier for them to read. There is no research to support the claims of readability of typeface. However personal preference does make a difference.

Other students may have difficulty tracking words and need increased space between lines. “Select All” and increase the line spacing to 1.5 or double line spacing. These sentences use the same font and size as the rest of the text, but are double-spaced.

It is also possible to change the spacing between words. In this example the “Select All” feature is used to change the spacing between words. Type one space in the “Find” window and two spaces in the “Replace” window. Having more spacing between words may assist those students with “word boundary” problems who have difficulty seeing where one word stops and the other begins. This sample inserted two spaces between words.

Another formatting change may be to increase the margins so that fewer words appear on the line. Students with difficulty tracking the words across a page may be more successful when there are fewer words per line such as in this example.

If the student is more successful using a colored overlay (see Using Color with Standard Text), change the background color on the computer by going to the “Format” menu, then “Background” to replicate the colored overlay on the computer. Use color to bring key words to a student’s attention by using the “Find/Replace” options again. This time insert the key word in
Playaway® self-playing digital audio books from Follett Library Resources come ready to play. They are self-contained single audio books complete with a battery, earbuds and a lanyard. The device has a simple interface with 8 buttons to play, increase or decrease the narrator speed, navigate throughout the book and bookmark pages. These may be available at the local public library.

A slightly different format from a standard MP3 player is the FP™3 Player from Fisher-Price. This is a child friendly player with large navigation buttons, volume control and a graphic representation of books and songs that are listed on the player. Books can be downloaded from the Fisher-Price website (fee) or converted from existing CDs using the software from the player. Media must be converted into the specific format for the FP3 Player and is not compatible with MP3.

Text-to-Audio © by Premier Assistive Technology, Inc. is a tool that converts text documents to sound files. Text-to-Audio can create 10 different types of audio output files including MP3 and WAV files. It compresses files as it creates them. Text-to-Audio uses AT & T’s Natural Voices™ to produce high quality digital-speech audio. The WAV or MP3 files that are created can be played back using an MP3 player or on the computer. They could even be burned to a CD to be played later by the student.

There are many resources available for teachers to convert text into some type of audio format. While this is a format that many students are familiar with on a recreational basis, they may need support in comprehending the text, navigating through multiple pages and building good listening skills. Teachers who need support in teaching those skills may want to use websites such as Learning through Listening from Recordings for the Blind and Dyslexic. Lesson plans, research articles and other downloadable materials are available regarding teaching listening skills even if your school doesn’t subscribe to the service.

**Modified Electronic Text**

When reading materials are electronic, the text becomes flexible and can be reformatted or transformed into accessible alternative formats. Text can be enlarged, format can be adjusted with more spacing between words or lines, or presented in high contrasting colors to make it easier to see. Once text is in a digital format, it can be read on the computer, word definitions can be spoken or students can click embedded links for a multimedia presentation of the content to increase understanding.

Using digital text makes format changes easy to do which may actually increase the readability of the text for a student.

In this example, you or the student can “Select All” of the text from the Edit menu of the word processor application and select a larger font size (Times New Roman 16pt).
Children’s Illustrated eTales is a Palm application of four short stories with colorful illustrations for students Kindergarten through Grade 2. On Palm OS handhelds, Palm eBook Studio allows ebooks to be created, formatted, and converted for reading on a handheld.

Digital audio book readers such as the EZDaisy Talking Book Player and Scholar Talking Book Player by Telex Communications, Inc. or VictorReader® Stream by Humanware are designed for students with a vision or learning disability. These hand-held book players read DAISY files and can convert digital text into audio files, and feature navigation controls, audio formats including MP3 and variable speed control. Because they are digital, students don’t have to worry about tapes or CDs. The Scholar and VictorReader Stream includes additional features such as bookmarking and “Go To” options. In addition to playing audio files in an MP3 format, the digital book reader, ClassMate Reader by Humanware also visually displays text with a highlighting feature so that students can see and hear the text read using the portable device. It also includes study skills features, the ability to create voice and text notes, bookmarking options, a dictionary and the ability to listen to audio only files. Some of the readers use “human-like” voices while others use high quality synthesized voices. They can all hold literally thousands of books on flash memory cards. Humanware reported a study in which 29 “college-bound” students were instructed in the use of and had access to a ClassMate Reader over a 24-week period. At the conclusion, the study reported that students read electronic text for significantly longer time periods than printed text (4.7 hours compared to 1.46) and self-reported an increase in comprehension of the electronic text when they could see and hear the text being read (http://www.humanware.ca/web/en/Newsletter/15.html Retrieved 11/20/08)

Audio Texts
Audio-only texts are a resource that should be considered for some students given the technology available and used within the mainstream. Students can listen to audio books on CD players, playaways, MP3 players, cell phones, iPods and other handheld devices and/or the computer. Because audio formats are familiar to so many students, they may be more accepting of audio books as an alternative format than other options. One study showed that secondary level students with mild disabilities performed higher in content assessments when they used audio texts compared to standard print based text (Boyle, Rosenberg, Connelly, Gallin, Washburn, Brinckerhoff, & Banerjee). Text files can be converted to MP3 files, WAV files, AAC files (for iPods), or a number of other audio formats. The software for MP3 and AAC (iTunes) playback is available for download at no cost, and many text-reading programs have MP3 players built in. Another option for audio text is to create your own podcast of short books, chapters, tests or other traditional text. A podcast is simply an audio file that is recorded to be downloaded at a later time. Students can download the podcast and listen either on the computer or a portable media player. Podcasts can be created using a telephone (gcast) or using free or commercial programs. Audio files come in many different formats, each geared to be played by specific media players. Not all are interchangeable.

Audio files of text are also available from different sources. Audio books are available from commercial web sites such as Amazon and iTunes. Audio books are also available from Recording for the Blind and Dyslexic®. This organization provides audio books for students with a verified print disability for a fee. They provide a list of compatible portable media players for RFB&D audio files at http://support.rfbd.org/index.aspx?page=playing.
Fee based e-books
Some organizations offer electronic books to schools or individuals with disabilities for a modest fee. Most require a written proof of disability.

Accessible Book Collection
Books are listed by reading level, grade level and word count. They have specific high interest/low vocabulary books listed. Many of their books include illustrations and are switch accessible. The annual membership for schools requires a certification that the books will be used with students with disabilities.

One More Story
E-text subscription service that uses recorded voice with e-text. Offers books in a library format. Booklist mirrors frequently used elementary reading books.

Reading A-Z
Provides access to leveled readers, lessons, Benchmark books with running records, phonemic, phonetic and alphabet activities, vocabulary, assessments and more.

Tumblebooks
Tumblebooks for early readers are adapted by taking existing picture books and adding animation, sound, music and narration to produce an electronic picture book that either the child can read or have read to them. Older readers have a separate library of chapter books, high interest/low level, literature and more that have been adapted with narration, highlighting options and adjustable online text.

Publishing houses, including those that provide curriculum for schools and commercial sites (www.amazon.com) are also resources for digital books that can be purchased.

Handheld ebook readers and applications
Many of the handheld devices, PDAs and ebook readers can be used as an assistive tool for reading text. Ebook readers hold hundreds of pages, can enlarge the text and may be physically easier for students to turn pages. Many come with MP3 converters, so a student may be able to listen to the text while reading it.

The Amazon Kindle and Cybook are examples of portable reading devices that can hold hundreds of titles including books, magazines, newspapers, documents, and pictures. They use “electronic paper”, with the readability of paper and adjustable font size. Students can add bookmarks and annotations, copy and paste passages and then export them. Some of the devices are wireless, others use USB connectivity. Portable reading devices read text using a proprietary format, thus most text is not interchangeable between devices.

TouchBook™ uses Touch User Interface (TUI) technology. By pressing the surface of a printed page that is TUI-enabled the reader is able to retrieve digital content such as definitions, links or bookmarks that are stored on the computer, websites, DVDs, and CDs.
highlighted and customize text size, background color, recorded sound, and graphics. It has an on-screen keyboard and is single-switch accessible.

There are many other sources of e-books available. If you would like to know names of more electronic books you can visit the website of Project LITT: Literacy Instruction through Technology which conducted a three year study of the effectiveness of hypermedia based children's literature in improving reading skills of students with learning disabilities.

**Free e-books (downloadable)**

There are several excellent websites that provide access to electronic books. *Starfall Learn to Read* is a free website featuring a multitude of stories appropriate for Early Childhood through second grade. Stories are categorized according to early emergent readers through advanced emergent readers. The website allows the user to highlight words and have the words sounded out for the reader.

*International Children's Digital Library (ICDL)* is a five-year project funded by the National Science Foundation (NSF) and the Institute for Museum and Library Services (IMLS) to create a digital library of international children's books. One goal of this project is to create a collection of more than 10,000 books in at least 100 languages that is freely available to children, teachers, librarians, parents, and scholars throughout the world via the Internet. This website provides scanned images of the books but does not read the book aloud for the student.

Text and books that were written more than 50 years ago are now in the public domain and can be downloaded from the Internet by going to the *Project Gutenberg* site. These wonderful stories and novels can be adapted for use with older students who are still struggling with reading but would enjoy a more complex story line.

*Bookshare.org* is a web-based system supplying current accessible books in digital formats designed for people with print disabilities. These digital formats are in NISO/DAISY format for talking books, and BRF format for Braille devices and printers. Access to copyrighted books from Bookshare.org is limited to people in the United States with bona fide print disabilities and the non-profit organizations serving them. Bookshare requires an affidavit of print disability. Bookshare has partnered with Don Johnston, Inc. to offer a free Bookshare.org edition of *Read:OutLoud*. Eligible members will have full access to the NIMAS compliant reader complete with study skills tools.

*Teacher Tap* is professional resource for educators that lists electronic text with and without pictures, audio texts, interactive stories and more. The site is organized according to reading level, content, lists and collections, etc.

UDL Editions by CAST take advantage of the flexibility of digital text and power it with a text reader, highlighters and other study tools using the Texthelp© Toolbar and animated reading “coaches” that provide leveled supportive reading strategies.
**Planet Wobble** from Crick Software is another series that provides hard copy and on-screen books. Activities included in the series are based on specific literacy objectives such as repeated text for the first series, word study, comprehension activities and writing activities. These activities are differentiated, enabling children of all abilities to use them and are switch accessible. The series of books and activities provides progression through three levels. *Planet Wobble* books must be used with *Clicker* software.

*Start-to-Finish*® Books from Don Johnston Incorporated are high quality literature based stories. The stories come with a CD, a hard copy of the book that looks age-appropriate and an audiotape. The CD includes the text in exactly the same arrangement as in the book. Some of the stories in the series are classics that have been rewritten with high interest, controlled vocabulary (e.g., *Treasure Island*, *The Red Badge of Courage*). Others are new stories that have been written specifically for the series. The Gold Library includes titles with grade 2-3 readability, syntax and vocabulary of conversational speech, easily decodable words and a limited number of ideas per sentence. The Blue Library includes titles with grade 4-5 readability, syntax and vocabulary of more formal English; more ideas introduced into longer sentences with varied sentence structures. All *Start-to-Finish Books* include built-in scanning for single switch users. Each *Start-to-Finish* title includes teacher support materials, guided reading levels, lexile levels, PDF files of activities that include vocabulary and word study, plot and character development activities, cloze passages, multiple-choice quizzes and open ended questions for each chapter. Titles cover history, literature, science and nature, mystery and sports.

*Start-to-Finish Literacy Starters* are written and edited to match the interests and issues of older beginning readers. The content and graphics are more mature but take into account the barriers of language, syntax, and vocabulary that would make text difficult to read or comprehend for a beginning reader. *Start-to-Finish Literacy Starters* uses a proprietary combination of three text types—Enrichment, Transitional and Conventional—to provide the support for different skill areas: print conventions, oral language development, alphabetic principle and phonological awareness. All *Start-to-Finish* books and materials are read to the student using recorded speech from an actor rather than synthesized computer speech. The student or teacher can set the books to highlight word-by-word, by line or sentence as the text is read.

*Thinking Reader* from Tom Snyder Productions is a software series of electronic books developed to provide support for struggling readers. The program trains students to read strategically in order to increase their comprehension. Specifically designed for Grades 5-8, the *Thinking Reader* series presents unabridged, grade-level literature via the computer screen combined with human voice narration.

*UKanDu Little Books*® are switch accessible simple books for emerging readers. Students can choose words to complete the sentences on each page and create their own stories. When finished, the story is read back to the student and can be printed for a hard copy.

*WiggleWorks*® by Scholastic is a complete instructional program that features electronic versions of several excellent children's books. Students can click on unfamiliar words to hear them read aloud, record themselves as they read the book, and write or dictate their own books, which the computer can read aloud. Customizable features allow teachers to choose how text is read and...
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If a student could benefit from just a few pictures to support general concepts or key words, you might consider using a standard word processor for the text and add images to the document. You can use digital pictures, clipart or download images from the internet using a search engine set for images or other software programs that have a graphic library to illustrate key points or vocabulary.

Electronic Text

Electronic text allows you or the students to manipulate or access the text in ways that would not be possible using standard printed text. Words can be seen and heard when used with a text reader. Electronic text is abundant and comes from a variety of sources:

- Commercial
- Free downloadable
- Subscription-based downloadable
- CD included from some publishers when a hard copy of the text is purchased
- Scanned from a paper copy
- NIMAS text from an authorized entity

These are just a few of the many available resources. A more comprehensive listing of electronic resources for reading follows at the end of the chapter.

Commercial e-books

The following commercial products are highlighted because of the accessibility features that are built in. Electronic books or e-books are another way to allow students with physical disabilities to interact with text. When they are well designed with accessibility features, they offer a way for students to interact with the text. They are especially useful for students with physical disabilities who may not be able to hold or turn the pages of the regular text version. But they can also be a good choice for other students with other disabilities. Generally these programs read stories aloud to students in digitized (recorded) speech. Many have colorful graphics, music and sound effects. The students can interact with both the text and graphics. Here are just a few of those available.

*IntelliTools Reading: Balanced Literacy* program incorporates guided reading, phonics and writing through theme based stories including song, rime, and patterned language activities. The *Balanced Literacy* program includes nine full-color original storybooks, 142 lessons, 117 letter, pattern and decodable minibooks, 212 phonics activities, and 27 writing exercises. It also includes 46 colorful *IntelliKeys*® overlays that support *IntelliKeys* users and customizable options including one for low vision.

*LeapFrog®* products are commercially available at discount stores or over the Internet. They have a variety of learning systems, books, pads, and other digital devices that can read text, spell and interact with the student in a variety of ways. They have products suitable for students from infancy through secondary. While not developed to be assistive, they provide reading supports for many students by reading and spelling words, adding meaning to a term or concept, asking comprehension questions and more.
A typical line might look like the following text from *Monkey Business at the Market* © (1994) by Jean Slater.

![Image of a monkey coming into the grocery store, running through the aisles, looking for the door, people screaming, and running out of his way, with nobody knowing he just wanted to play.]

When a student no longer needs the support of pictures, he will tend to stop looking at it and naturally fade its use. The teacher can also reduce the size of the graphic while enlarging the size of the text so that it has increased prominence on the page. *Clicker5, Writing with Symbols 2000™*, *IntelliTools® Classroom Suite, PixWriter™* and *Boardmaker* are software programs that can be used to supplement text with pictures. Slater Software, the developers of *Picture It* have a free online service, *Literacy Support Pictures™* which supplies symbols for words entered into their search window.

**Newspapers**

*News-2-You* is a weekly online newsletter with picture supports for beginning readers. This weekly downloadable newsletter consists of an 18-20 page edition of current events, jokes, a recipe and activity pages. The simplified version of the same newsletter includes communication boards that support the newsletter. The “higher edition” has fewer picture supports and higher-level activities. The subscriber does not need to have specialized software to download and view the pictures. A speaking edition of the *News-2-You* newsletter is available if you have the free software *Flash* installed on your computer.
student types in the trouble word and the talking spell checker/dictionary/thesaurus will pronounce it. There are a number of these products. Some of the devices let you enter a word list so that the student can scroll through the list; looking for the word they are unsure of and select the word to hear it spoken. It clarifies homophones such as too, two, and to. The phonetic spelling correction lets the student look up a word even if he doesn’t know how to spell it.

**Reading Pens**

A single word scanner can be of great help to an advanced reader who struggles with large, multi-syllabic or unfamiliar words. A device such as a *Readingpen*\(^\text{®}\) from WizCom Technologies LTD. can be an excellent tool. It can be moved across the unknown word or line of text either from left to right or right to left. It scans the word or line of text and uses built in optical character recognition (OCR), to pronounce the word or read the line of text. It provides the definition if needed, speaking it on some models. A thesaurus is also included on some versions. This is not a tool for a young reader, one who struggles with many words in a passage, or has visual/motor difficulties. However, it can be a good match for the right student. A similar device, the *QuickLink Pen*\(^\text{®}\) Elite from WizCom Technologies LTD also speaks entire lines of text. Unlike the Reading Pens, it stores the scanned text into the pen to be transferred later to a Windows\(^\text{®}\) based computer. The *IRISPen* \(^\text{™}\) series are pen scanners that transfer scanned text into Windows or Mac\(^{®}\) applications. They are small and lightweight and connect to a computer using a USB cable. Some versions have text to speech technology.

**Use of Pictures/Symbols with Text**

Adding pictures to text can be very helpful for students who struggle with reading text. Using pictures together with words not only strengthens the association of text with vocabulary but also allows struggling readers to more easily comprehend what is written. Seeing words illustrated makes the text more meaningful and easier to remember. This is a strategy that has been reported as being effective for emerging readers (Silver-Pascuilla, H., Ruedel, K. & Mistrett, S.).

**Software**

One example of software that easily adds rebus symbols to text is *Picture It*. *Picture It* from Slater Software allows the teacher or therapist to enter text and quickly add rebus symbols. Rebus symbols are added to the entire passage with just the click of one button. One way to adapt books is to paste with adhesive picture-supplemented text over the traditional text. *Picture It* software consists of a library of over 6000 pictures/symbols linked to words, including the 100 most commonly used words. Customized pictures can be imported into the library. Pictures can be placed above or below the text and reduced in size so that as the student increases his or her reading ability, the text is more prominent than the picture. If necessary, the picture-supported text can also be read to the student by the computer and is accessible by switch, touch screen, keyboard or mouse.
Some students without an identified visual impairment might also benefit from large print because of visual processing deficits, problems with tracking words in a sentence, identifying word borders/boundaries or other impairments. A low-tech solution might be enlarging the page on a copy machine. While you can only enlarge to a certain point before cutting off text, it might be enough to relieve the visual fatigue that some students experience without even knowing it. Some students with sensory impairments benefit from tactile cues such as pieces of textured material glued on the page to illustrate a concept (soft, scratchy, smooth), or glue or puffy paint to outline a shape in the book.

Others may benefit from using hand-held magnifiers. Although you can find low level magnifiers at retail discount stores, be aware that their clarity and magnification are less accurate than those developed specifically for individuals with visual impairments. Some students may improve their ability to track the words in a line using a bar magnifier. Vision specialists should be consulted about high quality magnifiers for students with identified visual impairments. Please see Chapter 12 - Assistive Technology for Students who are Blind or have Low Vision, for more adaptations for students with visual impairments.

Low-Tech Modifications to Text

Changing the Readability of Text
When students need standard text or curriculum slightly modified, there are some low-tech solutions. Using Wite-Out® on challenging vocabulary and replacing the words with easier synonyms can change the readability of the text. Another solution is to summarize the text on the computer with easier vocabulary and less details. Paste the summary over the existing text so that the student’s book “looks” like their peers. Enlarging the font, increasing the line or word spacing, or increasing the margins on the document so that fewer words are on a line can increase readability. Once again, that modified text can be glued over the existing page.

Marking Text
Color coding, either with highlighters, Highlighting Tape, colored text printed from the computer or any other means can give students a visual clue to identify important vocabulary, facts, main ideas, recurring “trouble” words, where to start/stop reading, repeated lines or whatever the skill the student needs support for.

Independent Reading
If students need individual vocabulary words or short phrases/sentences read to them, the text can be printed on Language Master cards and recorded by the teacher. Students can then run the card through the Language Master or similar card reader to hear the text read aloud as many times as needed. Other reading supports such as spelling the words, giving definitions or synonyms to unfamiliar vocabulary, and syllabication cues can also be recorded on the cards.

Handheld Device to Read Individual Words

Talking Dictionaries
The various talking products such as those from Franklin Electronic Publishers are especially helpful for students who stumble over new words or larger words as they are reading. The
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easier to manipulate. Putting something in between pages to separate them makes it possible to slip a finger between the pages. These “page fluffers” can be anything that works well for the student. An easy way to make “page fluffers” is by adhering pieces of lightweight foam or sponge to a piece of tag board. These can be cut into one inch squares and then paper clipped to each page. A small piece of the soft side of sticky-back Velcro™ can be stuck to the corner of each page as another “page fluffer”. Any lightweight item that will sufficiently separate the pages will work. Some students simply need a way to “grab” pages. You can use large paper clips or Hefty Post-it® tabs, or the student can try wearing an office “rubber finger” to grip individual pages. It is also important to consider the physical placement of the reading material. Often an easel is used to hold the reading material in an upright position so the student can easily view it.

Automatic page-turners such as Flip by AbleNet® can turn the pages of a book or magazine when the student presses a switch. Reading materials are inserted in the page-turner, adjusted and activated by one or more switches depending on the student’s needs. They can be programmed for automatic dwell times that can be adjusted depending on the user and reading material.

The BookWorm™ Literacy Tool from AbleNet is a device that makes almost any children’s book a "talking book." Record the text of each page of a children’s book into the BookWorm literacy tool and affix the matching stickers. Students press the keypad or use an external switch to listen to the recorded pages of the book as they read.

AAC Users
Students with Severe Speech and Physical Impairments (SSPI) who use communication devices generally need special accommodations for their reading instruction. As students with SSPI develop reading skills, teachers can program building words activities, phonetic exercises, word banks/walls, vocabulary pages, and more into the student’s communication system. As the student’s reading skills progress so will the overlays/pages the student uses to support their reading. They may have overlays to ask and answer comprehension questions, word definition pages, vocabulary to express prior knowledge before reading text or even have replicas of books, pages or repeated lines on their device so that they can read independently or as part of a group reading activity. These students require the support of Speech and Language Pathologists in addition to their special and regular education staff in order to meaningfully interact with print. One literacy program, MEville to WEville by AbleNet uses standard children’s books with specific adaptations for students with limited communication skills. The program suggests possible communication devices and activities for those students. For more information about students with SSPI, please see Chapter 3 – Assistive Technology for Communication.

Visual Modifications
Special adaptations of text need to be made for students with visual impairments; books can be converted to Braille or large print, text can be copied and enlarged on a copier or low-tech tactile cues can be placed in the book. All are adaptations that could be appropriate for students with visual impairments. Students who need Braille copies of text or large print books can receive those from vision support services-local, state or national.
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Using Color

*Highlighters* can be used to make specific letters or words stand out. Highlighters come in many colors and sizes. Students should be taught strategies for highlighting. Students can highlight new vocabulary, key words, dates, important people or facts, definitions, a sequence of steps or events, or concepts pointed out by the teacher as being important for a test. Use a consistent color for each category; vocabulary-orange, main ideas-pink, important people/dates-blue, etc. Students can later transfer that information to study guides or outlines. Some *Crayola®* highlighters are even erasable so that a student's highlighting can be later removed.

*Highlighting Tape* can be used in lieu of standard highlighters. *Highlighting Tape* comes in six colors (orange, yellow, pink, blue, purple and green) and has a large number of uses. It is especially useful in library books or other books that should not be permanently marked. The tape is easily removable and can be written on.

Transparent colored *Post-it®* notes can be used similarly to *Highlighting tape* and standard *Post-its*. *Post-its* can be used to remind the student of important text, facts, charts, or can be used by teachers to write pre-reading or summary questions (i.e., “What were the main reasons for the start of the Civil War?”). “Hefty” *Post-it* tabs can be used to mark important pages such as glossaries, table of contents or as a bookmark for students who have difficulty organizing themselves or their materials.

Another low-tech strategy for students reading standard text is using *transparent color overlays*. Some students experience a significant improvement in their reading when the standard white background is changed to a contrasting color. Experts in the field recommend trying different colors to see what the impact is on reading. If you have two copies of the same page of text and place a different colored overlay on each, you can ask the student to tell you which is better, clearer, and easier to read. Continue trying different colors to see if the student can find one that makes a difference. The student will often describe the effect as, “the letters don’t move”, “the words are bigger,” “the words are brighter,” “I can see the spaces,” etc. Different students are helped by different colors. Blue, pink, red, green, purple and other combinations have all been known to work. Some students benefit from two or more overlays overlapped on top of each other. Once the student finds a filter, have the student read 10 or more lines first without the filter and then with the selected filter. If this is going to work, it will work immediately (Sweeney, 2000).

Colored reading strips sometimes called *Reading Helpers* or *EZC Readers®* are widely available and can be used in lieu of colored overlays. They come in a variety of widths and colors. Another simple idea is to place a strip of *Highlighting Tape* on a two-inch strip of clear plastic transparency (the kind used for overhead projectors). The child can then use it to move down the page, highlighting the line being read.

Book Adapted for Access

**Physical Access**
If a student has a physical disability that makes it difficult to handle books, pages can be made
Using Reading Strategies
Some students are successful reading standard text with the assistance of low-tech strategies and systems. Students may need regular reminders in order to use successful reading strategies. Harvey and Goudvis describe strategies that students can use to enhance their understanding of the text such as:

- Think how the book is like me.
- Think how the book is like another book.
- Think how the book relates to what I know.
- Ask questions.
- Make a picture in your mind.
- Tell it in your own words. (Harvey & Goudvis, 2000).

These strategies and others can be written on a bookmark and laminated. Some students do better with a visual or picture clue of strategies to use. You can find symbols to represent the strategies from the Internet or programs with graphic libraries such as Boardmaker® or Inspiration®. The student can then easily refer to the strategies while reading.

(Based on Harvey & Goudvis, 2000. The Picture Communication Symbols ©1981-2008 by Mayer-Johnson LLC. All Rights Reserved Worldwide. Used with permission.)
A CONTINUUM OF CONSIDERATIONS FOR ASSISTIVE TECHNOLOGY

For Reading

- Standard text
  - Book adapted for access
  - Low-Tech Modifications to text
  - Handheld device to read individual words
  - Use of pictures/symbols with text
  - Electronic Text
    - Modified Electronic Text
      - Text reader
        - Scanner with OCR and text reader
          - Text Reader with Study Skill support
What does the student need to do after they have read the material?

Reading is often the first step in eventually using the material. We always need to keep in mind, what will the student do with the material read?

Narrowing the Focus

As a team, identify by circling or other means those few tasks the student needs to do for reading that will have the most impact.

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.

Solution Generation: Tools/Strategies

As a team, brainstorm and write on chart paper any assistive technologies &/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for reading. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology.
Differences in skill development, maturity, a different environment or other factors may make all
the difference. If the student is currently using assistive technology note the AT used, location,
level of effectiveness, trained staff, and any other issues that are pertinent to the student/building.
Be certain to list low and high tech AT supports.

**Sensory Considerations**

Different environments have different levels of sensory stimulation. If the team has determined
that sensory impacts are influential for the student’s learning, identify the sensory levels in each
environment in which the student will be reading.

**Tasks**

As a team, discuss and write on chart paper the reading tasks that the student needs to do.

One of the most important questions when assessing a student’s need for assistive technology is:
What are the tasks the student needs to do? In this instance what does the student need to read
and then what does the student need to do with the information read? These are some questions
to consider:

- Is this student currently reading standard curriculum?
- Is the student currently reading modified curriculum? If so, what modifications have been
  made?
- Does the student need assistance in reading worksheets, assessments, directions,
  information from the board or overhead, study guides or other typical requirements in the
  classroom?
- When the student uses the Internet, can he/she read web sites, wikis, blogs?
- Does the student have a need to read electronic text?
- Does the student have access to appropriate reading materials for recreation or personal
  purposes?
- How does the student read text they encounter in the community such as menus, signage,
  product labels?

Skilled readers use multiple cues when reading, such as contextual clues in the sentence,
initial letters of an unfamiliar word, word shape, automatic word recognition, prior
knowledge, concepts about the type of text they are reading and more. Struggling readers
often only employ one or two strategies and will skip unfamiliar words/text if they are not
successful (McGee & Richgels).

- Does the student employ reading strategies when encountering unfamiliar words? Which
  strategies?
- Does the student automatically use effective strategies or need prompting to do so?
- What strategies and cues does the student use to enhance comprehension?

We generally read prior to completing a process, whether it is to take a test, write a report,
discuss the material with others, follow directions, pursue an interest, or many other reasons.
Chapter 7 – Assistive Technology for Reading

- Other individual specific sensitivities

Although these factors are not directly related to reading, they impact the student’s ability to learn and focus on instruction so should always be considered.

Other Considerations
Each individual student has specific skills and areas of concern. Be certain to address those as you capture the particular traits of the student in this part of the SETT process.

Environmental Considerations
As a team, discuss and write on chart paper any environmental considerations that might impact the student’s reading such as auditory or visual distracters, placement in the classroom, number of different reading environments or any other environmental impacts.

Students may encounter different reading requirements, expectations, tasks, stimuli, and other differences that can affect their reading performance in each setting. Some questions to ask and consider for each reading environment include:

- What is the student’s position and distance from the text to be read (i.e., the board, computer or other surface which cannot be manipulated by the student)?
- Do the student’s reading skills change according to environmental influences such as group reading versus independent reading?
- Do individual teachers have different reading expectations for the student?
- Does the student have different reading requirements in each classroom/subject?
- What kind of support does the student receive in the regular education classroom with standard curriculum?
- If the student uses or will potentially use computer based programs for reading or reading assistance, where are the computers located; what is the computer’s age, operating system and system capabilities?
- Does the student have ready access to computers with supports (reading support, access support, adult support)?
- If text needs to be scanned into the computer, are the scanning stations easily accessible to the student/staff?
- Can text be quickly scanned when necessary?
- Is the school Technology Coordinator involved in decision-making when discussing options for electronic text?

Assistive Technology: past and present
What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time.
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- Is there a difference in the student’s comprehension when the text is read aloud by an adult compared to the student’s independent silent reading?
- Does the student comprehend equally well when the text is read aloud by an adult compared to computer read text?
- Would the student benefit from seeing text highlighted as the computer reads it?
- Does the student have auditory processing difficulties?
- Is the student’s listening comprehension sufficient for auditory text only?
- Is the student’s comprehension different for different types of text such as fiction, nonfiction, directions, and assessments?
- Has the student’s working memory and/or short-term memory been assessed?

Word Attack Skills
It used to be assumed that students with cognitive limitations could only learn to read using a “sight-word approach”. That assumption has proven to be erroneous. Regardless of disability, successful readers need to build their skills to read and decipher unfamiliar words.

- Does the student have the phonemic awareness to identify similar and dissimilar patterns in words?
- Has the student established sound/symbol relationships?
- Does the student recognize familiar words and patterns?
- Can the student isolate individual sounds (i.e., initial, final, medial)?
- Does the student use resources such as a word wall to decode unfamiliar words?

Sight Vocabulary
Word attack skills are important when encountering unfamiliar words, but if students need to decode every word they read in a sentence, their comprehension of the text will suffer. Good readers have automatic sight word vocabularies that they can read without stopping to decode.

- Does the student have a sight word vocabulary?
- Does the student remember previously taught words?
- Can the student recognize and remember the visual pattern that words or letter combinations make (i.e. “ing”)?

Sensory Considerations
Some students are adversely affected by environmental stimulation that others can filter out or ignore. Some common factors that can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as

- Visual clutter
- Fluorescent lighting versus full spectrum lighting
- Classroom and background noise
- Tactile stimulation
- Awareness of physical space
Student’s Abilities and Difficulties
As a team, discuss what the student’s abilities and difficulties are related to reading. Please complete and review Section XX of the WATI Student Information Guide: Reading (pp. ****)

Physical Considerations
Students who have difficulty physically manipulating books, text, or other print based materials may benefit from assistive technology solutions to increase their accessibility to the text. Once those accommodations have been made, the student may need no further accommodations. Some examples of physical access questions are:

- Does the student have difficulty turning pages in a book, magazine, or other paper-based material?
- Can the student support or hold the printed materials in a comfortable and accessible fashion without compromising his/her posture?
- How well does the student see the print?
- Have you noticed a difference in the student’s reading ability when the font size is smaller, larger, with or without a serif?
- Does the spacing between the words or lines of text impact the student’s vision?
- Can the student track the words across the page/line without losing his/her place?
- What happens when there are more or fewer words on a line such as when text is bulleted or indented?
- Is the student affected by the amount of visual “clutter” on a page?
- Has anyone assessed the impact of color on the student’s reading skills?
- Is visual or physical fatigue an issue for this student?
- What other physical considerations/questions are specific to this student?

Communication Considerations
Does the student have the ability to express their knowledge in all of the areas below? If not, please see Chapter 3 Assistive Technology for Communication.

Reading Comprehension
Erickson & Koppenhaver say that without instruction aimed at making meaning from text, children are left with an impression that “reading is merely decoding words and successfully saying them aloud….addressing only word reading will not promote successful silent reading comprehension.” (Erickson & Koppenhaver, p.64)

If a student has an identified language learning disability, is an English Language Learner (ELL), has a cognitive disability or otherwise lacks sufficient background knowledge, reading comprehension can be limited. Some questions to consider for this child include:

- Does the use of pictures supporting the text increase the student’s background knowledge and comprehension?
- Does the student benefit from “brainstorming” sessions using words or graphic maps?
- How do you know the student understands the vocabulary used in the text?
- What other pre-reading strategies have been used, and with what success?
**WATI Assistive Technology Decision Making Guide**

Area of Concern: Reading

### Problem Identification

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the student’s abilities &amp; difficulties related to reading?</td>
<td>What environmental considerations impact the student’s reading?</td>
<td>What reading task(s) do you want the student to do?</td>
</tr>
<tr>
<td>• Review Section 6 WATI Student Information Guide (Chapter 1, page 33)</td>
<td>• Reading requirements for different settings</td>
<td>Read:</td>
</tr>
<tr>
<td>• Physical considerations</td>
<td>• Student’s distance from text</td>
<td>• Standard Curriculum</td>
</tr>
<tr>
<td>• Communication considerations</td>
<td>• Reading group size</td>
<td>• Modified Curriculum</td>
</tr>
<tr>
<td>• Visual considerations</td>
<td>• Visual clutter on page</td>
<td>• Community print</td>
</tr>
<tr>
<td>• Background knowledge and/or receptive language</td>
<td>• Lighting</td>
<td>• Worksheets</td>
</tr>
<tr>
<td>• Comprehension of text-read or listened to</td>
<td>• Computer operating system</td>
<td>• Tests</td>
</tr>
<tr>
<td>• Phonemic awareness</td>
<td>• Current or past AT used</td>
<td>• Recreational</td>
</tr>
<tr>
<td>• Sight vocabulary</td>
<td>• Other concerns</td>
<td>• Computer</td>
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<tr>
<td>• Other concerns</td>
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</tbody>
</table>

### Sensory Considerations

What sensory challenges does the student have that impacts Reading? (i.e., visual, auditory, tactile)

### Narrowing the Focus

Identify specific reading task(s) for solution generation

### Solution Generation Tools & Strategies

Brainstorming only—no decisions yet

Review the Reading Continuum

### Solution Selection Tools & Strategies

Use a Feature Match Process to discuss and select idea(s) from Solution Generation

### Implementation Plan

AT Trials/Services Needed:
- Formulate reading objectives to determine effectiveness of trial
- Training needed
- Date
- Length
- Person(s) Responsible

### Follow-Up Plan

Who & When
Set specific date now.

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them (i.e. on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference.
Using the SETT process and Decision Making Guide

It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. Additional categories include:

- Narrowing the Focus to help identify a specific task in order to select appropriate assistive technologies
- Implementation Plan to assign trials, dates, responsibilities and data collection
- Follow-Up Plan to set a date for the team to reconvene and review the student’s progress

Again, this is intended as a guide; during the actual assessment process, each topic should be written in large print where everyone can see (i.e., on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology tools and strategies for their students.
holder’s property and should be paid for when used. It behooves all of us to request accessible
digital files from the publishers when purchasing their textbooks. Those publisher-produced files
can be used legally with any student.

When a team is deciding whether accessible instructional materials are necessary for a student,
they should consider these key questions

- Does the **STUDENT** need instructional materials in specialized formats to access the
  curriculum and receive a free, appropriate, public education?
- In which **ENVIRONMENTS** will specialized materials be used?
- For which **TASKS** will the student require materials in which specialized format?
- What **TOOLS** will the student and others need?

(Marfilius, S. 2008)
By agreeing to deliver the materials marked with “NIMAS” on this contract or purchase order, on or before ___/___/___, the publisher agrees to prepare and submit files meeting NIMAS requirements to the NIMAC at the American Printing House for the Blind (APH) located in Louisville, Kentucky. Should the vendor be a distributor of the materials and not the publisher, the distributor agrees to immediately notify the publisher of its obligation to submit NIMAS file sets of the purchased products to the NIMAC. The files will be used for the production of accessible formats as permitted under the law for students who are blind or have other print disabilities (Section 1). (Retrieved 6/2/08 from http://dpi.wi.gov/sped/bul07-03.html)

Copyright Issues

Whenever a school uses an alternative version of copyrighted text with a student, we need to be certain that it is a legal copy of the text. The Chaffee Amendment is the law most frequently referenced when providing alternate versions of text to be used with students with print disabilities.

The Chaffee Amendment:
- Allows authorized entities to reproduce or distribute copies of phonorecords of previously published non-dramatic works in specialized formats for use with individuals who are blind or other persons with disabilities.
- …specialized formats refers to Braille, audio
- or digital text which is exclusively for use with individuals who are blind or other persons with disabilities.

There is no new language or clarification regarding which students qualify as having print disabilities. Current language states that students whose reading disability is physically based are eligible to receive NIMAS files. By definition of the Copyright Act of 1931 as Amended, student with “print disabilities” are those who have been certified by a competent authority as unable to read printed materials because of:
- Blindness
- Visual Impairment
- Physical Limitations
- An Organic Dysfunction
- Students who qualify as a student with a disability under IDEA 2004

In all instances, the student who will be using the NIMAS files must be one who qualifies under IDEA 2004 and have an IEP that reflects the student’s print impairment. For more information on NIMAS, NIMAC or copyright, please go to the CAST (Center for Applied Special Technology) website at http://www.cast.org. Wisconsin schools can go to http://dpi.wi.gov/sped/vision.html and view the information listed under National Instructional Materials Access Center (NIMAC) and Accessibility Standard (NIMAS).

While it is legal and ethical to provide adapted text for those students who meet the eligibility under current definitions, it is illegal to make copies of those same materials for other students even if a student could benefit from the alternative format. Those materials are the copyright
Chapter 7 – Assistive Technology for Reading

Goal of NIMAS

The goal of NIMAS is to ensure the development of high quality and consistent text source files in order to create specialized formats for students with print disabilities. State and Local Education Agencies (SEAs and LEAs) must ensure that students who are blind, visually impaired or those with other print disabilities receive instructional materials in a timely manner. Each state is required to adopt NIMAS or provide an assurance that students will have appropriate instructional materials in a timely fashion. The state of Wisconsin has adopted NIMAS. NIMAS files will be "housed" in a national repository, the NIMAC - National Instructional Materials Accessibility Center - 20 U.S.C. 1474 (e).

School District Responsibilities

School districts must send their Department of Public Instruction (DPI) an assurance form stating that district students who are blind, visually impaired or those with other print disabilities, will receive their materials in the appropriate format and in a timely manner. Wisconsin DPI strongly recommends school districts coordinate with NIMAC (a national repository for NIMAS source files).

How will it work?

How will this work? When schools districts who coordinate with NIMAC, purchase core materials or textbooks for elementary or secondary schools, they must request that the publisher send a NIMAS source file to the NIMAC. It should be noted that the mandate is not to the publisher, but rather to the SEAs and LEAs. It also only relates to those printed core materials published after July 19, 2006. When the school district requires an alternate form of the text for a specific student with a documented print disability, they must contact one of the state authorized entities that can download files from the NIMAC database. The authorized entity will convert the source file into a useable format as requested by the school. Some of the authorized entities are already sources of alternative text such as Recordings for the Blind and Dyslexic (RBFD), American Printing House for the Blind (APH), Bookshare.org or state schools that support students with visual impairments. Anyone can search the NIMAC http://www.nimac.us/ for files, but only authorized agencies can download files from the NIMAC.

Alternate files from publishers

School districts may be able to purchase a CD version of textbooks directly from the publisher in an attempt to provide accessible versions for students with print disabilities. While this is encouraged, care must be taken to make sure these versions will actually work for the students. CDs can be “locked” so that it is difficult or impossible for a screen or text reader to “read” them, or an audio file created from them. Some may not contain full text versions or only outline key points in a text. Requesting NIMAS-compliant digital copies in the original PO can help. Don’t assume that just because a publisher provides a CD, it will be accessible. Remember that NIMAS is not retroactive and will not apply to core materials purchased prior to July 19, 2006. School districts can also purchase NIMAS files directly from the publisher.

In Wisconsin, Stanford Taylor (December, 2007) from the Department of Public Instruction recommends the following language be included on purchase orders of new text:
Chapter 7 – Assistive Technology for Reading

little instruction on engagement with connected text (Katims, 2001). Karen Erickson says that in order to build comprehension when reading, instruction must have emphasis on both automatic word identification and phonics or decoding skills. The combination of the two is required for reading success. Successful readers must be able to effortlessly recognize most words they encounter and have the skills to figure out unfamiliar words. Comprehension is adversely affected when instruction emphasizes only one skill. When readers do not have the skills to figure out unfamiliar words, they are forced to skip or guess words (often based on the initial letter with no regard for sentence context). When readers are taught to stop and sound out or consciously think about every word they encounter, they are expending cognitive resources that would otherwise be devoted to comprehension (Erickson, K. 2003).

Teachers who use the Four-Blocks® method of literacy instruction by Pat Cunningham (1991) can modify the activities for students with disabilities. The original Four-Blocks framework was developed to adjust to individual differences in the classroom and teaches students not only how to decode unfamiliar words but also builds comprehension, writing skills and independent reading. The basic premise is that each day is devoted to four different approaches to teaching all students to read. Incorporating Guided Reading, Self Selected Reading, Writing and Working with Words on a daily basis enables students to interact with print meaningfully. Karen Erickson and David Koppenhaver further addressed the specific accommodations of the Four-Blocks framework for students with disabilities, using assistive technology when appropriate (2007).

Although teachers have been using technology to support students’ reading for a relatively short time period, research is reporting that it improves student’s reading fluency, comprehension, speed and vocabulary. When students use text-to-speech technology, their writing quality and length of writing projects increase. Older students report better editing when using text-to-speech than when reading for editing purposes on their own. Ann Orr and Lorena Parks summarize this research in Educator’s Ezine (2007).

NIMAS

What is NIMAS?
NIMAS is the National Instructional Materials Accessibility Standard that is part of IDEA- 2004 20 U.S.C. 1474 (e)(3)(A). NIMAS files are text files from publishers that can be converted to a standard or specialized format. Files and documents we traditionally see and use (word processing doc, pdf, html, etc.) are not accessible to all users. But those files can be changed into an accessible document or format depending on the student’s needs. NIMAS is a file format that is accessible and flexible and can be converted to:

- RTF (Rich Text Format) for text-to-speech and large print alternatives
- HTML (Hyper-Text Markup Language) for large print and text-to-speech that can include audio, text and video
- BRF (Digital Braille) for common Braille devices or Braille printers
Students with Print Disabilities

For many students with disabilities, the limitations of print raises barriers to access, and therefore to learning. Following the passage of the IDEA in 1997 and more recent reauthorizations, it has become essential that all students have access to the general curriculum, and thus to print materials. Some students cannot see the words or images on a page, cannot hold a book or turn its pages, cannot decode the text or comprehend the sentence structure. Students may experience different challenges, and may require different supports to obtain meaning from books. For each of them however, there is a common barrier - the centuries-old fixed format of the printed book. Many students with disabilities presently do not have access to the printed material they need. There are several reasons for that. In some cases, the problem is technical - schools may not have the technology they need to properly provide accessible versions to students, even if they had such versions. In other cases, the problem is lack of knowledge - many teachers and schools do not understand the issue of access or the potential solutions that are available ("NIMAS at CAST: About NIMAS", 2006).

Educators usually select technology for two reasons. They select programs that remediate specific skills through individualized and/or repetitive practice or they select programs that compensate for a student’s disability. Deciding when to provide remedial supports and when to provide assistive technology accommodations is critical when designing a student's instructional plan. As many reading researchers have suggested, the focus in the early grades is on learning to read, and the focus in the intermediate and upper grades becomes reading to learn. Some of the research shows that using technology for compensatory intervention actually also provides remedial benefits (Silver-Pacuilla, H., Ruedel K. & Mistrett, S. p. 8). While assistive technology by definition is not instructional, sometimes the support that assistive technology provides enables the student to further develop his or her skills.

Research

There is an abundance of books and research about how children learn to read and the typical progression of most students. McGee and Richgels (2000) say that children’s literacy learning is developmental, but not in the sense of proceeding in an irreversible, step-by-step progress. No child’s literacy development exactly matches those of another child. Furthermore, an individual child’s literacy behaviors vary in sophistication depending on the task and situation. Although the age may vary with each student as they acquire literacy skills, research tells us that students with cognitive disabilities follow the same developmental progression as “typical readers”. Additionally adolescent aged or older students with cognitive disabilities continue to develop literacy skills long after “traditional reading instruction” usually stops (Katims, 2001; Erickson, 2007). When Katims looked at reading instruction for students with mild to moderate cognitive disabilities, he discovered that although many students engaged meaningfully with print, the special education reading instruction they received focused primarily on word identification with
Introduction

There are students who struggle with reading every day. They may be students who have an identified disability in reading or are “unidentified” struggling readers. We also know that students who have language learning disabilities often struggle with making meaningful connections with printed text, as do students who are English Language Learners (ELLs) and students with cognitive disabilities. Some students with physical impairments, visual and hearing impairments, and AAC (Augmentative and Alternative Communication) users often have difficulty accessing the text. This chapter will outline some of the research that impacts students who struggle with the reading process, National Instructional Materials Accessibility Standards (NIMAS) definitions, requirements, definitions and restrictions will be addressed. Factors about the student, environment and tasks that should be considered when contemplating assistive technologies and strategies will be explored. Finally, we will examine some of the tools from low- to high-tech that can support struggling readers.

This chapter is not intended to educate professional staff in appropriate reading instruction. If you are interested in knowing more about how children learn to read, McGee and Richgels book, *Literacy’s beginnings: Supporting young readers and writers* and *Put reading first: The research building blocks for teaching children to read* by Adler provide a good analysis of reading development. Free copies of the Adler publication are available from their website [http://www.nifl.gov/partnershipforreading/publications/PFRbooklet.pdf](http://www.nifl.gov/partnershipforreading/publications/PFRbooklet.pdf). A good resource for teaching reading to students with disabilities is *Children with Disabilities: Reading and Writing the Four-blocks ® Way* by Karen Erickson and David Koppenhaver.
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Power Point
Microsoft Office
http://office.microsoft.com

Read/Write Gold
TextHelp Systems Inc.
http://www.texthelp.com/page.asp?pg_id=10059

Spark-Space Limited
UK Company
www.spark-space.com/education.htm
Product Resources

Audacity
http://audacity.sourceforge.net/

Claymation
Registered Trademark – Will Vinton 1978
Claymation Station
http://library.thinkquest.org/22316/home.html

C-Map
Institute for Human and Machine Cognition
http://cmap.ihmc.us

Comic Book Creator
Planetwide Media a division of Planetwide Games, Inc.
Personal publishing software
http://mycomicbookcreator.com/

Draft:Builder
Don Johnston Incorporated
26799 West Commerce Drive
Volo, IL  60073
http://donjohnston.com

GarageBand
http://www.apple.com/ilife/garageband/

Google Docs
International Business Machines Corporation
http://www.google.com

HyperStudio
http://hyperstudio.com

Inspiration
Inspiration Software, Inc.
http://www.inspiration.com

Moodle
http://moodle.org
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Web Resources

**Dictionary.com**
An online dictionary, thesaurus, reference and translation guide
http://dictionary.com

**Visuwords.com**
Online graphical dictionary — Look up words to find their meanings and associations with other words and concepts. Produce diagrams reminiscent of a neural net. Learn how words associate.
http://visuwords.com

**Wikipedia**
A multilingual, web-based, free content encyclopedia project.
http://www.wikipedia.org
Voice Recognition (VR) Software

Voice recognition software is improving as fast as the new versions are released. Training time has been significantly decreased, ease of use increased, and student accuracy significantly improved. In addition to stand-alone VR software, VR is also built into other software such as Office XP, Vista OS, WordQ, SpeakQ, Read and Write Gold and Premier.

For all of the positives VR software may still fall short of getting the student’s thoughts and ideas down on paper. VR can not organize thoughts or improve sentence delivery on its own. A student’s jumbled thoughts or poor speech patterns will show up on the computer screen. Good training with voice recognition is important. Students need to master navigating the software and controlling the writing process by voice. They will still need to edit, catch the program’s misunderstood but correctly spelled words, and check their work. VR software can be used with an organizational software such as Inspiration to help enhance the organization of writing.

Students will need time to learn and master the VR program before they are expected to use it functionally in classroom assignments. Microphones may also be an issue. Many schools report they are using a lot of them. The tender wires take a beating in the school environment. Despite these challenges (needed training, proper computer equipment, still needing an organizational tool, etc.), students may benefit greatly by using their voice to write. (For more information, see Chapter 5, Assistive Technology for Motor aspects of Writing.)

Solution Selection: Tools & Strategies

Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the reading tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time.

Implementation Plan

After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial materials, team member(s) responsibilities, start date and length of trial, training needed and any other student/staff specific issues. Be certain to identify writing objectives and criteria of performance to determine the effectiveness of the trials.

Follow Up Plan

Before the meeting ends set a mutually agreed upon time and place to give progress on the implementation plan. Be sure to include all those people who have assigned tasks and an interest in the outcome. This will give team members a chance to revisit concerns, keep members on track and solve problems before they become a roadblock to implementation.
Talking Word Processing

This software is used to provide verbal feedback to a student while they write. The verbal feedback can be provided at a letter, word, sentence, or paragraph level. The entire document could also be read back. Some students are better able to hear mistakes than read for mistakes. Some examples of software that do this are Write Out Loud, WordQ, Read and Write Gold, Premier, etc. (See Chapter 7 – Assistive Technology for Reading for additional resources.)

Multimedia Software for Alternative Expression of Ideas

Improving access to digital media is changing the type of assignments students can use to express their understanding of content. Early multimedia such as PowerPoint or HyperStudio allowed a student to add pictures, videos, movement and sound to their projects. SMART® Notebook software is an example of a new generation of multimedia software. Alternative formats of expression may help some students get their “ideas out”.

PowerPoint, a program that is available in almost every school allows a student to add graphics, movement, charts and graphs, video, and voice to a project. Text to speech software can be used to read the text in the PowerPoint. Internet access allows a student to find the right pictures and videos to express an idea. Sound and video editing software such as GarageBand or Audacity are also available to edit media materials a student may want to use. Through picture editing and the slideshow feature, projects like Claymation and cartoons can be made. Personal publishing software, such as Comic Book Creator, allows students to use visuals to help make their point. Choosing the features that match a student’s motivation and/or abilities will help them create a project that can truly share what they know.

Graphic organizers like Inspiration, C-map or Spark-Space can help a student visually and kinesthetically organize the bits of information gathered for a project prior to beginning the writing process. This information can then be organized into a coordinated whole.

Video and pod casting software can help a student express visually and verbally what they are struggling to get down on paper. Through the editing process they can organize those thoughts into a cohesive whole.

Some of the new online tools such as Google Docs or protected group spaces such as those found in Moodle can help students work together on writing projects. The group members are at their own workstation and see a group document at the same time. This may work well as an instructional strategy but can also be used by the students to create a better group document.

Tools for Citation Formats

Citations are important for students to use, helping them recognize the authors and creators whose ideas, words and media contributed to the current project. Websites, documents and other citable works are easy to loose in the rush of internet searching. Website tracking software and reference managers such as the ones built into Draft:Builder or Read/Write Gold’s RefWorks can help a student format not only written work but the varying media a student may draw upon for their projects.
Word Prediction Software

Word prediction programs reduce the time, effort and frustration for individuals with spelling difficulties to produce written work by providing an on-screen list of possible words to use in a piece of writing. The student types a letter or two and the program provides a list of words (based on word frequency and context) beginning with that letter(s). If one of the choices is a word the student wishes to use, they select it. If not, the student enters another letter that produces a new set of choices.

Word Prediction software (i.e., Co:Writer, WordQ, Read and Write Gold, Premier, and SOLO) also include features such as spell checking as you type, multiple word prediction, text to speech, grammatical rules, phonetic spelling and hotkeys for frequently used words. Text-to-speech can provide auditory feedback to students to assist them in word choices and selection to monitor the structure and meaning of their work.

Digital Templates

Digital templates are interactive prompted writing guides that assist writers through the correct writing sequence. Some software (SOLO) uses prompt statements that guide students through each step of the writing process, from creating an introductory paragraph to completing the conclusion statement. Many allow you to modify any of the templates or create your own templates for any subject or assignment.

Abbreviation Expansion

Abbreviation Expansion software can be used to create abbreviated forms for frequently used words or phrases for slower writers and poor spellers. For example, if a student consistently misspells "conscious" they could type "c-o-n" and space bar in its place and the word "conscious" will automatically appear on the screen. This feature is often included in word prediction programs such as Co:Writer as well as word processing programs like MS Word.

Word Processing with digital supports

Students can be provided with access features to support their digital writing. Digital highlighters can be used to extract text from source documents, decreasing the copying time this would normally take. Digitally based graphic organizers can be used to group chunks of information that will be needed and to organize the circular thinking patterns students may have on a topic into an outline with a push of a button. This outline can then be exported to a word processing document or PowerPoint with the “organizational” elements intact. Some students benefit from hearing the words they are writing, text readers or read back elements can help them catch poor word choices or the correct spelling/wrong word used. Programs mentioned before such as word prediction and abbreviation/expansion help get the right words on paper, and built in tools such as the thesaurus, word count and grammar check can provide valuable editing feedback. Some new writing tools are emerging at the time of this writing that can assess not only writing conventions like punctuation and capitalization, but these tools can provide more in-depth feedback such as sentence length, sentences leading to a cohesive paragraph, or sentences that lead to a key point, all helping a student to evaluate their writing before it is turned in.
Talking spell checkers and electronic dictionaries such as Franklin etc. can help a poor speller select or identify appropriate words and correct spelling errors during the process of writing and proofreading. Talking devices “read aloud” and display the selected words onscreen, so the user can see and hear the words. Match the student’s needs with the features - speech, thesaurus, help with words that sound alike but are spelled differently, and capabilities of the device.

Check the keyboard of the electronic, handheld spell checker for asterisk and question mark keys. Depending on the design of the device, those two keys may be used to help you find the correct spelling. The asterisk often is used as a marker for an indefinite number of missing letters. For instance, typing in "neu*" yields a list of words beginning with those two letters and, hopefully, phonetic alternatives as well - "neutral," "new," "newt," "pneumonia." The question mark sometimes can be used in place of unknown letters. Typing in "p?t" brings a listing of all words in the spell checker's word base with that letter pattern - "pact," "pant," "past," "peat," "pelt," "plot." A stand-alone, electronic spell checker with asterisk and question mark keys and speech capability can be a helpful tool for students who struggle with spelling.

If the student is using a computer, websites like www.dictionary.com can help with definitions and homonyms and www.visuwords.com can give a visual representation to the words through color coding groups of meanings when a word has several uses. Read and Write Gold is one example of a software program that not only gives text to speech but also clarifies homophones.

Word Processing Software

Computers change the writing process by making it easier to access, develop, record and edit ideas, and to publish and share with others. Different computer supports are useful during different phases of the writing process. Students may need to change the size, color or shape of the font they write with. The background color can be formatted if needed and pictures added to cue up what they are writing about. These can be converted back to the “print standard” of an assignment—a student may prefer to type in 24 point font but the assignment needs to be converted back to 12 point font before it is turned in.

Word processing software (i.e., Microsoft Word, Open Office, Claris Works, Word Perfect) lets you see typed text on a computer screen before printing on paper. In this way, you can easily remove or add words, move sentences or paragraphs around, and correct spelling errors without having to rewrite the paper.

Grammar checkers, often included in word processing programs, check for errors in grammar, punctuation, capitalization, and word usage. Possible errors are shown on the computer screen and cue the student to check their writing, giving them a chance to correct problems before printing a document. Grammar check may be a part of the word processing program or purchased separately. Digital text also allows for easy formatting—it's easy to underline, boldface, change spacing between lines, center text or add visual elements.

The writing and editing process can be a laborious time-consuming task. Errors are easily corrected and information can be reorganized and edited before printing the final product. Other tool "add-ons" such as word prediction programs and/or abbreviation expansion, which are described below, can work along with word processing software for added support.
Chapter 6 - Assistive Technology for the Composition of Written Material

Picture Supports to write from or about
Some students have difficulty determining a topic or image about which to write. Students on the autism spectrum may not be able to readily form a visual picture of what they are to be writing about. Utilizing a picture from a magazine, a digital photograph, or a textbook picture may help to provide the visual support necessary for the student to be able to complete a written activity.

Pictures with words
Some students may need pictures or photos with word labels attached. For students who seem to have difficulty finding the correct word, having the picture label may help them identify the works they are looking for. Thus the student is able to spend his/her time and energy on writing about the topic, instead wasting valuable time searching for the correct word. Specific software: Boardmaker, Picture It, Writing with Symbols, Pix Writer.

Word Cards/Word Banks/Word Wall
These tools are commonly used in many elementary school classrooms, and help to provide students who struggle with writing by having frequently used words displayed on the classroom walls, study carrels, dividers, or on charts. These visual tools provide examples of words the student might need to use in the given activity. These words can also be added to word prediction programs that have topic dictionaries for easy retrieval while they are writing. Writing with Pictures: using a picture-based writing program such as PixWriter will allow students to write even if they are unable to spell. The student can begin to put together simple picture sentences.

Pocket Dictionary/Thesaurus
If a student is able to look up words in a dictionary or thesaurus, these pocket models can be useful. Because they are portable and unobtrusive, the student is able to utilize the tool whenever needed.

Written Templates and Guides
These may include “story starters” and other sentence builders that can help students by allowing them to fill in words or phrases to make complete sentences. Various templates can be created for the main idea, supporting characters, developing plots, etc. Templates can be created of varying complexity depending upon the needs of the student. Specific software such as Kidspiration or Inspiration work very well for making templates.

Portable Talking Spell Checkers, Dictionaries and Thesaurus
Stand-alone desktop and pocket sized spell checkers are available. Some are based on exact spelling while others use phonics to help a student find the word they are trying to write. Most stand alone spell checkers have a small keyboard to enter the word the way a student thinks it's spelled. Homonyms can be particularly difficult. When words sound alike but have different meanings (there/their/they’re), some spell checkers will not show the other options. Using the wrong spelling changes the meaning and can increase the frustration of the writer, having a dictionary component as part of the spell checker can help decrease that frustration. When a word is spelled phonetically, it may not be recognized with all spell checkers. The spell checker suggests words that begin with the same two or three letters typed in. Spelling that's not phonetic may not be recognized, so no suggestions for the correct word are given. Chances of success are greater if the first two or three letters are typed correctly.
A Continuum of Considerations for Assistive Technology
For Composing Written Materials

Picture Supports to write from/about
- Pictures with words

Words Cards/Word Banks/Word Wall
- Pocket Dictionary/Thesaurus
- Written Templates and guides

Portable, talking, spellcheckers/dictionary/thesaurus
- Word processing software
- Word prediction software
- Digital templates
- Abbreviation Expansion

Word Processing with Digital Supports
- Talking Word Processing

Multimedia software with alternative expression of ideas
(e.g., PowerPoint, Inspiration)

Tools for citations and formats
(e.g., Reference Management in Draft:Builder and RefWorks in Read/Write Gold)

Voice Recognition software
Solution Generation: Tools/Strategies

As a team, brainstorm and write on chart paper any assistive technologies and/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorm strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed earlier follow the general continuum for writing. The continuum is generally organized from low to high assistive technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology.
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Assistive Technology: past and present
What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference. If the student is currently using assistive technology note the AT used, location, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low and high tech AT supports.

Sensory Considerations
Some students are adversely affected by environmental stimulation which others can filter out or ignore. Some common factors which can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as: visual clutter, fluorescent lighting versus full spectrum lighting, classroom and background noise, tactile stimulation, awareness of physical space or other student specific sensitivities.

Although these factors are not directly related to writing, they impact the student’s ability to focus on instruction and learning and should always be considered.

Tasks
As a team, discuss and write on chart paper the reading tasks that the student needs to do.

One of the most important questions when assessing a student’s need for assistive technology is: What are the tasks the student needs to do? In this instance what does the student need to write and then what does the student need to do with the information written? Some examples may include: generating ideas, organizing writing, getting ideas on paper, using appropriate grammar/spelling/punctuation, connecting ideas to make sense to the reader or using appropriate citations and formats.

Narrowing the Focus
As a team identify, by circling or other means, those few tasks the student needs to do for writing that will have the most impact.

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.
Student’s Abilities and Difficulties
Students may struggle getting thoughts on paper, organizing thoughts, getting started with the process of writing, and/or making a mental picture of what to write about.

As a team, discuss what the student’s abilities and difficulties are related to composing writing. Please complete and review Section 5 of the WATI Student Information Guide: Composing Written Material (Chapter 1, page 32).

Sensory Considerations
Some students are adversely affected by environmental stimulation that others can filter out or ignore. Some common factors that can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as:

- Visual clutter
- Fluorescent lighting versus full spectrum lighting
- Classroom and background noise
- Tactile stimulation
- Awareness of physical space
- Other individual specific sensitivities

Although these factors are not directly related to writing, they impact the student’s ability to focus on instruction and learning so should always be considered.

Other Considerations
Each individual student has specific skills and areas of concern. Be certain to address those as you capture the particular traits of the student in this part of the SETT process.

Environmental Concerns
As a team, discuss and write on chart paper any environmental considerations that might impact the student’s writing such as auditory or visual distracters, placement in the classroom, number of different writing environments or any other environmental impacts.

An area to consider may include teacher expectations such as: rigor of the assignment, goal of the composition process, comfort level with alternative media as an expression of knowledge (i.e., PowerPoint, Venn Diagrams, Inspiration outlines, etc.), rubrics for evaluation of the project or facilitation of tool use.

What are the tools already available in the student’s classroom or in the school? Are they pre-loaded and ready? Have all the student’s teachers and the student themselves been trained in how to use the tool? Are the number and location of tools appropriate to allow access to the student in all environments? What supports are in place for the teacher to facilitate tool use?
### PROBLEM IDENTIFICATION

#### Student’s Abilities/Difficulties

What are the student’s abilities & difficulties related to the area of concern?

- Struggles getting thoughts on paper
- Problems organizing thoughts
- Doesn’t know how to get started with the writing process

#### Environmental Considerations

What environmental considerations impact the area of concern?

- Teacher’s expectations concerning tool use
- Rigor of assignments
- No one trained in operation of tools
- Limited access to tool
- Current/past AT used

#### Tasks

What task(s) do you want the student to do?

- Generate ideas
- Organize writing
- Getting ideas on paper
- Connecting ideas
- Appropriate citations and formats
- Using correct grammar, spelling and/or punctuation

---

#### Sensory Considerations

What sensory challenges does the student have that impacts this area of concern? (i.e., visual, auditory, tactile)

Visual clutter, background noise, tactile stimulation, awareness of physical space, fluorescent lighting versus full spectrum lighting

---

#### Narrowing the Focus

i.e. Identify specific task(s) for solution generation

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team will focus on. The tasks that remain can become your new focus at a later date.

---

#### Solution Generation Tools & Strategies

- Brainstorming Only
- No Decisions yet
- Review the area continuum

#### Solution Selection Tools & Strategies

- Use a Feature Match Process to discuss and select idea(s) from Solution Generation

#### Implementation Plan

- AT Trials/Services Needed:
  - Date
  - Length
  - Person Responsible
  - Formulate objectives/criteria to determine success of trial/AT

#### Follow-Up Plan

Who & When
Set specific date now now.

---

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Chapter 6 - Assistive Technology for the Composition of Written Material

Assistive Technology for the Composition of Written Material
Kim Swenson, Mary Wirkus, Marcia Obukowitz

Introduction
Writing is a complex process that involves both the physical mechanics of handwriting and the cognitive component of organizing, creating or composing written material. This chapter focuses on tools that may assist students who struggle with writing composition.

“Composition is the plan, placement, or arrangements of the elements.” (www.wikipedia.org) Composition of writing involves the ability of the student to express ideas in a way that is meaningful to others. Standards for the development of literacy suggest that good writing necessitates a linear path to the end product. A student is required to learn a concept or series of concepts, to organize that information into a linear form, and then compose the ideas in a meaningful way which creates a presentation that express ideas surrounding a specific topic.

A common concern expressed by teachers, parents, and in some cases, the students themselves is “They have good ideas but just can't get them down on paper.” Understanding the writing sequence and adding supports as needed may help students. For others there may be alternate ways to share or present what they know. The following tools may assist students in overcoming or adapting to the writing obstacles they face.

Using the SETT process and Decision Making Guide

It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. Additional categories include:

- Narrowing the Focus to help identify a specific task in order to select appropriate assistive technologies.
- Implementation Plan to assign trials, dates, responsibilities and data collection.
- Follow-Up Plan to set a date for the team to reconvene and review the student’s progress.

Again, this is intended as a guide; during the actual assessment process, each topic should be written in large print where everyone can see (i.e., on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology tools and strategies for their students.
Chapter 6 – Assistive Technology for the Composition of Written Material

Introduction ..........................................................................................................................1
Using the SETT Process ......................................................................................................2
Decision Making Guide .......................................................................................................3
Decision Making Guide Expanded .....................................................................................4
Continuum ............................................................................................................................7
Continuum Expanded ..........................................................................................................8
Web Resources .....................................................................................................................12
Product Resources ...............................................................................................................13
<table>
<thead>
<tr>
<th>Product</th>
<th>Vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M™ Vetwrap™ Bandaging Tape</td>
<td>Available locally</td>
</tr>
<tr>
<td>Adhesive Mounting Putty</td>
<td>Available locally</td>
</tr>
<tr>
<td>BigKeys</td>
<td>Graystone Digital, Inc.</td>
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<tr>
<td>CalcuScribe</td>
<td>CalcuScribe</td>
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<td>Dana™</td>
<td>AlphaSmart, Inc.</td>
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<td>Dragon Naturally Speaking</td>
<td>Nuance</td>
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<td>Dycem®</td>
<td>Dycem Technologies</td>
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<td>Franklin Children’s Speller &amp; Dictionary</td>
<td>Franklin Electronic Publishers</td>
</tr>
<tr>
<td>Franklin Homework Wiz Speller &amp; Dictionary</td>
<td>Franklin Electronic Publishers</td>
</tr>
<tr>
<td>Handheld computers</td>
<td>Palm, Compaq, Handspring etc.</td>
</tr>
<tr>
<td>IBM Viavoice</td>
<td>Nuance</td>
</tr>
<tr>
<td>IntelliKeys®</td>
<td>IntelliTools, Inc.</td>
</tr>
<tr>
<td>Laser PC-6</td>
<td>Perfect Solutions</td>
</tr>
<tr>
<td>Magnetic Poetry®</td>
<td>Magnetic Poetry</td>
</tr>
<tr>
<td>Memo Board™ Contact Paper</td>
<td>Available locally</td>
</tr>
<tr>
<td>Microsoft Office</td>
<td>Microsoft</td>
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<tr>
<td>Microsoft Windows</td>
<td>Microsoft</td>
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<tr>
<td>NEO</td>
<td>AlphaSmart, Inc.</td>
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<tr>
<td>QuickLink Pen</td>
<td>Wizcom Technologies, Inc.</td>
</tr>
<tr>
<td>Quicktionary II</td>
<td>Wizcom Technologies, Inc.</td>
</tr>
<tr>
<td>Research Assistant for Students (and Teachers)</td>
<td>ESSDACK</td>
</tr>
<tr>
<td>with Bibliography Generator</td>
<td></td>
</tr>
<tr>
<td>Sculpey modeling clay</td>
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<td>SmartApplets</td>
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<td>SpeakQ</td>
<td>Quillsoft</td>
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<td>SuperPen Voice</td>
<td>Wizcom Technologies, Inc.</td>
</tr>
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<td>TASH USB Mini keyboard</td>
<td>TASH Inc.</td>
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<tr>
<td>The Writer</td>
<td></td>
</tr>
<tr>
<td>Velcro™</td>
<td>Available locally</td>
</tr>
<tr>
<td>ViaVoice®</td>
<td>IBM North America</td>
</tr>
<tr>
<td>Wikki Stix™</td>
<td>Wikki Stix</td>
</tr>
</tbody>
</table>


References


Purcell, S., & Grant, D., (2002)*Using Assistive Technology to Meet Literacy Standards K-3*, Verona, WI, Attainment Company

Purcell, S., & Grant, D., (2004)*Using Assistive Technology to Meet Literacy Standards 4-6*, Verona, WI, Attainment Company

Purcell, S., & Grant, D., (2007) *Using Assistive Technology to Meet Literacy Standards 7-12*, Verona, WI, Attainment Company
Motor Aspects of Writing Feature Match- Matching the tool to the task

<table>
<thead>
<tr>
<th>Factors to Consider</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Amount of writing</td>
</tr>
<tr>
<td>Very little…………..to…………………………………………………………………………..Lots of writing</td>
</tr>
<tr>
<td>Single words…………Sentences……………………Paragraphs…………………………………Essays……………………………….Papers</td>
</tr>
<tr>
<td>2. Due date</td>
</tr>
<tr>
<td>right away……………………………………………………………….much later date</td>
</tr>
<tr>
<td>Immediately…………….Next day …………………………………………Next week……………………………………….Next month</td>
</tr>
<tr>
<td>3. Purpose of task</td>
</tr>
<tr>
<td>Are there other ways to do the work besides writing?</td>
</tr>
<tr>
<td>Copying information……………………Review information……………………Demonstrate knowledge……………………Create new information</td>
</tr>
<tr>
<td>4. Revisions or editing required</td>
</tr>
<tr>
<td>None……………………………Editing done with pencil.…………………………….One draft…………………………………………Multiple drafts</td>
</tr>
</tbody>
</table>

**Low tech**
- **Utensils** - Variety of sizes and types
- **Utensils** - Modified with pencil grip or splint
- **Paper** - different sized lines, boxes heavier paper (24 pound) is easier to write on and erase
- Templates - eliminate excess writing
- Prewritten words phrases
- Cut and paste preprinted words
- Magnetic letters or numbers
- Words printed on magnetic paper
- **Handwriting**
  - Writing tools pencils, mechanical pencils, markers, pens
  - Increasing handwriting legibility
  - Space between words, between lines
  - Margins -keep uncrowded
  - Note taking- make copies, use carbon paper or get from teacher

**Mid Tech**
- **Labeler**
- **Portable word processor**

**High tech**
- **Computer with accessibility features**
- **Computer with word processing**
- **Alternative keyboard**
- **Computer with word prediction**
- **Computer with Voice recognition software**

**No Tech**
- **Dictation to another person**
- Although not assistive technology, dictation can solve some of the issues with written language assignments

K J Stindt MS OTR 2007
needed and any other student/staff specific issues. Be certain to identify motor aspects of writing objectives and criteria of performance to determine the effectiveness of the trials.

**Feature Match**

The following charts are examples of ways to involve the student in the feature match process. The student can choose the template that appeals to them visually. Then the student can highlight or otherwise mark their thought process when choosing the tool for the specific task they need to accomplish. It can also be used to remind the student of the choices they may have. Additionally, the student can have copies of it available to them to use independently to further increase their ability to perform written tasks.
*SpeakQ* by Quillsoft plugs into *WordQ* and adds simple speech recognition. Users can benefit from a combination of word prediction, speech output and speech input to generate text when stuck with spelling and word forms, identifying errors, proofreading and editing. Designed with special students needs in mind, it works in both discrete and continuous modes.

*IBM ViaVoice for Mac OS X* is a continuous speech voice dictation for Apple's Mac OS X. Users can dictate, correct, edit, and format text with their natural voice. Mac OS X Edition also provides voice command and control of the Internet, so users can move back and forth between Web sites. An enhanced Speech Recognition Engine takes advantage of Mac OS X audio features and provides for a fast enrollment.

**Writing AT into the IEP**

There are many correct ways to write AT into the IEP. It must be considered on the special factors form of the IEP and a listing of AT may be included there. It may be included as a related service and maybe also be included as a supplemental aid or service. If in an exploratory phase, do not write AT as a goal, put it in the special factors until the technology has been determined to work for the student. (Purcell, Grant, 2002, 2004, 2007) and (Bateman, Herr 2003) state many examples of writing present level of performance, objectives and goals.

The following is a four step formula for writing an IEP goal.

(e.g. #1)

**Time Frame:** In 36 weeks

**Conditions:** Given a computer with adapted keyboarding

**Behavior:** Eric will use an onscreen keyboard to complete writing assignments

**Criterion:** in 10th grade English and civics class

(e.g. #2)

Given access to a computer with voice recognition (condition), the student will dictate sentences (behavior) averaging 15 words per minute in a 10 min. practice session (criterion) one of two opportunities (time frame).

**Solution Selection: Tools & Strategies - Motor Aspects of Writing**

Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the motor aspects of writing tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time or require additional or significant staff training.

**Implementation Plan - Motor Aspects of Writing**

After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial materials, team member(s) responsibilities, start date and length of trial, training
Pen. This pen allows the user to scan full sentences of text and receive instantaneous auditory word-by-word translation. The pen weighs 3 ounces and is capable of storing up to 3000 pages of data.

♦ Computer with Word Prediction Software

Word prediction is most frequently considered for the student with spelling difficulties but should not be overlooked for the student with mechanical difficulties. The use of word prediction software may decrease keystrokes and increase quantity and efficiency; for the student with physical limitations, using fewer keystrokes to complete words and phrases will increase the quantity and quality of writing, while reducing fatigue. Word prediction software is fairly easy to use, and requires minimal instruction. Many programs include phonetic spelling prediction, auditory text to speech feedback and customized topic dictionaries to assist students in many curriculum areas.

- Most scan and read programs now include word prediction (e.g. Kurzweil, WYNN, Read and Write Gold, SOLO)
- Other word prediction programs: WordQ by Quillsoft, Premier Accessibility Suite including Predictor Pro by Premier Literacy, Clicker 5, Pen Friend and Wordbar by Crick, Co:Writer by Don Johnston, IntelliTalk by IntelliTools, ClaroRead by Claro Software.

♦ Voice Recognition Software

Voice recognition is a computer application that lets people control a computer by using speech. Students can write using voice recognition in conjunction with a standard word processing program. When users speak into the microphone their words appear on a computer screen in a word processing format, ready for revision and editing. Not only can voice recognition software benefit students with learning disabilities but also the student with physical access challenges. While many such students benefit from standard word processing, the visual-motor demands of keyboarding can be a major stumbling block that compounds the writing process. Similarly, students who are the poorest spellers are frequently unable to effectively use standard spell checkers. For whatever reason, if a student's oral language skills far exceed their ability to generate text with pencil and paper or standard word processing, voice recognition may enable them to become successful writers.

There are two kinds of voice recognition software: discrete speech and continuous speech. Discrete speech recognition requires the user to speak one-word-at-a-time. Continuous speech recognition allows the user to dictate by speaking at a more or less normal rate; both have their advantages and disadvantages.

Dragon NaturallySpeaking is one of the most comprehensive voice recognition programs for the Windows OS, enabling hands-free navigation and dictation in Microsoft® Word, Excel®, Corel® WordPerfect®, and virtually all Windows®-based applications. Dragon NaturallySpeaking may be used to create documents, reports, send e-mails, instant messages, surf the web, and even operate many of the computer functions.

Microsoft Office has incorporated voice recognition within Microsoft Word 2003 and XP. The voice recognition engine within Word is not designed specifically for individuals with disabilities; however, it provides an excellent diagnostic tool to use to determine if voice recognition may indeed be a useful tool for the student. The voice recognition component requires custom installation.

Microsoft Windows Vista operating system now has voice recognition built into the operating system.
Handheld computers offer a small, portable tool for written language. Handhelds allow input of text into various applications including memo pad, to do list, and word processing programs. Text can be inputted via a small onscreen keyboard and stylus or by writing on the handheld’s LCD screen. The latest in handheld operating system software allow the student to write anywhere on the screen and the written words are translated into text. A variety of keyboards are available for use with the handhelds including portable wireless keyboards and snap on thumb keyboards. Some handhelds such as the Blackberry, iTouch or iPhone come with a thumb keyboard and also touch screen and onscreen keyboards.

Tablet PCs also offer word processing applications with all the capabilities of a laptop or desktop. The Tablet PC incorporates a touch screen with handwriting recognition capabilities.

iTouch offers an MP3 device with Internet connectivity and hundreds of downloadable applications. Using an MP3 format, this device is not only beneficial for listening to audible books, but can be used as a writing tool through applications for word prediction, instant messaging, and email. The technology for this device is evolving and becoming very usable and much less expensive.

Scanning
A scanner connected to the computer may be used to assist writing by scanning worksheets or chapter questions that the student may then access digitally on the computer. Worksheets may be designed with text boxes for short answer, fill in the blank, multiple choice or true/false. A student using other software to assist writing, such as word prediction or voice recognition, would then be able to complete worksheets using these types of programs. (See Chapter 7 – Assistive Technology for Reading.)

Many of today’s light portable scanners come with a scanning program and many are compatible with various scan and read software frequently used (e.g. Kurzweil, WYNN, Read and Write Gold, Premier)

OCR (optical character recognition) scanning software is required if you intend to have the scanned documents used with text-to-speech software. Classic scanning software simply takes a picture of a document versus recognizing characters or letters as with the OCR scanning software. A classic scanning program may be used for worksheets that a student can read independently. Text boxes may be inserted to this type of document and the student may answer the questions digitally.

Consider a high speed scanner for scanning entire textbooks or workbooks. Keep in mind copyright laws. The student must have a purchased workbook and be identified as a student with a print disability. (See Chapter 7 – Assistive Technology for Reading-NIMAS Standards)

Portable Scanners
Portable handheld scanners work like a digital highlighter to scan and read text from books, magazines, newspapers, and other printed documents. They capture the text to memory and allow the user to download the text to their PC via a cable. This tool allows a student to capture important information from textbooks, glossaries, research materials, etc. and download it directly into a word processor.

The QuickLink Pen from Wizcom Technologies, Inc., LTD is a handheld scanner that scans full lines of text from 6-22 point size, store it, and then transfer it to a computer, Palm Pilot, or text enabled cellular phone.

The SuperPen Voice from Wizcom Technologies, Inc., LTD is a handheld scanner and translator. The pen combines the functionalities of the Quicktionary II and the QuickLink...
Chapter 5 – Assistive Technology for Writing, including Motor Aspects of Writing and Composition

- To learn about Microsoft accessibility features go to: http://www.microsoft.com/ENABLE/
- Go to Apple Accessibility website for information about accessibility settings and pdf. files that describe in detail the settings and how to use them. http://www.apple.com/accessibility/

**Computer with Word Processing Software**
- The computer can be an exceptionally effective tool to support students who are struggling with writing. Word processing on the computer offers the opportunity to change letters, words, sentences, and paragraphs easily and quickly while allowing a clean, attractive, and readable end product.
- Formatting options such as font styles, color and size are beneficial for the visually impaired and motivating for students who have struggled to produce legible materials.

**Alternative Keyboards / Alternative Access**
Another means to provide access for a student who is experiencing difficulties with the motor aspects of writing is to use an alternative keyboard (See Chapter 4 – Assistive technology for Computer Access)

- **IntelliKeys® USB** from IntelliTools, Inc is an alternative keyboard that enables students with physical, visual, or cognitive disabilities who can press and release a part of the keyboard to type, enter numbers, navigate onscreen displays, and execute menu commands. The IntelliKeys® keyboard comes with six standard overlays (plus a setup overlay) that are ready to use with any word processing program or software that requires keyboard input. These overlays include an alphabetical overlay which is very useful for early writers. The IntelliKeys® is a programmable alternative keyboard which can be configured to almost any layout based on student need. Mac/Win compatible.

- **Big Keys** is an alternative keyboard with large keys and features which may include color coded keys or high-contrast lettering and an optional detachable Plexiglas keyguard. Features: optional ASSIST Mode (for those who cannot press 2 or more keys simultaneously or need 1-handed typing; works with and enhances the Windows "Sticky Key" Accessibility Option), and optional ability to switch between ABC and QWERTY layouts. No special software required; it is a plug ‘n play device. This keyboard comes with a USB adapter making it compatible with both Win and Mac computers.

- **Logitech diNovo Mini** is a palm sized cordless mini keyboard that connects to the computer or is used for running entertainment options. This keyboard has the thumb layout of many phones which proves to be more accessible to some users.

- Another popular alternative keyboard is the **TASH USB Mini keyboard**, a small size alternative keyboard that plugs directly into a computer with no special interface needed. The membrane keys are less than one half inch square and are closely spaced for easy access. This is especially useful to someone with limited range of motion.

- **Dana/Neo**: see portable word processors above.

- **Onscreen keyboards** provide the various keyboard layouts on the computer screen. Depending on the software, selections on the keyboards may be made by mouse click, mouse dwell, or scanning. Use of the onscreen keyboard decreases the physical space between the keyboard and the monitor, thus eliminating some distracters. Onscreen keyboards are now available through the latest versions of both Windows and Mac.

- **Handwriting recognition** is a feature available through Microsoft Word. Your natural handwriting is converted to typed characters and inserted into the word document. You can write directly on a Tablet PC or on non-touchscreen computers by using a handwriting input device, such as a Graphire pen tablet device used with 3-D drawing programs or Computer Aided Drafting (CAD) software, or you can write using your mouse.
Portable Word Processors

<table>
<thead>
<tr>
<th>Product</th>
<th>Ordering Info</th>
<th>Features</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEO</td>
<td>AlphaSmart, a division of Renaissance Learning, Inc. P.O. Box 8036 Wisconsin Rapids, WI 54495-8036</td>
<td>Full size keyboard Large LCD screen USB &amp; Infrared Special Needs features (sticky keys etc.) Small to Extra large fonts</td>
<td>Portable &amp; rugged 2 MB software storage for multiple applets 512KB storage for 100’s of text pages Alternative keyboard layouts Under $250.00</td>
<td></td>
</tr>
<tr>
<td>CalcuScribe</td>
<td>CalcuScribe 98 Cervantes Blvd. Suite #1 San Francisco, CA 94123-1672</td>
<td>Word Processing Calculator 300 hours on 3 AA 50 page memory Full sized keyboard Infrared capabilities 2.75 lbs</td>
<td>Sticky Keys Auto-repeat option Zoom feature – 8 pt to 16 pt Unlimited files Under $275.00</td>
<td>Unable to download files from PC</td>
</tr>
<tr>
<td>Dana</td>
<td>AlphaSmart, a division of Renaissance Learning, Inc. P.O. Box 8036 Wisconsin Rapids, WI 54495-8036</td>
<td>Runs Palm applications Date book Address book Memo Pad To Do List Infrared capable</td>
<td>Lightweight Onscreen keyboard/graffiti Easy touch keyboard Larger LCD runs over 10,000 applications Under $430.00</td>
<td>Graffiti and onscreen input available only in vertical setup</td>
</tr>
<tr>
<td>The Fusion</td>
<td>The Writer Learning Systems PO Box 186 Paso Robles, CA 93447-186</td>
<td>portable notetaker word prediction Dictionary &amp; Thesaurus keyboarding tuition optional text to speech.</td>
<td>Large LCD up to 10 lines of print Large font for vision issues lightweight Under $415.00</td>
<td></td>
</tr>
<tr>
<td>Laser PC-6</td>
<td>Perfect Solutions Software, Inc 15950 Schweizer Court West Palm Beach, FL 33414-7128</td>
<td>Word Processing Spell Checking Spreadsheets</td>
<td>Adjustable size of text Typing tutor Text-to-speech Under $150.00</td>
<td>8 built in programs add to complexity</td>
</tr>
<tr>
<td>The Writer</td>
<td>Advanced Keyboard Technologies, Inc. P.O. Box 2418 Paso Robles, CA 93447-2418</td>
<td>Infrared capabilities Auto-Thesaurus Spell Check Password protected folders</td>
<td>KeyAcademy™ keyboarding program – 116 lessons WriterExpress™-customized formatted files Word prediction in Education Package Power skin overlays available Good writing checklist Under $200.00</td>
<td></td>
</tr>
<tr>
<td>UBI Duo</td>
<td>SComm 6238 Hadley Street Raytown, MO 64133</td>
<td>2 keyboards in one device Wireless Allows 2-4 people to text each other Adjustible Font size 12 to 24pt Change contrast between text and background</td>
<td>2-4 people can communicate Could provide just-in-time note-taker Download text to computer Save text $1995</td>
<td></td>
</tr>
</tbody>
</table>

**Operating system Accessibility Features**

Both Windows and Mac platforms offer accessibility settings helpful to people with visual, hearing, and mobility needs. Some examples of these are sticky keys (the ability of one key to stay depressed so that another key can be pressed at the same time-- i. e., when you press the shift key), key repeat rate (changing the key repeat rate so that students with difficulties releasing the keys do not get multiple letters printed), magnification (the ability to change the size of the information on the screen), visual or auditory alarms (to compensate for the typical alarms that may not work for the student’s disability).

Assessing Students’ Needs for Assistive Technology (2009)
folders. Features include wireless infrared file transfer capability or via a USB connection to a Mac or PC computer, spell check, and word prediction.

- **UBI DUO** is a device that resembles two small portable keyboards. It was designed for the deaf or hearing impaired to communicate with anyone at anytime, without a third party, personal interpreter. The communication mimics text messaging and instant messaging. It is not intended as a word processor but has features that would make it appropriate for note taking, real time modeling, or asking questions.

A chart that compares some of the features of the portable word processors is on the following page.
♦ **Portable talking dictionary**
A student with spelling challenges may need to look up words in a dictionary. The added benefit of the *talking dictionary* is that it provides additional auditory support to students during the writing process. Some dictionaries will spell the word one letter at a time allowing the student to write the word without having to look back and forth to the dictionary.

- *Franklin Children’s Speller & Dictionary*
- *Franklin Homework Wiz Speller & Dictionary*

♦ **Portable Word Processors**
If you are looking for increased computer access for students with disabilities but need to keep costs down, you may want to consider purchasing a portable word processor that will interface with a computer. Portable word processors are lightweight (2.3 lbs. or less) and extremely inexpensive (under $400) when compared to a laptop computer. There are many portable word processors available, however below is information on some of the more popular ones that you might want to consider. They are very similar, but each has slight differences in features that you will want to consider when purchasing.

- *Dana™* by AlphaSmart® is an alternative, lightweight keyboard/computer that provides portable access to a full-featured word processor in addition to the organization tools of the Palm™ operating system. It is an electronic notebook that you can synchronize with a computer or send files directly to a printer. The organization tools include a Data Book with calendar and alarms, an Address Book, and a To Do List for prioritizing tasks like assignments. *TextPlus*, a word prediction applet, and many other inexpensive software programs that run on the Dana are also available to help a student.

- *CalcuScribe* is a portable word processor that allows the student to create text files that can be used by any application once sent to a computer. It also houses an interactive calculator for arithmetic, algebra, and trigonometry that allows the student to do math problems in a word processing environment and save the calculations to send to a computer. Using the infrared pods, files can be shared with other CalcuScribes or sent to a printer without going through a computer first. (The printer needs IR to do this.)

- *The Fusion Keyboard* by Advanced Keyboard Technologies is a portable notetaker which features a large LCD screen with a choice of font sizes, word prediction, keyboarding and optional text to speech.

- The *Laser PC-6* by Perfect Solutions offers the additional feature of text-to-speech capabilities to the portable word processor. Text can be viewed on a changeable 4 line by 40 or 8 lines by 80 character screens. It comes with eight built-in programs including a word processor with word prediction, sticky keys, spell checker, homework calendar, typing tutor, database, spreadsheets, and a scientific calculator. It weighs 2.75 lbs with battery and has a memory of 256K which allows for 45 named files and 14 pages max of text per file with 100 pages text overall. Perfect Solutions also offers 2 add-on options. The text-to-speech cartridge provides talking word processing including talking spell checker and word prediction, and it allows text to be spoken in letters, words, sentences or paragraphs.

- *NEO by AlphaSmart®* is a light-weight, portable, stand-alone notebook for word processing and math. Ready to send text to any computer or printer using USB cable or infrared. Features include file management, word-processing with spell check, thesaurus, calculator, features for special needs including sticky keys, slow keys.

- *The Writer* by Advanced Keyboard Technologies is a portable word processor that allows students to organize and store their assignments, by name, in 1 of 16 password-protected work
stamps. In particular, pay attention to the size of the stamped image, the need for an ink pad, and the grip and pressure required to use the stamp. Some stamps are self-inking. This can reduce the need and the potential mess of a stamp pad.

- Software programs that help you to create your own word banks. Any word processing program can be used to make word banks. More specialized software manufacturers include Slater Software, Mayer-Johnson, IntelliTools and Crick. These word banks can be used on the computer or printed out.
- The IntelliShare Classroom Activity Exchange site http://aex.intellitools.com/ is one source that offers already created activities that allows a student to retell a story, sequence events, create their own story, etc.

♦ Writing templates

- A variety of plastic or metal writing guides are available from independent living aids catalogs. Writing guides are pieces of plastic with cut out areas for writing within cutout lines. They come in various sizes for writing checks, signatures, letters and envelopes. You can also make your own templates out of cardboard, manila folders or a thin plastic such as overhead transparencies.
- Wikki Stix™ may be used as a writing guide. Wikki Stix™ are colorful, flexible “sticks” made out of a wax coated string that is tacky to touch. They stick to any surface and peel off without a trace. They can be placed on the bottom or top writing line as a guide. Children can form letters with Wikki Stix™ or use them as letter guides when writing.
- Teacher-made templates for note taking can reduce writing demands by providing a fill in the blank format. This works well for learning note taking skills, as the teacher can leave out important words for the child to fill in as they are listening. The student is not required to write down all the extraneous information.
- Students who are unable to write even single words are often given the notes from the teacher. It is important to encourage attending to the lecture by requiring the student to circle, highlight or otherwise mark the main idea as it is being discussed. This helps discourage students from thinking they don’t have to pay attention because their notes are already done. It also gives the teacher a way to monitor a student’s attending skills and comprehension. The teacher may easily redirect the student’s attention to the copy of the notes to ensure that they are used correctly.

Mid and High Tech Solutions to Improve Motor Aspects of Writing

♦ Label maker

- The new electronic label makers are another way for students with difficulties forming letters to produce written work. They can be used to type a word or phrase, print it out and attach to a worksheet or other document. You may be able to check in your local school office area to borrow one. Since these devices are readily available, using a feature match will help determine the best choice for the student. There are numerous types and sources of label makers. When choosing a label maker here are some features to consider:
  - Keyboard- Size of keyboard, size of buttons, layout (QWERTY vs. ABC)
  - Features -fonts, font sizes, color of text, memory, complexity of special features,
  - Tape- size, length, color or transparent
  - Tape cutter- automatic or manual
  - Cost- machine and tape refills
Assessing Students’ Needs for Assistive Technology (2009)

- **Literacy Lined Paper** notebooks.
  - You can make your own raised line paper
    - Using *Elmer’s glue* carefully trace the lines on paper then let it dry
    - Using *Wikki Stix™*, place stix on lines for temporary raised line
  - You can use the software *Boardmaker* to make sheets with boxes for students to write in. The boxes provide a visual space to write in and help corral the student’s writing. They can be made different sizes and help the students learn the concept of space between words as a box is left blank between words. Using different sized boxes can also help determine what the optimal space size best meets the student’s needs.

- **Adapting worksheets/Writing templates**
  - For fill in the blank worksheets, draw a box in the answer space to help the child corral their writing and see what space they have to write in.
  - Another way to adapt the worksheet is to use a word bank and number the words. The student can then put the number of the word in the blank and if time allows they can write the words in after all the numbers are put in the blank. This way the writing does not interfere with content of the worksheet. The writing can still be practiced, but if there is not enough time to complete the writing portion, the knowledge has still been demonstrated.
  - Enlarge the worksheet on a copy machine so that the child does not need to make as small or precise a mark as the other students may help with their ability to perform independent written work.
  - Taping the worksheet to the desk or placing it on a clipboard may also make it easier for the student to write on by stabilizing it for them. This is especially helpful for students with use of only one arm or who have difficulty with having their hands do two different movements at the same time.
  - *Magnet letters, words or phrases* may be used by students as an alternative to writing their response.
  - Using things like masking tape, *Velcro™, Dycem®, gripping stuff*, or non slip rubber mats from Rubbermaid is another way to hold things in place. These simple items can go a long way to help make materials more accessible.

- **Use of Prewritten Words/Phrases**
  - It is extremely important to provide students with the opportunity to produce written language even though they may not have the motor skills to adequately do so in the traditional method using a pencil and paper. One way to do this is to provide words already written that can be placed in sentences and paragraphs. This requires only a swiping motion to move the words into the desired arrangement. *Magnetic Poetry®* is a commercial product offering preprinted words in various sizes. You can create your own pre-written words and phrases using magnetic paper or a label maker. Words can be printed on paper or card stock and stuck to magnetic material or be printed directly on magnetic paper. The student can then arrange them on a metal surface. Magnets can also be used by students to indicate choices on worksheets mounted on a cookie sheet beneath plastic.
  - Preprint numbers, letters and or words with a label maker and allow the child to choose what they need and stick it on the paper. An egg carton(s) works well for storing the letters and numbers for the child to choose from. A sticker of each letter can be put on the side of each egg cup so the child can easily see what they letters are.
  - Use rubber stamps for stamping student’s name on papers or for answering one-digit answers on worksheets. The student’s needs and environment need to be assessed when looking at
Low Tech Solutions to Improve Motor Aspects of Writing

♦ **Environmental & Seating Adaptations**
  - (See Chapter 2 – Assistive Technology for Seating, Positioning and Mobility)
    - Slantboard
    - Workspace environment (desk height etc.)
    - Seating
  - **Variety of pencils/pens** Office supply and even many discount stores carry a variety of different pencils/pens. They vary in diameter, shape, type of lead used, and many are constructed with a built-in gripping surface. According to research, (Carlson and Cunningham, 1990), allowing the writer to experience a variety of writing tools and allowing then to choose the one that best meets their needs is preferred to selecting the tool for the student.
  - Variations of less conventional writing mediums offer students alternatives to the more traditional paper and pencil. For example, markers produce less “resistance” than writing with a pencil, allowing students who might not have the strength to apply adequate pressure to write on paper. Other students may require additional adaptations, such as a dry erase board in addition to a marker. Dry erase boards require even less pressure to produce a mark and errors can be easily erased. You can purchase Memo Board™ dry erase removable paper made by Contact and create your own low cost dry erase boards.

♦ **Pencil/pen with adaptive grip**
  - Just as there are many different pencils and pens, there are also many types of pencil grips. They vary in size, shape, and composition as well as aesthetic qualities such as color. Collect a variety and allow the writer to choose which is most beneficial. Author of Living in the State of Stuck, Scherer (2004), feels that the user of the assistive technology needs to have a say in what is prescribed, chosen or used. Having a variety of grips to choose from lets the student know that their opinions and desires are important when choosing a grip or any type of AT.
  - You can also make a quick and inexpensive pencil grip using Adhesive Mounting Putty.
  - Sculpey oven bake clay may be formed into custom made grips and baked for a permanent adapted grip.
  - Crayons may be melted into various shapes/molds and a Velcro cuff may be added to secure crayons in the student’s hand.
  - 3M™ Vetwrap™ Bandaging Tape is also easily shaped around a writing utensil and comes in colors that are motivating for children.
  - Grip on the writing utensil can also be adapted by using the HandiWriter splint available from Pocketfull of Therapy. This splint holds the writing utensil in the web space between the thumb and index finger and provides a bead to be held by the ring and little finger. It simulates an efficient grip enabling the child to use this grip until their hands have developed the strength and coordination to do it independently. It can also be fabricated with easily available materials for students using their choice of colors and beads, giving the student input to splint and helping to engage them in using the splint.

♦ **Adapted paper**
  - There are a variety of papers available at school supply and discount stores. Some variations include line width, color, and texture for students requiring additional sensory input.
    - Right Line Paper; wide rule, narrow rule, stop-go red-green with raised lines.
A CONTINUUM OF CONSIDERATIONS FOR ASSISTIVE TECHNOLOGY

The Motor Aspects of Writing
Environmental and Seating adaptations

↓
Variety of pencils/pens

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Adapted pencil/pen

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Writing templates

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Prewritten words/phrases

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Label maker

↓
Portable talking dictionary

↓
Portable word processor

↓
Computer with accessibility features

↓
Computer with word processing software

↓
Alternative keyboards

↓
Computer with scanner

↓
Computer with word prediction

↓
Computer with voice recognition software
Consider your student’s writing development with this typical progression of writing:

- Early Childhood four- and five-year-old kindergarten students are combining letters to write words and their name.
- Kindergarten students are combining letters to write words and their name.
- First graders are filling in worksheets and writing simple sentences.
- First through third graders practice penmanship and learn cursive handwriting. Computers are used, but not using structured keyboarding.
- By fourth grade, students are writing paragraphs and short stories as the writing demands at this stage become increasingly difficult. Computers are used and touch typing keyboarding is taught.
- Middle school and high school students are required to do various types of writing, including extensive papers and projects as well as demonstration of competency to show what they have learned. Handwriting and keyboarding are both used.

Narrowing the Focus - Motor Aspects of Writing -
As a team, identify by circling or highlighting those few tasks the student needs to do for writing that will have the most impact.

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.

Solution Generation: Tools/Strategies - Motor Aspects of Writing
As a team, brainstorm and write on chart paper any assistive technologies and/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for motor aspects of writing. The continuum is generally organized from low to high assistive technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of assistive technology. Subsequent to the continuum is a more in-depth description of select tools.

Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference. If the student is currently using assistive technology note the AT used, location, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low-and high-tech AT supports.
**Environmental Sensory Considerations**

Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student’s learning, identify the acceptable sensory levels in each environment in which the student will be writing.

**Assistive Technology: past and present**

What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Differences in skill development, maturity, a different environment or other factors may make a significant difference. If the student is currently using assistive technology, note the AT used, location, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low and high tech AT supports.

**Tasks - Motor Aspects of Writing**

As a team, discuss and write on chart paper the motor aspects of writing tasks that the student needs to do.

One of the most important questions when assessing a student’s need for assistive technology is: What are the tasks the student needs to do? Teachers require written communication in many forms including note taking, worksheets, essays, and tests. In this instance what motor aspects are required to complete the writing task? These are some questions to consider:

- What tasks are required of the student that would influence their choice of assistive technology?
- What is required in the curriculum?
- Is the majority of writing single words, fill in the blanks, sentences, paragraphs, or multiple page term papers?
- What are the daily or weekly written assignment requirements?
- Are test questions taken from lecture notes?
- If the student has difficulty taking notes are peer or teacher notes available?
- What is the format of the test? Essay, multiple choice, true/false?
- Are there pop quizzes?
- Before considering reducing the quantity of the required writing or increasing the time element, would the task be more efficient with the use of assistive technology?
- Are there aspects of the writing assignments that are “busy work” that is not specifically beneficial to increasing the student’s understanding?
- Is the student able to meet the reading requirements in order to perform the writing tasks?
- Is someone currently performing the writing tasks for the student and is the goal to make him more independent?
Student Sensory Considerations
Some students are adversely affected by environmental stimulation which others can filter out or ignore. Some common factors which can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as

- Visual clutter
- Fluorescent lighting versus full spectrum lighting
- Classroom and background noise
- Tactile stimulation
- Awareness of physical space / personal space
- Other individual specific sensitivities

Although these factors are not directly related to the motor aspects of writing, they impact the student’s ability to focus on instruction and learning so should always be considered.

Other Considerations
Each individual student has specific skills and areas of concern. Be certain to address those as you capture the particular traits of the student in this part of the SETT process.

Environmental Considerations - Motor Aspects of Writing

As a team, discuss and write on chart paper any environmental considerations that might impact the student’s motor aspects of writing such as auditory or visual distracters, placement in the classroom, number of different writing environments or any other environmental impacts.

Environmental considerations pertinent to the student’s success include:
- Ability to maneuver about the room/school as needed, need to travel from class to class; the number of class changes, and if there is sufficient time for these transitions.
- Lecture or small group, the ratio of adults to students, if the student has an aide.
- Teacher expectations.
- Positioning of the student in clear view of the teacher, the board, displays.
- Sufficient light, board free of glare.
- Ability to hear the teacher; is the auditory stimulation in the room conducive to the student, are students nearby talkative/distracting, is there excessive noise outside the room, does the student need background music to focus best?
- Visual stimulation both in and outside the room, the amount of distracting clutter.
- Student’s organization skills; desk/workstation.
- Physical aspects including desk height.
- Positioning of the student with good trunk stability, stability of materials to keep them from falling on the floor.
- Use of a slant board to correctly position papers for visual and dexterity purposes.
- Use of software, availability in all environments needed in the correct platform.
- Accessibility of computers in the classroom.
Most students who were slow at handwriting or had poor legibility increased the quantity and overall legibility of text they produced with a keyboard. This supports the use of keyboarding as a way to increase and improve a student’s writing. Press and Banton (2007) use the SETT process to analyze technology solutions for struggling writers in the school setting and recommend using a feature match process to choose the technology, followed by an implementation plan including, trial, data collection and finally obtaining the technology for the student.

**Student’s Abilities and Difficulties - Motor Aspects of Writing**

As a team, discuss what the student’s abilities and difficulties are related to the motor aspects of writing. Please complete and review Section 4 of the WATI Student Information Guide: Motor Aspects of Writing (Chapter 1, page 30).

Indications of writing difficulties are demonstrated in many ways. The student needs adequate support and skills to perform written tasks. To help the team to better understand the abilities and difficulties there are questions that may be asked to elicit the child's current level of functioning. Some examples of questions that you might ask are:

**Physical**

- Does the student have a desk and chair that fit? (See Chapter 2 on Seating and positioning)
- Does the student demonstrate positioning issues such as laying on desk, frequent need for movement such as rocking, kicking, sitting on feet, excessive walking around?
- Does the student have an efficient grasp of the writing utensil?
- Is the student able to write in the appropriate space?
- Does the student fatigue when writing?

**Visual perceptual**

- Does the student complete written work in a timely manner?
- Is the student able to maintain their place on the paper?
- Does the student visually attend to all answer fields on a page?
- Does the student fit their answers in the allotted space?
- Is the student able to read the work they have written?
- Is the student able to correctly transfer information by copying?

**Social emotional**

- Does the student exhibit avoidance behaviors when asked to write?
- Does the student orally express more than they are able to physically write on paper?

**Cognitive considerations**

- Does the student demonstrate an interest in sharing information?
- Does the student demonstrate attention to task?
- What is the student's learning style?
- Does the student’s learning style affect the writing task?
- Is the student able to see the need for producing written work?

**Organization**

- Does the student efficiently prepare materials to initiate writing tasks?
- Does the student use and follow an outline or other organizing prewriting technique?
lower grip score than children without handwriting problems. In addition, among children with poor handwriting, those with decreased proprioceptive-kinesthetic finger awareness may demonstrate a lower grip score than those with good proprioceptive-kinesthetic awareness. Tseng (1998) also evaluated the development of grip positions in preschool children finding that there is more than one grip that is functional. Yakimishyn and Magill-Evans (2002) looked at grip in addition to tools and surface orientation found that a short writing tool used on a vertical surface positively influenced the grasp of young children. Grip form and graphomotor control were compared in a study undertaken by Burton and Dancisak (2000). Their research supported the use of a grip assessment in documenting the grip, and at the same time finding that changing grip did not assist poor writers. Use of this research is helpful when gathering the information on how assistive technology can help students with poor or inefficient grip patterns. Despite its easily observed differences, most researchers agree that grip does not correlate with handwriting as there are many functional writers with unusual grips and many writers with good grip that have difficulty with handwriting.

**Visual motor integration**

Researchers Weil and Amundson (1994) confirmed to a significant degree what others have found in the correlation between handwriting and visual motor skills. The ability to copy shapes as a predictor for success with handwriting is evident. Cornhill and Case (1996), Tseng and Murray (1994) and Volman, van Schendel, and Jongmans (2006) in their research also agree regarding the influence of visual motor integration on handwriting. There is a significant correlation between visual motor skills and ability as a predictor of handwriting.

**Time spent on fine motor skills**

Important to handwriting and fine motor skill development is the amount of time spent on this type of activity in the elementary school years. McHale and Cermak (1992) found that 30% to 60% of the day was allocated to fine motor activities, with writing tasks predominating over other manipulative tasks. This illustrates the difficulties and frustrations that children with fine motor issues may encounter every day. Assistive technology may be a way to support students to work through writing with adaptive materials.

**Handwriting instruction**

Handwriting instruction also impacts the development of handwriting skills. See authors Marr and Cermak (2001) for a literature review of research on the affect of consistency on handwriting instruction.

**Using AT to support students with handwriting deficits**

When determining how to best meet the needs of students with handwriting difficulties through the use of assistive technology, there are several articles that can help the reader to see what others have done. Moser (2004) reviewed research on both handwriting and assistive technology and reported on the outcome measures for these interventions. This is an excellent article to use when looking for data supporting the use of assistive technology and for information on research for students with handwriting difficulties. Handley-More, Billingsley, and Coggins (2003) addressed the use of technology to facilitate written work. They found that use of word processing with word prediction improves the legibility and spelling of written assignments completed by some children. They concluded that, “It is important to evaluate each child individually and provide training and ongoing support for technology use.” Rogers and Case-Smith (2002) looked at the issue of keyboarding versus handwriting and its affects on written work. They found that keyboarding had only low to moderate correlation with handwriting performance, suggesting that they require distinctly different skills.
assisted scanning to choose letters through auditory, visual or tactile methods allows students with severe disabilities to demonstrate emergent writing skills. Students who are verbally expressive and are using AT should be able to translate their thoughts to paper, using pictures, letters, words and text.

**Social-Emotional**
Considering the level of difficulty involved in the motor aspects of writing, some students may experience social-emotional reactions relating to tasks requiring writing. In the case of handwriting, maladaptive behaviors ranging from minimal output to extreme avoidance behaviors may influence the production of written work. Avoidance behaviors have frequently been misinterpreted as laziness, unwillingness or general misbehavior when in fact the student is demonstrating difficulty with the motor aspect of the task. The easiest way to determine if it is a behavior problem versus a problem with the motor component of writing is to ask the student to tell you what they want to write on the paper. If the student has a desire to write and can tell you what they want to write, the behavior may be a reflection of their inability to get the information on the paper.

**Handwriting Research**

**Complexity and multiple factors involved with handwriting**
For a review of the literature related to handwriting research and articles addressing a multitude of components related to handwriting, there are several research articles that delineate the various factors involved in handwriting. Cornhill and Case (1996) address factors that relate eye-hand coordination, visuomotor integration and in-hand manipulation to good and poor handwriting. They found that visual motor integration and in-hand manipulation were significant predictors of handwriting. Tseng and Murray (1994) in their research on the perceptual motor factors involved with good and poor handwriting addressed these components of handwriting: visual perception, visual motor integration, manual dexterity, hand-eye coordination, fine motor praxis, and kinesthetic perception. They found that visual motor and hand-eye coordination were the best predictors of all handwriting. With the poor handwriters, praxis (motor planning) contributed the most to legibility and visual perceptual skills contributed the most to legibility of good handwriters.

More recently, research by Volman, van Schendel and Jongmans (2006) on the underlying mechanisms of handwriting difficulties looked at the various factors involved in the motor aspects of handwriting. They found that the poor handwriters had lower skills on visual perception, visual-motor integration, fine motor coordination and cognitive planning. Visual motor integration was again the significant predictor of handwriting. Tseng and Chow (2000) looked at the perceptual motor skills of children with slow handwriting and found a significant difference between slow and normal handwriters in upper-limb coordination, visual memory, spatial relation, form constancy, visual sequential memory, figure ground, visual-motor integration, and sustained attention. For an overview of handwriting research, Graham and Weintraub (1996) have undertaken a meta-analysis of the handwriting research from multiple disciplines. All of these journal articles help the reader understand the extreme complexity of a task that is often taken for granted—handwriting.

**Grip**
Grip is often the first indication of a problem or possible problem with handwriting. In their research on grip, Schneck and Henderson (1990) provide a descriptive analysis of the developmental progression of grip. It includes pictures representative of grip that can be difficult to verbally describe. Schneck (1991) looks further at grip comparisons of students that have good and poor handwriting. Their results suggest that children with handwriting difficulties may demonstrate a
Strength – the ability to maintain a grasp of a writing instrument over time both while moving it dynamically or holding it statically.

Postural control - the ability to make appropriate postural adjustments while writing. It is important to develop proximal strength or position a student for trunk stability before fine motor skills can be addressed. The student’s positioning must be considered for motor aspects of writing. (See Chapter 2 – Assistive Technology for Positioning, Seating and Mobility.)

Motor skills require the assimilation and interpretation of sensory information in order to accommodate with an appropriate motor response. Neuromuscular abilities lay the foundation for the development of motor skills.

Motor skills include:

- **Crossing the midline** - the ability to cross the midline of the body without disruption of body position; and in the case of handwriting the ability to move the hand across the middle of the body while writing on a horizontal surface.
- **Bilateral integration** - the ability to use the two hands in a coordinated fashion; and in the case of handwriting, grasping a writing instrument with one hand and stabilizing the paper with the other.
- **Laterality** - the ability to demonstrate a preference of one hand over the other for a task requiring coordinated movement; and in the case of handwriting’ demonstrating the consistent hand preference for use of a writing tool.
- **Praxis** - the ability to plan and execute new motor movements; and in the case of handwriting, the ability to demonstrate appropriate letter formations and sequence letters by arranging letters in appropriate order to form words.
- **Fine motor coordination** - The muscle control required to make small, precise movements; and in the case of handwriting, the ability to manipulate the writing instrument to move and adjust the position of the writing instrument, turn the writing instrument over to erase, etc.
  1. Grasp is the ability to hold an item and in the case of handwriting the ability to hold a writing utensil. The tripod pencil grasp is the most frequently observed though there are other efficient grasps. The correlation between grip and handwriting success is very low and grip is generally very difficult to change.
  2. Motor accuracy is the ability to control fine motor movements and in the case of handwriting controlling the motor movements so that letters are correctly sized and on the line.
- **In-hand manipulation skills** -The ability of the small muscles of the hand to perform coordinated movements including the ability to pick up and move small items to and from the hand as well as the ability to rotate items; in the case of handwriting, the ability to move up and down the pencil when adjusting grip as well as switching from the writing end of the pencil to the erasing end.
- **Visual motor integration** – The ability of the eyes to guide hand movement and in the case of handwriting the ability to trace, and imitate or copy number/letters accurately.

Cognitive
The level of cognition required for writing is often misinterpreted. Some professionals often think that there needs to be an average level of cognitive ability in order to write. However, most students with a desire to share information, do have the ability through assistive technology to perform a writing task. Combing strategies that build upon background information and high interest topics with assistive technology can support even the most cognitively challenged students to produce written work. Students who want to share information with others may be given opportunities to write with pictures, letters, words, or other alternative media. Hanser (2006) delineates an approach to a low-tech way to foster emergent writing with students with severe disabilities. Using partner-
Background
This section will focus on the multiple factors involved with producing written documents.

Handwriting is a complex skill involving visual perceptual, neuromuscular, and motor components. There are also cognitive and social emotional factors that influence handwriting. The student who may benefit from assistive technology in the area of writing may already be receiving occupational or physical therapy for motor challenges and the therapists should be consulted. The labor-intensive motor aspect of writing includes: holding the writing utensil; stabilizing the paper; visually guiding the hand; moving the writing utensil along the paper; visual recall of the letter; kinesthetic memory of letter formation; and word formation and writing and re-writing as part of the editing process. These all make writing one of the most difficult and complex skills acquired by students. Consider then how these mechanical challenges may affect the student’s confidence, motivation, and self-esteem as they attempt to commit to paper what they actually know.

Handwriting
The following is a brief introduction to an understanding of handwriting, not meant to be all inclusive, but to give the reader a basic understanding of handwriting to better select appropriate assistive technology supports.

Handwriting is a complex process requiring visual perception, neuromuscular abilities, motor skills, cognition and social emotional factors.

Visual perception is the ability to understand and interpret information taken in through the eyes, which is a highly cognitive function. Visual perceptual components necessary for handwriting include:

- **Visual Discrimination** - the ability to identify like characteristics or features of visual information; and in the case of handwriting, identifying like characteristics of like letters and numbers in order to eventually replicate them.
- **Visual Memory** - the ability to demonstrate recall of visual information; and in the case of handwriting, appropriate letter formations and the sequence in which a series of letters must be placed to form words.
- **Visual Spatial-relations** - the ability to perceive the position of two or more objects in relation to each other; and in the case of handwriting, the ability to visually interpret the position of the letters/words appropriately on the lines of the paper and space appropriately between letters/words.
- **Visual Form constancy** - the ability to discriminate between similar objects; and in the case of handwriting, letters/words.
- **Visual Figure-ground** - the ability to perceive a form and find it from among an assortment of other matter found in the background; and in the case of handwriting, the proper spacing between letters and words.
- **Visual Closure** – the ability to recognize a figure when it is not complete; and in the case of handwriting, the ability to determine if a letter is correctly formed or (in)complete.

Neuromuscular refers to abilities that combine muscle strength and postural control. Neuromuscular components include:

- **Muscle tone** - the ability to maintain a posture. During handwriting, the student must have adequate muscle tone to maintain an upright position without support from the hands, freeing them up to grasp a writing instrument.
WATI Assistive Technology Decision Making Guide

Area of Concern: Motor Aspects of Writing

### Problem Identification

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
</table>
| - Review Section 4 of Student Information Guide (Chapter 1, page 30) | - Review Chapter 1 page 42 - Environmental Observation Guide  
- Student to teacher position/# students to adults/aid/  
- lecture/small group/number of classrooms/travel Teacher expectations  
- W/C accessible/lighting/clutter  
- Workstation/desk  
- Student accessible computers/OS | - Writing assignments (worksheet/sentence/paragraphs/pages)  
- Note taking  
- Projects  
- Tests  
- Reading |

<table>
<thead>
<tr>
<th>Sensory Considerations</th>
<th>Narrowing the Focus</th>
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<tbody>
<tr>
<td>Vision/Hearing/Tactile (hyper/hypo-sensitive)</td>
<td>i.e. Specific task identified for solution generation</td>
</tr>
</tbody>
</table>

### Solution Generation

<table>
<thead>
<tr>
<th>Tools &amp; Strategies</th>
</tr>
</thead>
</table>
| Brainstorming Only  
No Decision  
Review Checklist |

### Solution Selection

<table>
<thead>
<tr>
<th>Tools &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss &amp; Select Idea from Solution Generation</td>
</tr>
</tbody>
</table>

### Implementation Plan

| AT Trials/Services Needed:  
Date  
Length  
Person Responsible |
|----------------------|

### Follow-Up Plan

| Who & When  
Set specific date now. |
|-----------------------|

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Again, this is intended as a guide; during the actual assessment process, each topic should be written in large print where everyone can see (e.g. on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and try appropriate assistive technology tools and strategies for their students. Following the SETT process and the Decision Making Guide should ultimately result in the acquisition of appropriate assistive technology tools and strategies that, with maintained use, result in success for the student.
Assistive Technology for Writing, including Motor Aspects of Writing and Composing

Cindy Nankee, OTR/L, ATP, Karen Stindt MS, OTR/L, ATP, Paula Lees OTR. MS Ad Ed

Writing is a complex process that involves both the motor aspects of handwriting and the cognitive component of creating or composing written material. Due to the importance of each component this chapter has been divided into two sections; The Motor Aspects of Writing and Composing Written Material.

This chapter will address The Motor Aspects of Writing.

Introduction
Students are required to produce written material (e.g. tests, worksheets, and essays) to demonstrate what they have learned. Handwriting instruction begins prior to kindergarten and continues through first and second grade. Penmanship is practiced through the third and fourth grade with keyboarding instruction starting at or before the fourth grade in most curricula. Technological advances have made alternatives to handwriting available, including keyboarding, handwriting recognition and voice recognition. The majority of schools not only have computer labs, but also computers within the classroom. Some classrooms designate an area as a writing center that includes a computer with writing, visual-mapping, and outlining software along with a variety of pens, markers, crayons, stamps and papers. This section will be looking at assistive technology tools for the motor aspects of writing whether it be penmanship or technology based.

Each section of this chapter is organized in accordance with the Decision Making Guide following the SETT format (Student, Environment, Task and Tool). The Student section will assist you in determining skills and abilities required by the student to perform the motor aspects of writing whether it is handwriting, keyboarding, or the use of various other assistive technologies. The Environment section poses questions to consider concerning the impact of the student’s environment, the teachers’ expectations, and how these impact the choice of assistive technology. The section on Tasks for motor aspects of writing poses questions to help determine what is required of the student in order to appropriately choose an assistive technology solution. Following “Tasks” is a section on Tools which includes the continuum of assistive technology to be considered. The continuum is organized from low- to high-technology. This is followed by a more extensive listing of tools and strategies under the continuum subtitles. The chapter concludes with a discussion of a feature match process and steps for implementation. Chapter appendices include sample IEP objectives, references, resources, and product charts.

Using the SETT process and Decision Making Guide
It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. There are three additional categories on the Decision Making Guide that further help in the selection and implementation of assistive technology. Narrowing the Focus helps the team identify a specific task for solution generation. The Implementation Plan assists the team in assigning trials, dates, responsibilities and data collection. The Follow-Up Plan directs the team to set a date for the team to reconvene and review the student’s progress.
Chapter 5 – Assistive Technology for Writing, Including Motor Aspects of Writing and Composition

Introduction ..........................................................................................................................1

Decision Making Guide .......................................................................................................3

SETT Process .......................................................................................................................4

Continuum for Motor Aspects ............................................................................................12

Continuum Expanded ..........................................................................................................13

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<tbody>
<tr>
<td>Slim Armstrong</td>
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<td>SmartClick</td>
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<td>SpeakQ</td>
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<td><a href="http://www.assistiveware.com">www.assistiveware.com</a></td>
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<td>SoftTouch</td>
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<td>ProEd</td>
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<td>Tracker Pro</td>
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<td>Traxsys Roller Plus</td>
<td>Don Johnston, Inc.</td>
<td><a href="http://www.donjohnston.com">www.donjohnston.com</a></td>
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<td>Typeit4me</td>
<td>Ettore Software</td>
<td><a href="http://www.typeit4me.com">www.typeit4me.com</a></td>
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<td>WAVE Wireless Trackball</td>
<td>AbleNet</td>
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<td>WIVIK</td>
<td>Prentke Romich Company</td>
<td><a href="http://www.prent-rom.com">www.prent-rom.com</a></td>
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<td>WordQ</td>
<td>Quillsoft</td>
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<tr>
<td>ZoomCaps</td>
<td>Meeting the Challenge, Inc.</td>
<td><a href="http://www.mtc-inc.com">www.mtc-inc.com</a></td>
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</table>
### Product Resources

The following is a list of products mentioned in this chapter. Keep in mind that there may be multiple vendors for each product. Inclusion on this list is not an endorsement.

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<tr>
<th>Product</th>
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<td>Infogrip</td>
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<td>Chester Mouse</td>
<td>Chester Creek</td>
<td><a href="http://www.chestercreektech.com">www.chestercreektech.com</a></td>
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<td>WestTest Engineering</td>
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<td>Matias Corporation</td>
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<td>Headmouse Extreme</td>
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<td>Jouse</td>
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<td>Kurzweil 3000</td>
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<td>Magic Wand</td>
<td>In Touch Systems</td>
<td><a href="http://www.magicwandkeyboard.com">www.magicwandkeyboard.com</a></td>
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<td>MathTalk</td>
<td>Metroplex Voice Computer</td>
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<td>MicroTouch</td>
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<td>My Tobii</td>
<td>Tobii ATI</td>
<td><a href="http://www.assistivetech.com">www.assistivetech.com</a></td>
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<td>AlphaSmart (Dana &amp; Neo)</td>
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<td>SEMCO</td>
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<td>EyeTech Digital Systems</td>
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<td>REACH Interface Author</td>
<td>Applied Human Factors</td>
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<td>Read &amp; Write Gold</td>
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<td>RJ Cooper</td>
<td><a href="http://www.rjcooper.com">www.rjcooper.com</a></td>
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</table>
Solution Selection: Tools & Strategies

Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the reading tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time or require additional or significant staff training.

Implementation Plan

After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial equipment and materials, team member(s) responsibilities, start date, length of trial, training needed and any other student/staff specific issues. Be certain to identify objectives and criteria of performance to determine the effectiveness of the trials.

Trials – Take advantage of AT loan libraries for trial equipment when possible. Many manufactures of software provide trial CDs or downloads from their websites. Plan to use the technology for at least a month to determine effectiveness. Of course, adjustments and modifications should be done as necessary during that time.

Training - Identify at least two staff members and a family member to be trained (along with the student) by an AT professional. Training should take place in the environment where the computer will be used. Several training sessions may be necessary, depending on the complexity of the chosen technology.

Data – Collecting data will help determine the effectiveness of the assistive technology. Identify what objectives you will measure. For example, you could collect samples of written work before and after implementation to look at quality & quantity of work, or identify level of independence in computer access before and after implementation.

Documentation - Keep good records on the assistive technology (vendor, tech support, date of purchase, warranty, instructions) and its use by the student to be passed on during transition to another teacher, grade, or school.
Switch Interface – Remember, a switch does not plug directly into the computer, it requires a computer interface. The computer is connected to the switch interface, which is then connected to the switch. The switch interface then determines what the computer receives when the switch is pressed. When you press a switch, the interface box makes the computer think that a key on the keyboard or a mouse button is being pressed. So if you would normally press the spacebar to turn the pages in an electronic book, you can now use a switch instead. Switch interface boxes can be wireless, too (IntelliSwitch, Swifty, Quizworks USB Switch Interface).

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<tr>
<th>Product</th>
<th>Vendor</th>
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<tr>
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<td>IntelliSwitch</td>
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<td>SwitchHopper</td>
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<td>USB Switch Interface Plus</td>
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<td>Swifty</td>
<td>Origin Instruments</td>
<td><a href="http://www.orin.com/">http://www.orin.com/</a></td>
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Mounting - Switches sometimes must be mounted in place to make them easier to use. This provides stability for the student by ensuring that the switch stays in one consistent place. Switches that are pressed with the hand can be held in place on a table or desk with Velcro. For students who access switches in other ways, a mounting system may be useful. Mounts can be rigid or flexible (gooseneck). Popular commercial mounts include the Slim Armstrong and the Magic Arm. Camera mounts may be considered as a lower cost alternative.

Switch Accessible Software - Some software programs have been developed specifically for use with a switch to develop cause & effect, choice making, early literacy skills, allow independent test taking (Test Me Score Me) or to give students access to curriculum specific topics (Switching on Science/American History). Other programs have built-in options to allow switch use (Classroom Suite, Clicker).

Many standard software programs can be accessed through a switch with the use of additional switch software (Discover Envoy, SwitchXS for Mac, EZ Keys).

Switch Accessible Software is available from the following vendors (among others):

| Vendor                           | Website                           |
|----------------------------------|                                   |
| AbleNet (SoftTouch)              | http://www.ablenetinc.com/        |
| Creative Communicating           | http://www.creative-comm.com/     |
| Crick Software                   | http://www.cricksoft.com/         |
| Don Johnston, Inc                | http://www.donjohnston.com/       |
| Inclusive TLC                    | http://www.inclusivetlc.com/      |
| IntelliTools                     | http://www.intellitools.com/      |
| Judy Lynn Software               | http://www.judylynn.com/          |
| Laureate Learning Systems        | http://www.laureatelearning.com/  |
| RJ Cooper                        | http://www.rjcooper.com/          |
| Marblesoft-Simtech               | http://www.marblesoft.com/        |
from Enabling Devices, The *Wobble Switch* from PRC and AbleNet’s *Flex Switch* are examples of lever switches.

- **Motric-Specific Movements** activate switches such as pinch, grip, bat, pull, etc. Enabling Devices and AbleNet make several switches that require specific movements.

- **Pneumatic (sip and puff)** switches depend on a change in air pressure for activation. Sipping activates one switch, puffing activates the other.

- **Dual Switches** are two switches in one housing, each having its own action. A dual switch can be used for Morse code or for 2-Switch Step Scanning. The *Rocker* switch from AbleNet is an example of a dual switch.

- **Wireless Switches** - If cords and wires are a hindrance, consider a wireless switch that connects a receiver to the toy/device and then transmits information through radio waves. The *JellyBeamer* by Ablenet is a popular wireless switch.

**Electrical** – Electrical switches do not require physical contact for activation. Different types of mechanical switches include:

- **Proximity** switches simply require a motion near the surface. They are sensitivity-adjustable (*ASL Adjustable Proximity*, *AbleNet Untouchable Buddy*).

- **Fiber Optic** switches have a visible light, and breaking the beam of light activates the switch. Fiber optic switches can be set up at any reliable site such as a finger or chin (*ASL Fiber Optic*, *Fiber-Optic Eye-Blink Switch* from AMDi).

- **Infrared** - The *Self-Calibrating Auditory Tone Infrared (SCATIR) Switch* works by detecting a beam of reflected pulsed infrared light. The SCATIR Switch can be controlled with an eye-blink, eyebrow movement, finger movement, head movement, and facial muscle movement. Using the *Multi Infrared/Sound/Touch (IST) Switch* by Words+, students can access software with virtually any kind of body motion—the blink of an eye or a vocalization/breath.

- **Sensor** switches send up electrical impulses from the muscle (small movements) that activates the switch. This type of switch requires careful placement. (Enabling Devices *Sensor Switch Kit*, *Don Johnston Sensor*). The *Impulse™* from AbleNet senses tiny muscle movements and sends a signal to a receiver via wireless Bluetooth technology to activate the switch.

- **Wheelchair Integration** - It is possible to use the same switches used to drive a power wheelchair to access the computer. Adaptive Switch Labs specializes in fiber optic switches that can control both the wheelchair and the computer. A special interface box and a visual display are added to the wheelchair electronics to enable computer access. Note: Not all wheelchair electronics and/or switches have this capability.
movements can require more motor planning and concentration, with practice it can become a rhythmic, kinesthetic movement which requires less active thought.

*Inverse* – The student must maintain the switch activation until the desired selection is highlighted. Releasing the switch makes the selection. This requires the ability to hold a motor pattern and quickly release. The student must maintain direct attention to the screen, and anticipate the need to release the switch.

**Characteristics of Switches**

When assessing for switch use, these are some questions to keep in mind:

- How big is the switch target surface?
- Which areas actually activate the switch? The center? The edges?
- What does the switch feel like? Is it soft or hard? Does the student prefer or dislike a particular texture?
- How much pressure is required to activate the switch?
- Can the student easily release the switch?
- What type of feedback (if any) does the switch provide when activated? Is the student distracted or startled by a “click” sound?
- Is the switch durable? Can it withstand moisture/dirt?
- Is the switch easy to mount? Can it be positioned to accommodate the student in different body positions?
- Does the switch come in a wireless version?

**Types of Switches** - There are two main types of switches, mechanical and electrical. Below are examples of switches that are commonly used for computer access. This list is in no way exhaustive and new switches are always under development. Check vendor websites and catalogs frequently for new products.

**Mechanical** – Mechanical switches require that the student actually physically touch the switch for activation. The amount of pressure needed to activate these switches can vary. Examples include:

- **Push** (sometimes called button or touch) *switches* are the most common type. The student activates the switch by pushing against its surface. These switches have a single surface area for activation. They are usually pressed with a hand, but can also be pressed by other body parts. The *JellyBean* and *BuddyButton* are common push switches.

- **Light Touch Switches** require less pressure to activate than push switches. Examples include the *ASL Micro Light Switch* and the *Plate Switch* from AbleNet.

- **Lever switches** can be activated by pushing in any direction. They are easily mounted and are typically activated by the head or gross hand movement. The *Ultimate Switch*
Switch Access

Switch access may seem like an easy alternative input method for accessing the computer. However, the student’s cognitive abilities must be considered. Having the physical ability to activate a switch does not mean the student will be able to use scanning as an input method.

Switch scanning should only be considered after all other access methods have been ruled out. It is slow and tedious, but can be a successful access method for those who need to use it. Before recommending switch access for input, try it yourself. You will get a feel of the cognitive demands and patience required for this type of access.

Switch assessment

When assessing a student for switch access, a switch site will need to be determined. This involves finding a consistent, controlled movement that can be easily repeated many times without causing fatigue or pain. This usually involves a lot of trial and error. It is often helpful to observe the student while resting or during other activities. Students are usually very aware of their own bodies, so always ask the student what they think is their best movement for switch access. They are usually right. Typically, upper extremities are considered first, then the head, and then lower extremities. However, some would argue that the head is a more natural access method for students since there is a more direct connection with the eyes.

During the assessment, the switch itself should not be the activity. It should be a means to participate in something interesting and motivating on the computer. Do not say, “Hit the switch”, but rather say, “make the balloons pop”, or “turn the page”. It may make sense to start with activating a simple switch toy or music if that is motivating for the student.

Modes of Scanning – Different modes of scanning can be used, based on the student’s physical and cognitive abilities.

Automatic – The student activates the switch to begin the scan. Scanning proceeds automatically at a predetermined rate until the student activates the switch again to make a selection. This requires a high degree of motor control by the student to wait for the desired selection and then activate the switch at the required time. It also requires the ability to continually attend and visually track the movement on the screen. This is NOT an ideal method of input for many students.

Single Switch Step – In singe-switch step scanning, the student must keep activating the switch until the desired selection is highlighted. To make the selection, they must wait for a certain period of time without activating the switch.

Two Switch Step - In two-switch step scanning, one switch moves the highlight from one selection item to the next and the second switch selects the desired item. The student controls all timing and movement. Two-switch scanning can be extremely efficient, allowing the student to make selections faster than with single-switch scanning. While the action of two physical
Dragon NaturallySpeaking is a great option for students that have a physical disability and need to have “hands-free” access to the computer. MathTalk is an additional program that can be combined with Dragon NaturallySpeaking to dictate equations into Scientific Notebook. Read&Write Gold and ClaroRead also integrate with Dragon NaturallySpeaking to provide speech feedback to confirm that the dictated text is accurate.

SpeakQ is a voice recognition program that is designed for students with learning disabilities. It is used in conjunction with WordQ. SpeakQ is an option for students who can use the keyboard, but have difficulties with the processes of writing and reading. These students can benefit from a combination of word prediction, speech output and speech input to generate text. The reading demands are reduced, especially in the training where the computer uses speech output to prompt the student what to say. There are two modes. In the Speak and Select mode, spoken words are displayed as a list of choices enhanced by word predictions. The student then selects from the list of words or phrases (using the keyboard or mouse), or type letters to further refine the suggestions. In the Speak Continuously mode, spoken words are entered directly into the document. There are no verbal commands for control or correction.

Eye Gaze

Eye gaze systems are used to move the cursor on the screen to activate an onscreen keyboard or other specialized software. Dwelling or eye blink is used to make a selection. The eye-tracking piece is attached to the monitor and it reads the eye movement. To be able to functionally operate eye control systems, users must be able to look up, down, left and right and direct their gaze to all areas of a computer screen. They must be able to focus on a spot for a specified amount of time. Eye problems such as nystagmus, strabismus, visual acuity and medication that affect eye tracking can influence the accuracy the systems. Some systems track one eye and others track both. Problems can occur if users have severe involuntary head or eye movements. Students who do not have voluntary control over any body part except their eyes, and are unable to use voice recognition technology typically use these systems. Typical users may include students with a neurological disease, high-level spinal cord injuries, or cerebral palsy. Examples of eye gaze systems include Quick Glance, ERICA, and My Tobii.

Morse Code

Morse Code - Morse code uses two switches (see Switch Access page 17) and adaptive software to enter keyboard characters into a word processor. Morse code is not a common input method because it requires learning Morse code and it’s slow, but for single switch users it can work well. Morse code input doesn’t require the ability to watch the screen as visual scanning software does. If a single switch is used for entering the code, a dash is differentiated from a dot by holding the switch closed for a longer period of time. In two-switch Morse code, one switch is used for entering dots while the other is used for dashes. Mouse movement can be achieved using MouseKeys (accessibility feature that allows the keyboard number pad to replace the mouse), although it is tedious. The Darci USB is a plug and play device that replaces the keyboard and mouse for Morse code input in any Windows application. EZ-Keys is a software program that provides Morse code access.
Speech Recognition

Speech recognition software converts words spoken into a microphone into text or commands. Although speech recognition may seem like the simple answer for students who have difficulty with keyboarding, many things need to be considered including:

*Speech* – The student should have relatively clear, consistent speech. Students with accents or mild to moderate dysarthria have been successful with speech recognition. Appropriate training of the software is essential for accuracy.

*Cognitive abilities* – The student should be able to understand how speech recognition works and have experience with general use of the computer. They must also have fairly intact strategic memory system.

*Dictation skills* – The student needs to be able to compose and dictate clear, well-structured sentences without hesitations or fillers (umm, ahhh). The student must know how to and be able to create complete sentences.

*Literacy/Editing* - The student must be able to review the text that has been dictated, identify errors and correct them. It is very important to correct recognition errors because this helps the speech recognition program improve its voice model. If corrections are not made, recognition accuracy is compromised.

*Motivation* – Speech recognition can be frustrating during the beginning stages, so the student must be very motivated and able to see the benefit of the initial work to achieve success.

*Support* – Speech recognition technology, especially in a school setting, requires much support. As many team members as possible should be trained to use the technology so that support can be provided in various situations.

Training the software to recognize the student’s voice used to be a time consuming and frustrating process, requiring lengthy sessions of reading text aloud. However, the process of training a speech recognition program is much simpler now, and is no longer a barrier for most students. Students with severe visual or reading difficulties can be supported as they progress through the initial training.

Windows Vista has a built in speech recognition feature for dictation of text and control commands. Mac OSX has *Speakable Items* which lets you navigate menus and enter keyboard shortcuts; speak checkbox names, radio button names, list items, and buttons; and open, close, control, and switch among open applications, but not dictate text. *MacSpeech Dictate* is a software program that enables the Mac user to enter text and speak commands.

The most popular speech recognition software is *Dragon NaturallySpeaking*, which enables the user to enter text into any Windows-based software program, navigate the Internet, as well as enter commands (“close window”, “print document”) by voice. *Dragon NaturallySpeaking* uses continuous speech and can have an accuracy rate of up to 99% with appropriate training.
good fine motor control. Some trackballs have been adapted with switch jacks so that switches can be connected to emulate mouse buttons (SAM Trackball, TRAXSYS Roller Plus, WAVE Wireless).

**Joystick** – Many students may be familiar with a joystick as a way to access a video game. Joysticks may have four or five directional controls, and can be proportional or continuous use. Joysticks can be positioned for use with the hand, chin, foot, or head. Some joysticks have been adapted with switch jacks so that switches can be connected to emulate mouse buttons (SAM Joystick). The Jouse2™ and Quadjoy™ are joysticks controlled by the mouth.

**Touchscreen** - Touchscreens allow you to use your finger (or a pointer) instead of a mouse. The touchscreen is a more concrete concept than a mouse or trackball, so it may be useful for young children, or those with cognitive disabilities. A touchscreen can be an add-on (TouchWindow, Magic Touch), or an integrated monitor system (Magic Touch, 3MTM MicroTouch™ Displays). Some laptops now come with touchscreens as well. Be aware that not all built-in touchscreens are touch-sensitive. Some require use of a stylus to access.

**Foot-controlled Mouse** – For students who do not have good hand function, but can utilize their feet, foot-controlled mice are available including the No Hands Mouse and Footime™.

**Head-controlled Mouse** – A head-controlled mouse translates the movement of the student’s head into cursor movements on the screen. Some require only a small reflective dot be worn on the individual’s forehead or eyeglasses (Tracker Pro, HeadMouse® Extreme ). As with the other mouse alternatives a head controlled mouse can be combined with an on-screen keyboard to completely replace the functions of a conventional keyboard. Mouse clicks can be done with a switch or dwell selection software.

**Dwell Selection** – For students who can control the mouse pointer, but have difficulty clicking the mouse, dwell selection performs the operation by holding the cursor over an icon or menu option for a specified amount of time. The software can send left-clicks, right clicks or double-clicks. Dwell software is often used in conjunction with an on-screen keyboard. MagicCursor 2000 and SmartClick are dwell software programs available for Windows and Mac.

**Interactive Whiteboards**

An interactive whiteboard is a touch-sensitive display that connects to a computer and digital projector to show the computer image. While not a practical solution for personal use, many classrooms have interactive whiteboards, which can be great for students who cannot access a keyboard or mouse. The large touch sensitive screen can be mounted or positioned so that students in wheelchairs can access it. Students can write or draw on the screen with their finger or a special “pen”. Specialized software can translate handwriting into typed text. An onscreen keyboard could be used, allowing a student to “type” using large arm movements rather than fine finger movements.
Mouse Alternatives

For students who lack the ability to use a standard mouse, there are many alternatives to consider. Explore commercial types of mice at a computer store for a better individual fit. There are many different sizes, shapes, button configurations, etc.

**Keyboard shortcuts** - Use keyboard shortcuts as an alternative to the mouse in both Windows and Mac. Keyboard shortcuts use a combination of a modifier key plus another key to achieve a menu option (for example Control + V is the same as clicking on Edit > Paste with the mouse). For a list of keyboard shortcuts for Windows go to support.windows.com and support.apple.com for Mac.

**Mouse Keys** – Built-in feature of both Windows and Mac operating system, enables the student to use the arrow keys on the numeric keypad to move the pointer instead of using the mouse.

**Left handed/Ergonomic** – There are hundreds of different variations of computer mice, including left handed mice for Windows available on the Internet and in office supply stores. You may want to explore the options, which come in all different sizes and shapes including pen mice and vertical mice that place the hand in a vertical “handshake” position.

**Wireless** - There are many options for wireless mice and trackballs available at computer stores. These utilize infrared (IR), radio frequency (RF), or Bluetooth technology. Keep in mind that Bluetooth and RF technology does not require line of sight between the mouse and the receiver, while IR does require line of sight between the mouse and the receiver.

**One Button** – Many children are confused and/or frustrated by the right click button on the standard mouse. While it is possible to disable the right click from the operating system, many teachers and students prefer a one-button mouse. The Chester Mouse is a small single-button mouse with no scroll wheel.

**Touchpad/Trackpad** – Some students with limited range of motion and/or strength may be able to access a touchpad (commonly found on laptop computers). Sliding your finger across the pad moves the mouse. Clicking can be done with buttons or by "tapping" lightly on the surface. External trackpads are available for both PC and Mac computers.

**Trackball** – If a student has difficulty gripping or moving a standard mouse, a trackball may be easier to use. A trackball is basically an upside-down mouse. Rather than moving the mouse on the table, the trackball remains in one place and the ball on the top is moved with the palm, thumb, fingers, or other body part. The BigTrack is the largest trackball on the market. It requires less fine motor control than a standard trackball and has a left and a right mouse click button located behind the trackball to avoid unwanted mouse clicks. The BigTrack works well with young children, and with students who do not have
Chapter 4 – Assistive Technology for Access to Computers

**Enlarged** - Enlarged keyboards are larger versions of the standard keyboard, in whole or in part, usually with colored keys and a variety of layouts. Some are also programmable (see *IntelliKeys*). An enlarged keyboard is often used with students who have decreased fine motor skills, or who require color coding or an alternative layout for cueing. The Big Keys series comes in different layouts and color combinations.

**Programmable** - The *IntelliKeys®* keyboard is the most popular programmable keyboard. It is a flat, enlarged membrane keyboard that plugs into any Macintosh or Windows computer. It enables users with physical, visual, or cognitive disabilities to type, enter numbers, navigate on-screen displays, and execute menu commands. *IntelliKeys* comes with overlays for numbers, mouse movement, and alphabetical and QWERTY key layouts that can be slid into the *IntelliKeys* for instant use. Customized overlays can also be created and printed with Overlay Maker or existing overlays can be downloaded from the IntelliTools Activity Exchange (http://aex.intellitools.com). Many children's software programs now include ready-to-use custom *IntelliKeys* overlays. *IntelliKeys* can also be used as an alternative for mouse functions or as a switch.

**Onscreen** - An onscreen keyboard is an image of a standard or modified keyboard on the computer screen. A mouse, mouse alternative, or switch selects the keys. Some onscreen keyboards incorporate word prediction programs to increase speed and may include alternate keyboard layouts in addition to the traditional QWERTY layout. Windows and Mac operating systems have a built-in onscreen keyboard, but with limited extra features. The onscreen keyboard is an option for students who have accurate control of a mouse or mouse alternative (trackball, head controlled mouse, touchscreen), but struggle with the keyboard. The onscreen keyboard also removes the need to look back and forth from the keyboard to the computer screen. Popular onscreen keyboards include *OnScreen*, *WIVIK*, and *REACH™*.
### One-Handed

Many students who type with one hand do well with a standard keyboard and a modified hand placement. However, there are many different types of keyboards designed for one-handed users. A smaller-sized keyboard may be beneficial for a student using only one hand.

- There are Dvorak arrangements designed for either right or left one-handed typing. The hand rests near the center of the keyboard and the majority of the letters are centered on the home row or above.

![Dvorak Keyboard Layout](image)

- The Half-QWERTY Keyboard allows one-handed typing using either hand, or both, just like a standard keyboard. The student’s functional hand is placed where it would normally go if they were a two-handed typist and that half of the keyboard is accessed as usual. To type the keys on the other side, the student holds down the spacebar while pressing the mirror-image key. This is most successful with students who were previously able to touch type with two hands.

- Another option is a chorded keyboard, which allows the user to enter characters or commands by pressing several keys simultaneously, like playing a chord on the piano. The BAT keyboard and the FrogPad are examples of chorded keyboards. Both are available in right or left handed versions.

- **AlphaSmart Portable Word Processor** – AlphaSmart products have built in right and left handed keyboard configurations, and can be used as a stand-alone word processor, or as an alternative keyboard to access the computer in the keyboard emulation mode.

### Wireless

Wireless keyboards eliminate the need to be attached to the computer with a cord, which works well for students who use a power wheelchair with a tray or those who are distracted by cords. These utilize infrared (IR), radio frequency (RF), or Bluetooth technology. Keep in mind that Bluetooth and RF technology does not require line-of-sight between the keyboard and the receiver while IR does require line of sight between the keyboard and the receiver. Wireless keyboards can be found at many office supply or electronics stores.

### Miniature/Compact

Compact keyboards have smaller keys, fewer key choices or a more "compact" layout. Some include a built-in track ball and/or wrist rest. These may be a good choice for students with a limited range of motion, or those using one hand or a pointing device to access the keyboard. There are several mini keyboards on the market, some wireless. The Magic Wand Keyboard has a built in mouse and requires only a light touch by the attached 'wand' to activate the keys, making it an option for students with muscular dystrophy.
data from one application and paste it in another. You can create Macros in Microsoft Word and Excel, as well as voice recognition software. There are many shareware programs for both Windows and Mac that will work in any application. If there are any functions or tasks that the student performs repeatedly, macros are effective in helping speed up those tasks.

**Auto Correction** - The AutoCorrect feature in Microsoft Word provides the most common misspellings of words, including omissions, additions of incorrect letters, incorrect sequence of letters, misspellings due to inadvertent physical key hits, and also the user's genuine difficulty with spelling specific words. In all programs, lists of words can be modified. You can add words that you commonly misspell.

**Alternative Keyboards**

The standard QWERTY keyboard is modeled after the typewriter and is designed for a two-handed touch typist. This layout may not be ideal for students who will not touch type, students who will type with one hand, or students with cognitive difficulties. Although it is preferable to use the traditional keyboard since it is found in all settings, consider the many alternatives.

**Alphabetical** – The Alphabetical or ABC layout is often used with very young students, or those who are unfamiliar with or confused by the QWERTY layout. Students who use communication boards or devices may be familiar with the ABC layout for spelling out messages. Keyboards with an ABC Layout often have larger keys and/or brightly colored keys.

**Dvorak** - The Dvorak keyboard layout has the most-used consonants on the right side of the home row, and the vowels on the left side of the home row. The next most common letters are on the top row, and the least-used letters are on the bottom row. This can be a useful layout for someone who is using a pointing device such as a headpointer or a mouthstick.

The option for changing the keyboard layout is found in the Control Panel in Windows, and the System Preferences in Mac.

**Ergonomic** – Some ergonomic keyboards may be useful to students who need alternative positioning of the keyboard. Split keyboards, like the FreeStyle, enable the student to position the two keyboard halves separately in a way that is most comfortable for them.
**Assessing Students’ Needs for Assistive Technology**

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**Pointing tools** – A student with no functional use of their hands may use a head pointer or mouthstick to access the keyboard and/or mouse. A student with limited grasp might use a typing aid with a rubber tip that slips over the hand. A dowel or pencil with the eraser side down can also be used.

**Keyboard Mask** – For students who may only need to access a few keys on the keyboard, and are distracted by the many choices on a standard keyboard, it may be helpful to make a mask out of cardboard or foam to place over the keyboard, revealing only the necessary keys.

**Standard Mouse Adaptations**

**Customizable Mouse Options** - Students often have difficulty controlling a standard mouse, especially double clicking required for opening files and using the “drag” function. Built in features in both Windows and Mac include changing the double click speed, actions of the mouse buttons, pointer speed, cursor blink rate, and mouse pointer schemes.

**Button Reassignment** - The standard mouse for a Windows based computer is designed for right-handed use. You can reassign the buttons on a standard mouse in the Control Panel so that the right click makes a selection and the left click brings up the shortcut to menu items. You can also disable the right click button for students who unintentionally activate it or don’t need to use it. There is also the option to make both of the buttons make a selection.

**Rate Enhancement**

There are several software programs or features built into existing software that enable the user to reduce the number of keystrokes necessary to produce a word or action.

**Abbreviation Expansion** - Abbreviation expansion lets the user type in an abbreviation for a word or phrase, and the software spells out the full text on the screen (for example, “dc” + <Spacebar> = “Washington DC”. *Microsoft Word AutoCorrect* is a built in feature that allows you to create your own abbreviations and expansions, which work in Word only. *Typeit4me* is a popular abbreviation expansion program for the Mac.

**Word Prediction/Completion** - Word prediction/completion uses the first few letters typed by the student to "guess" at the desired word. After typing the first few letters, a list of words that begin with those letters is displayed. If the desired word is in the list, it can be chosen and automatically entered into the word processor. Many word prediction programs also read the list of “guesses” aloud. Some of the most popular stand alone word prediction programs are *Co:Writer* and *WordQ*. Word prediction is also available as an option in multi-feature programs like *Kurzweil 3000* and *Read & Write Gold*.

**Macros** - Macros are shortcuts that complete a set of commands in response to a set of keystrokes. A macro can simulate keystrokes and mouse input, activate applications, execute commands (e.g., maximize or close a window), and combinations of these. Examples of macros include: insert a name and address; launch or switch to a program; increase the volume; and copy
Operating System Built in Accessibility Features

All Macintosh and Windows operating systems have built-in accessibility features that allow the user to customize features of the mouse and keyboard to better suit their individual needs. For Windows XP, Accessibility Options are found within the Control Panel. In Windows Vista they are found under “Ease of Access” within the Control Panel. On a Mac, the accessibility features are found in “Universal Access” within the System Panel.

**Sticky Keys** allows a user who can only push one button at a time to use the modifier keys (Shift, Control, Alt and Command) to press key combinations without having to hold down two or more keys at the same time. For example, when trying to type a capital letter, the user types [Shift] then the target letter, one after the other. The target letter will appear in uppercase and the next letter typed will automatically appear in lowercase. This is good for a student who is using one hand, or a pointing tool.

**Filter Keys (Slow Keys on a Mac)** ignores keystrokes that occur in rapid succession and keystrokes that are unintentionally held down for several seconds. This is good for someone who has a tremor or uncontrolled movements.

**Mouse Keys** allows use of the numeric keypad to move the mouse around the screen. This is good for someone who has a reliable method to access the keyboard, but has difficulty using a mouse.

**Visual Display Options** – Both Windows and Mac have customizable high-contrast schemes and modes to make it easier to see objects on the screen. There are options to increase the font and size of icons, cursor magnification, as well as text reading technology and screen magnification (although limited).

Standard Keyboard Adaptations

**Repeat Rate** – There is an option in Windows and Mac to adjust the character repeat rate to prevent multiple characters when a button is held down.

**Keyguard** - Keyguards are used to prevent accidental key presses. They are most often made of plastic and have finger-sized holes over each key. They are used to prevent accidental keystrokes or activation by stabilizing hand movement and preventing "drag" across dynamic screens. Keyguards are available for most standard keyboards and many augmentative communication devices.

**Labels** – Key labels are stickers that stick to the keys on the keyboard. They can be white letters on a black background, black letters on a white background, or color-coded. *ZoomCaps* are often used with children who have low vision or visual attention issues. Also available are large print, lowercase, color-coded labels from *Hoolean*.

**Moisture Guard** – A moisture guard covers the keyboard and protects it from dust, moisture, drool, etc.
Positioning of the Student and Equipment

Positioning of the student at the computer workstation is one of the first things that should be considered. Many students that have a physical disability may be able to access the computer via a keyboard and/or mouse if they are properly positioned at the computer workstation. Proper positioning and support enables the student to focus on learning. The student should sit comfortably in a well-balanced position. If they need to use their arms to support their body position or make constant position adjustments while using the computer keyboard, the seating system should be adapted.

One simple adaptation is the use of a non-slip surface on the chair to prevent slipping. While Dycem is the common solution for this, there are several low cost alternatives including non-skid rug material, shelf-lining material, rubber jar gripper, or non-skid vinyl safety tape. Rolled towels and pillows can also be used to make adjustments. An occupational or physical therapist should be consulted to help determine the most appropriate seating for the student.

Flexibility in the table height and positioning of keyboards and monitor is important. Students using wheelchairs usually sit higher than students in typical chairs so traditional desks and tables are usually too low to accommodate a wheelchair. Blocks or bricks can be placed under the table legs to raise the table. However, raising the table often results in raising the keyboard surface and monitor to an uncomfortable position. If this is the case, desk arms can replace standard arms on wheelchairs so that a lower table can be used. Using a wheelchair tray may also be considered.

Bi-level adjustable tables are convenient because correct working heights can be individualized quickly and easily, which is useful when several students requiring different table heights use the same computer. Other supports such as foot rests, articulating arm supports and wrist rests may improve access.

The computer monitor should be placed so the top of the screen is at or just below eye level. Keep in mind that many students with physical disabilities also have vision issues, so be sure to consider that the monitor may need to be placed to the right or left, or tilted up or down to accommodate the student’s vision, as well as their position in the chair or wheelchair. A document holder may be used to place papers in the same visual plane as the monitor.

Some students find that the keyboard is easier to use when it is angled toward them, especially if they are using a pointing device (page 9). Angling the keyboard also positions it in the same visual plane as the monitor, reducing the need for the student to shift his gaze back and forth from the keyboard to the monitor. A slantboard can be used to angle a keyboard to varying degrees. An empty three-ring binder can also be used to angle the keyboard, using Velcro or non-slip materials to keep the keyboard in place.

A wrist rest or forearm support such as Ergo Rest ® may provide needed support to increase control of movements and prevent accidental key activations. Gel supports located under the wrist or forearms provide a neutral resting position to increase stability for better fine motor control.
A Continuum of Considerations for Assistive Technology

Computer Access

Positioning of the student and equipment

Standard Keyboard/Mouse with accessibility/access features built into the operating system

Standard Keyboard/Mouse with Adaptations

Rate Enhancement

Alternate Keyboard/Mouse

Onscreen Keyboard

Voice Recognition Software

Eye Gaze

Morse Code

Switch Access
level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low and high tech AT supports.

**Sensory Considerations**
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential on the student’s learning, identify the sensory levels in each environment in which the student will be using the computer.

**Tasks**

As a team, discuss and write on chart paper the reading tasks that the student needs to do.

One of the most important questions when assessing a student’s need for assistive technology is: What are the tasks the student needs to do? In this instance what activities does the student need to participate in on the computer?

These are some questions to consider:

- Is the student able to access educational/special software to enhance participation in the curriculum?
- Is the student able to independently complete written work (reports, worksheets)?
- Is the student able to navigate the Internet? Use email?
- Is the student able to take notes?
- How does the student currently take tests?
- How does the student show their work in Math?

**Solution Generation: Tools/Strategies**

As a team, brainstorm and write on chart paper any assistive technologies and/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for computer access. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology.
Although these factors are not directly related to computer access, they impact the student’s ability to focus on instruction and learning so should always be considered.

Other Considerations
Each individual student has specific skills and areas of concern. Be certain to address those as you capture the particular traits of the student in this part of the SETT process.

Environmental Considerations

As a team, discuss and write on chart paper any environmental considerations that might impact the student’s ability to access the computer such as auditory or visual distracters, placement in the classroom, number of different environments in which the computer is to be used, or any other environmental impacts.

Important things to consider include:

- Will the student have a specific computer dedicated to their use, or will they use several computers throughout the school and home?
- What operating system is on the computer(s)?
- Will the computer(s) be laptop or desktop?
- What software programs will the student need to access?
- If special software is to be used, will it be on a network, or only installed on specific computer(s)?
- If the access method requires set up, is someone available to assist?
- Where in the room is the computer located? Can the student see the teacher from that location?
- What position(s)/equipment will the student be in when accessing the computer?
- Will the student require an adjustable workstation to accommodate a wheelchair?
- Will anything need to be mounted?
- If a dedicated laptop is used, is there a power source? How will it be transported?
- Is there adequate lighting in the location(s) that the computer will be used in?
- If there is sound on the computer, will that impact the other students in the room? Are headphones necessary?
- Will the student need to print from the computer? Use a scanner?

Assistive Technology: past and present
What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time.

Differences in skill development, maturity, a different environment or other factors may make all the difference. If the student is currently using assistive technology note the AT used, location,
Chapter 4 – Assistive Technology for Access to Computers

Student’s Abilities and Difficulties
As a team, discuss what the student’s abilities and difficulties are related to computer access. Please complete and review Section 3 of the WATI Student Information Guide (Chapter 1, page 28).

Consider the following questions:

- Does the student have experience using a computer? If so, for what?
- How does the student currently access the computer? Is the current method acceptable in terms of speed and accuracy?
- Is the student in an optimal position for accessing the computer (chair, wheelchair, etc.)?
- Can the student keyboard with two hands?
- Can the student isolate and point with one finger?
- Does the student have uncontrolled movements that reduce their accuracy?
- Does the student need any additional supports (keyguard, wrist support, pointing tools) to access the computer?
- Does the student have the range of motion to reach all areas of a keyboard, or move a mouse?
- Does the student have low or high muscle tone that may interfere with access?
- Is the student’s speech clear and consistent?
- What is the student’s most consistent, voluntary movement? Be specific (press down with right index finger, lateral movement with left elbow).
- Does the student fatigue easily during an activity, or get more fatigued throughout the day?
- Does the student have any visual issues (acuity, tracking, nystagmus)? Hearing issues?
- If the student is not able to direct select, have they tried scanning? If so, where was the switch placed for activation and what types of switches were tried?
- Does the student have the necessary cognitive skills to understand the purpose of using the computer? Do they understand the scanning process?
- At what level is the student reading and writing?
- Does the student maintain their attention to the computer long enough to complete a task? Are they visually interested in what’s happening on the screen?
- Does the student have any behavior issues that may interfere with computer use?
- Is the student motivated to use a computer to complete their tasks?

Sensory Considerations
Some students are adversely affected by environmental stimulation that others can filter out or ignore. Some common factors that can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as:

- Visual clutter
- Fluorescent lighting versus full spectrum lighting
- Classroom and background noise
- Tactile stimulation
- Awareness of physical space
- Other individual specific sensitivities
## WATI Assistive Technology Decision Making Guide

**Area of Concern:** Access to the Computer

### Problem Identification

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<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
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<tr>
<td>What are the student’s abilities &amp; difficulties related to computer access?</td>
<td>What environmental considerations impact the student’s use of the computer?</td>
<td>What computer task(s) do you want the student to do?</td>
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<td>- Review Student Information Guide- Chapter 1, page 28</td>
<td>- Number of classrooms</td>
<td>- Access educational/ special software</td>
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<td>- Current computer access method(s)</td>
<td>- Ratio of students to adults</td>
<td>- Complete written work (reports, worksheets)</td>
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<td>- Motor skills/ROM</td>
<td>- Workstation/desk</td>
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<td>- Fatigue/strength</td>
<td>- Software available</td>
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<td>- Power source</td>
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<td>- Behavior</td>
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<td>- Computer skills</td>
<td>- Teacher expectation</td>
<td></td>
</tr>
<tr>
<td>- Other challenges/concerns?</td>
<td>- Other challenges/concerns</td>
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</table>

### Sensory Considerations

What sensory challenges does the student have that impacts computer use? (i.e., visual, auditory, tactile)

### Narrowing the Focus

Specific computer task(s) identified for solution generation

### Solution Generation Tools & Strategies

Refer to Computer Access Continuum

- Brainstorming Only
- No Decision

### Solution Selection Tools & Strategies

Use a Feature Match Process to Discuss & Select Idea(s) from Solution Generation

### Implementation Plan

AT Trials/Services Needed:
- Date
- Length
- Training
- Data collection
- Person(s) Responsible

### Follow-Up Plan

Who & When
Set specific date

Important: It is intended that you use this as a guide. Each category should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Access to Computers for Students with Physical Disabilities

Patti Lindstrom Drescher, M. Ed, OTR, ATP

A student with a physical disability often cannot manipulate traditional classroom tools like pencils, markers, books, and paper. Access to computer-based tools may also be difficult. Fortunately, there are many hardware and software products that assist students with challenges to use computers at school and at home. These tools support individuals with physical disabilities, learning disabilities, and sensory challenges. This chapter will not address in detail computer access for students who are blind or have low vision. Please refer to Chapter 12 on Assistive Technology for Students who are Blind or have Low Vision for more information.

Computers have become an integral tool in all of our lives, making things easier, faster, and more convenient. If we didn’t have our computers, we might be inconvenienced, but we would have alternatives. We’d go back to handwriting or typing, using the library, phonebook, maps, writing letters and talking on the phone, etc. But for a student with a disability, the ability to access a computer may be their only way to learn new skills, participate in classroom activities, demonstrate their knowledge, and interact with other people. Use of the computer is essential for students with disabilities, and finding a reliable access method is the key to opening many doors for learning and developing.

Using the SETT process and Decision Making Guide

It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. Additional categories include:

- Narrowing the Focus to help identify a specific task in order to select appropriate assistive technologies.
- Implementation Plan to assign trials, dates, responsibilities and data collection.
- Follow-Up Plan to set a date for the team to reconvene and review the student’s progress.

Again, this is intended as a guide; during the actual assessment process, each topic should be written in large print where everyone can see (i.e., on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology tools and strategies for their students.
Chapter 4 –
Assistive Technology for Access to Computers

<table>
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<th>Section</th>
<th>Page</th>
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<td>Introduction</td>
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<td>SETT Process</td>
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<td>Computer Access Continuum</td>
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<tr>
<td>Computer Access Continuum Expanded</td>
<td>7</td>
</tr>
<tr>
<td>Product Resources</td>
<td>22</td>
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</table>
University of Washington at Seattle Augmentative Communication website is a good resource for AAC definitions and descriptions, resources, references and valuable information, http://depts.washington.edu/augcomm/index.htm

USSAAC
United States Society for Augmentative and Alternative Communication is a national branch of ISAAC (International Society for Augmentative and Alternative Communication). It is dedicated to providing information and support on AAC issues, technology, tools and advancements. There are many resources on the site available to the general public. http://www.usssaac.org/

Verbalize

YAACK (Augmentative and Alternative Communication Connecting to Young Kids)
The website from University of Nebraska-Lincoln is a resource for individuals who are providing AAC to young children. It includes information such as “When does a young child need AAC?”, Choosing AAC systems, AAC Resources and much more. http://aac.unl.edu/yaack/
PixAide™
A free symbol set for Mac OS 10.4 computer system of over 3,000 rebus symbols matched to over 10,000 words.
http://slatersoftware.com/PixAideInfo.html

Project Participate
A website filled with forms, ideas and strategies to promote student participation and success in school.
http://www.projectparticipate.org/

pVoice
pVoice is an application for Augmentative and Alternative Communication (AAC). Disabled people who cannot speak and have very little possibilities to operate a computer can use pVoice by selecting photo's or symbols to generate speech output.
http://www.oatsoft.org/Software/pvoice

Sclera’s Pictos
A resource of 1041 free symbols (pictograms).
http://www.oatsoft.org/Software/sclera-s-pictos

SET-BC (Special Education Technology-British Columbia) is a wonderful resource for AAC information, professional development, implementation ideas and strategies.
http://www.setbc.org/lcindexer/default.aspx

Speaking of Speech
An interactive forum for speech/language pathologists and teachers to improve communication skills in students by sharing ideas, resources, materials and more. Be certain to look at the materials exchange page.
http://www.speakingofspeech.com/

Straight Street Symbol Set
Free symbol set (.wmf format images)
http://www.oatsoft.org/Software/straight-street-symbol-set

The Stuttering Foundation
The Stuttering Foundation, a nonprofit charitable organization, provides free online resources, services and support to those who stutter and their families, as well as support for research into the causes of stuttering.

Trainland Tripod
This site was created by a parent of a child with autism. She has information about PECS, nonverbal communication, AAC intervention, communication boards, schedules and symbols and other links.
http://trainland.tripod.com/pecs.htm
Askability
A UK site full of stories, jokes and news (from the UK) written all in pcs. The jokes and riddles link is universal.
http://www.askability.org.uk/

Baltimore City Public Schools adapted library
On this website you will find books that have been adapted using the Picture Communication Symbols (PCS) and the Mayer-Johnson program BoardMaker©.
http://www.bcps.k12.md.us/boardmaker/adapted_library.asp

CHIP Speaking™
CHIP Speaking™ is a desktop augmentative communication device that supports up to 99 messages. Students can record in their own voice (or care-givers can record the voice of someone else of the same gender and age) or take advantage of computerized voices.
http://www.oatsoft.org/Software/chip-speaking

Imagine Symbols©
Imagine Symbols© is a free symbol set (for non-commercial use) which can be downloaded.
http://www.imaginesymbols.com/

Implementation Toolkit
The Implementation Toolkit is collection of video and print-based resources created to help you facilitate successful interaction using AAC from Dynavox Technologies. Registration for the toolkit is free.
http://www.dynavoxtech.com/training/toolkit/default.aspx

ISAAC
International Society for Augmentative and Alternative Communication. Most of the resources are for purchase or for members. However they do have an extensive listing of AAC related websites.
http://isaac-online.org/en/home.shtml

Linda Burkhart
A good resource of simplified technology and strategies for working with children with severe disabilities, including resources about PODD books, 2 switch step scanning, partner assisted scanning and more.
http://www.lburkhart.com

Literacy Support Pictures™
These symbols are freely downloadable courtesy of Slater Software.
http://www.slatersoftware.com/PixLibrary.html

Meyer-Johnson
Developer of Boardmaker. Go to downloads, sharing or tips for ideas, pre-made communication boards, “Activity of the month” and more.
http://www.mayer-johnson.com/
Internet Resources/Links

**AAC Funding Help**
Attorney Lewis Golinker is primarily responsible for the site's content which includes SGD funding fast facts, SGD funding programs, AAC report coach and general resources. 
http://aacfundinghelp.com/funding_programs.html

**AAC Institute.org**
A “not-for-profit, charitable organization dedicated to the most effective communication for people who rely on augmentative and alternative communication (AAC)” Resources include funding, consumer and parent pages, information for “beginners”, research and more. 
http://www.aacinstitute.org

**AAC-RERC**
The AAC-RERC is a collaborative research group dedicated to the development of effective AAC technology. Journal articles, book chapters, other publications and presentations are all available for download. 
http://www.aac-rerc.com/

**AAC Tech Connect** is a web site which provides pictures of speech generating devices according to category and lists product and contact information for major AAC device manufacturers. Their *Device Assistant* is a tool that helps a team compare and match the features of devices to student skills. It is available on a limited trial basis or by subscription. 
http://www.aacTechConnect.com

**accessibility portal.org**
A source of low/no-cost, mainstream strategies and applications for accommodating the communication needs of individuals with speech disabilities. 
http://accessibilityportal.org/augcom_ideas.htm

**Adapted Learning.com**
This free resource is a place to find and share adapted curriculum created with Boardmaker® Software. It also provides online community functions as well as feature articles and expert tips. It was developed to provide better symbol-enhanced learning tools and make it easier for special educators and parents to adapt curriculum. 
http://www.adaptedlearning.com/

**ASHA – Division 12, augmentative and alternative communication**
The specific division of ASHA (American Speech-Language-Hearing Association) that promotes continuing education about AAC for professionals and pre-service individuals. Non ASHA members can access many of the resources. 
http://www.asha.org/about/membership-certification/divs/div_12.htm
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References


Communication board from page 5 of this chapter with text labels.

Preparing Food

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<tr>
<th>Help me please.</th>
<th>Have to turn it on.</th>
<th>Needs some more.</th>
<th>Read the recipe</th>
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<th>What are we making?</th>
<th>Have to turn it off.</th>
<th>Finished.</th>
<th>Have to set the oven.</th>
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There are currently several assistive devices available commercially for individuals who stutter, with prices ranging from $1500.00 to $5,000.00. The Stuttering Foundation lists some devices but does not endorse the use of any of them (http://www.stuttersfa.org/Default.aspx?tabid=88). These devices are typically worn in one ear, much like a hearing aid. They can be worn behind the ear or, with the more expensive models, entirely in the ear canal.

In summary, use of a DAF and/or FAF device may reduce stuttering and its severity when used as an adjunct to therapy. If considering the purchase of an assistive device for reducing stuttering, it is recommended that the child and family be counseled regarding the lack of available evidence regarding long term effects and to the fact that there remains no known cure for stuttering.
Other Assistive Technology for Communication Disorders

Personal Voice Amplification Devices
Personal voice amplification systems are generally used for adults, especially educators because of the tendency of teachers to abuse their vocal chords with overuse. However, there are some students who are verbal, but have limited intelligibility. If speech is fatiguing, requires frequent repetition and/or excessive listener proximity because of low volume, those students may benefit from a portable personal voice amplification system. Personal voice amplification systems can be wired or wireless and consist of a small transmitter, a high quality microphone and a receiver/amplifier. The user wears the amplifier/speaker in a “fanny pack” and plugs in the microphone. Headset microphones are typically better because of their proximal location to the mouth and stability on the user’s head. Other microphones that can be considered depending on the student include a collar microphone, worn on the student’s shirt close to their mouth or pencil microphone, hand held by the mouth.

The Speech Enhancer SGD amplifies an individual’s speech, but also claims to clarify their speech. The device blends the speaker’s voice characteristics with synthesized components to reportedly create a clearer voice that sounds much like the speakers, but with more clarity. The system, a microphone, synthesizer and speaker is worn by the user. Research into the effectiveness of the device is limited and none to date has included school aged speakers. Bain, Ferguson and Mathisen (2005) reports inconclusive evidence as to the effectiveness of increasing intelligibility among adults with a variety of disorders (cerebral palsy, laryngectomy, vocal nodules, traumatic brain injury, Parkinson disease, multiple sclerosis) when judged by familiar and unfamiliar partners.

Some personal voice amplification systems (not an inclusive list)
- Califone Voice Saver
- Chattervox®
- The Speech Enhancer SGD
- Voicette

This section on stuttering was contributed by Charlie Osborne, M.A., CCC-SLP, University of Wisconsin-Stevens Point.

Assistive Technology for Stuttering
Historically, delayed auditory feedback devices have been shown to decrease the frequency and severity of stuttering in some individuals who stutter and have been used as adjuncts to therapy. The rate of speech of person who stutters tends to be slower and sounds and syllables prolonged when speaking under delayed auditory feedback (Silverman, 2004). Contemporary assistive devices may delay auditory feedback (DAF) and/or alter the frequency of the feedback (FAF) of a person’s speech. Use of DAF and FAF can often result in an immediate reduction in the frequency and severity of stuttering. There are anecdotal reports that DAF and FAF have been useful adjuncts to stuttering therapy with some adults who stutter. Unfortunately, at the present time there is limited evidence regarding the long term effectiveness of DAF and FAF with adults who stutter and almost no evidence regarding effectiveness of DAF and FAF with children who stutter. One researcher (Guitar, 2006) reported that he only dispensed devices to children over 11 years of age, believing that younger children could be better served through therapy.
However, IDEA does not prevent school districts from seeking funding from other sources to fund a portion of the devices they may find necessary to procure for students with disabilities. It requires the school district to “provide” the assistive technology. In providing it, the school district may borrow it, rent it, or seek an outside or “third party” funding source. When seeking funding for a student’s personal SGD, the family and school team need to consider factors such as ownership, use during vacations and holidays and what happens to the device if the student moves out of district or graduates. All of those factors need to be considered when making funding decisions.

If the family agrees that the school can submit the request for funding a device to either the family’s private insurance or through the student’s Medicaid, most states have information about the funding process for “durable medical equipment”, the category under which speech generating devices fall. All of the major vendors and suppliers of SGDs have “funding” departments to assist the team in navigating “third party” funding procedures. Their staff can assist the team in writing the report, reporting data from the trial, going through the steps of the funding process, etc. Other resources of information on AAC funding include websites such as AAC funding help, AAC Institute, AAC-RERC all of which are listed on the Internet Resources page found at the end of the chapter.

**As you and the student’s team venture on this remarkable journey to provide a communication system for the students you serve, remember that the device is not the goal, COMMUNICATION is!**
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Training of Communication Partners
Training of communication partners in all environments (e.g. home, school, and community) is a vital step towards successful implementation of a student’s communication system. Training of staff and family may include these or other skills:

- knowledge of vocabulary and its location in the system
- using a prompt hierarchy
- learning how to use and program the student’s communication system
- facilitator strategies (modeling, expansion, pausing)
- competence in problem solving and completing minor repairs or contacting technical support for the device
- other student/device specific skills

Kent-Walsh and McNaughton (2005) propose an eight step instructional model for training communication partners based on a review of previous models of instruction. In summary, those steps are

1. Pretest partner’s spontaneous use of communication strategies in the natural environment. Partners commit to participating in the instructional program.
2. Instructor describes the targeted strategy and provides a method for remembering the steps involved in implementing the strategy. Instructors discuss the impact of implementing the strategy with the AAC user.
3. Instructors model the targeted strategy with verbal explanations of all the steps performed.
4. Communication partners practice naming and describing all of the steps required to implement the strategy.
5. Communication partners practice implementing the strategy in a controlled environment, receiving feedback from the instructors.
6. Communication partners practice implementing the strategy in multiple situations in the natural environment. Receive reduced prompting and feedback.
7. Instructors review and document communication partner’s mastery of the targeted strategy. Instructors elicit feedback on the impact of the partner’s implementation of the strategy from the AAC user or their caregivers. Instructors assist communication partners in generating a maintenance plan for generalization of the strategy.
8. Communication partners practice implementing the targeted strategy across multiple environments and plan for long-term implementation.

Students can learn to “train” unfamiliar partners with messages such as “Please be patient, I use this device for communication”, “If you think you know what I am going to say, you can guess” or “Please let me finish my message” each dependent on the student’s communication competencies.

Funding
After the student has completed a successful trial with a specific SGD, the question of funding the device becomes an important issue. The law is clear that if assistive technology, including an AAC device is needed to accomplish the goals and objectives listed in the student’s IEP, then it must be provided.
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Retrieved from Dynavox Implementation Toolkit on February 18, 2009
http://www.dynavoxtech.com/training/toolkit/
A resource developed by Dynavox technologies is their “Implementation Toolkit”. The Toolkit has resources for AAC users and professionals, videos, AAC frameworks, observational guides and other tools that can even be helpful for teams supporting students using devices other than Dynavox products.

SET-BC uses the four communication competencies (operational, linguistic, social and strategic) in their SET-BC AAC Curriculum Rubric [http://setbc.org/setbc/communication/aac_curriculum_outline.html](http://setbc.org/setbc/communication/aac_curriculum_outline.html) which includes rating scales and levels that track a student starting at a basic initiation and response level to communicating for learning, independence and employment. The rubric may assist a team in identifying the next level of competence a student needs to achieve.

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Assessing Students’ Needs for Assistive Technology (2009) 45
nature and are not age or grade specific. The first Stage is Cause-Effect and continues to proceed as a student’s cognitive and linguistic abilities advance to language readiness, emerging language, early concepts, advanced concepts and communication, functional learning and written expression. It should be noted that Stages is not an assessment for augmentative communication, but rather an accessible instrument (single switch accessible) that assesses cognition and language skills.

If the team is not certain which symbol system is appropriate for a student, they might want to consider using the TASP (Test of Aided-Communication Symbol Performance). Subtests offer assessment of a student’s knowledge of symbols including photos compared with Picture Communication Symbols, size as well as number of symbols and higher level skills such as categorization and grammatical encoding.

When students have profound or multiple sensory disabilities, it can be difficult to assess and implement an appropriate communication system. *Every Move Counts, Clicks and Chats* helps teams understand the communicative intent of a student’s motor patterns. Assessment, data collection and implementation strategies are part of the program.

**Implementation Plan**

After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial equipment and materials, team member(s) responsibilities, start date, length of trial, training needed and any other student/staff specific issues. Be certain to identify communication objectives and criteria of performance to determine the effectiveness of the trials.

**Data Collection**

The importance of data collection cannot be over-stressed. How do you know whether a communication device was successful or not unless the team collects data during the trial(s). Decide the criteria for success to determine if the device meets the student’s communication needs (i.e., the student initiates requests for desired item(s), the student makes social comments to peers during lunch, the student independently navigates to a new page set, the student answers “scripted questions”, the student combines 2 symbols, the student uses simple repair strategies, etc.). The team can create their own data collection sheet or use others such as those shown below.
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5. ASSESSMENT OF SPECIFIC EQUIPMENT AND TECHNIQUES: copy additional forms as needed
Fill in death, check items patient can accomplish, mark N/A for features not available on this device, and X for features not usable by this patient

DEVICE/SOFTWARE:

Length of Trial:
☐ Considered but rejected without trial due to:
☐ Inability to meet required features
☐ Lack of symbols to represent language
☐ Lack of voice output
☐ Limited ability to meet communication needs in the near future
☐ Weight or size limiting portability
☐ Small size not meeting physical or visual needs
☐ Other:
☐ Trial during evaluation section □ Longer trial (> 1 week)

Additional Information:

Technique To Enhance Communication:
☐ Discussion □ Response to questions □ Role play □ Functional activity (play, look at magazine)
☐ Other: (describe) ________________________________

Access Methods:
☐ Direct selection, with □ touch input only, with □ touch and grid
☐ Keyboard numbers of locations: □ 8 12 □ 20 30 □ 40 60 □ 100 □ 150
☐ P paradise assured scanning □ scanning □ joystick □ non-scan alternative
☐ Other:
☐ Describe settings, scanning pattern, etc.

RESULTS OF TRIAL

Range of Movement: Sufficient on □ Left □ Right □ Both □ Sufficient on □ 10 □ 20 □ 30 □ 40 □ 60 □ 100 □ 150
☐ Navigation: □ One page, no navigation □ Can navigate pages – list pages:
☐ Navigation Support: □ Independent □ No vision □ Auditory □ Hand over hand
☐ Visual cue button shape, highlight, target in center □ Partner assisted navigation

Type of Symbols: □ Object □ Photograph □ Symbol □ Word □ Spelling
☐ Page Format: □ Grid □ Free Form □ Scene
☐ Number of Symbols on Page: □ 2-4 □ 5-10 □ 20 □ 40 □ 60 □ 80
☐ Message Unit: □ Sentence □ Phrase □ Word □ Letter
☐ Mean Length of Utterance: □ 1 word □ 2 words □ 3-5 words using carrier phrases only
☐ Ex: I want… I see… I don’t… I like…
☐ >5 words independent combined
☐ on single page □ on other pages to complete sentence
☐ with navigation to other pages to complete sentence

Functions: □ Repeat □ respond □ comment □ Share information □ Reject
☐ Vocabulary Expansion: □ Multiple levels □ Dynamic Display □ Encodement
☐ Editing Functions: □ Rate page □ Delay □ Clear message
☐ Word Prediction: □ Abbreviation expansion □ Pre-stored messages

Conclusion:
☐ Most appropriate device at this time □ Meets some needs, but will continue looking


Related Assessments
In addition to standard language assessments, teams may also need to use specialized assessments to determine a student’s ability to access sites on a device, understand a symbol or even how to interpret their movements as intentional communication. Much of this information is going to be gained through informal observations, interviews and trials. However there are some specialized assessments and software programs that may provide specific information needed to justify funding of a device or even to help narrow down which device is a better match for the student.

Software programs are available to help determine if the student can use direct selection and if so, what size area he might be able to activate accurately. Compass® and Evaluware™ are designed to provide assessment activities for computer access which may also include AAC access. They help determine the best settings and preferences for the student based on motor/access such as range of motion, the size of button that a student can activate, the volume setting needed, switch use, and more. Both programs provide detailed reports at the completion of the assessment.

Stages assessment software is a seven-level developmental framework that assists teams in determining a learner’s cognitive and language abilities. The seven Stages are developmental in...
• Activating device (turning on/off), speed, accuracy
• Navigating to words and phrases
• Asking for assistance when needed

Linguistic Competence (language):
• Uses a range of communication functions
• Uses different overlays for different activities/settings
• Combines words/phrases to create messages

Social Competence
• Demonstrates turn-taking
• Maintains and expands a topic
• Attends to speaker
• Uses social language

Strategic Competence
• Repairs communication breakdowns with a variety of strategies
• Uses different vocabulary with different audiences
• Uses strategies to add something new to the conversation
Solution Selection: Tools & Strategies

Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the communication tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time or require additional staff training.

Matching Systems to the Student
Whenever selecting a communication system for a student, one must always consider its “features” in order to “match” them as much as possible to the skills/abilities of the student.

Device features may include:
- **Access**- scanning capabilities or direct selection sensitivity/pressure needed to activate the system, size of targets, spacing between targets, ease of changing overlays
- **Physical**- weight, size of the system/device, portability and mounting
- **Visual**- glare, symbol size, background color
- **Other**- compatibility/capability to interface with other technology (e.g., computers, printers, environmental controls), customer support, ease of programming and back-up, flexibility of grid set-ups, durability

There are resources that make this process easier. Many vendors provide matrices listing the features of their devices. When researching devices, visit vendor websites and/or use internet searches for comparison charts.

SET-BC (Special Education Technology-British Columbia) is a wonderful resource for AAC information, implementation. It has two grids comparing features of low tech and high tech communication devices.


AAC Tech Connect is a web site which provides pictures of speech generating devices according to category (e.g., dynamic display, simple digitized, text-to-speech, etc.). It also includes contact information for major AAC device manufacturers and their product information and brochures. Their Device Assistant provides a free trial for searching for AAC devices based on features with a side-by-side comparison.

Another resource is this set of protocols http://www.mydynamictherapy.com/tools_for_professionals.htm It correlates with the Medicare requirements for a Speech-Generating Device evaluation and is aligned with the four basic AAC competencies (linguistic, strategic, operational and social) that are identified by AAC-RERC as necessary for an individual to independently use an AAC device.

Operational Competence (operating the communication system):
Some of these alternative options include:

- *SmartSpeaker™* (an “add-on” speech synthesizer for AlphaSmart or Neo)
- *NEO2 with Text2Speech*
- *The Fusion*
- *Franklin Talking Dictionaries*
- *Handheld PDAs*

**Innovative AAC**

As general technology evolves and is made more accessible, there are those who push technology beyond its intended use. That holds true for innovative applications for AAC. “Smartphones” including the iPhone have been modeled as alternative communication options. Pre-stored messages and pictures can be activated for communication or for repair when there is a communication breakdown. Those wishing to see an iPhone being used as an AAC device can view this short movie at [http://homepage.mac.com/billziegler/iMovieTheater26.html](http://homepage.mac.com/billziegler/iMovieTheater26.html).

*Proloquo2Go™* is a new technology was designed for the iPhone/iPod touch. Features will include text, pictures and symbols.

Alexicom Tech is a web based AAC system using photos, downloaded symbols and synthesized speech. This system can be accessed any place where the internet is available and can be used on any device that is internet compatible (computer, cell phone, tablet, smartphone, etc.). For more information go to [alexicomtech.com](http://alexicomtech.com).

Other innovative applications include *(Speaking Pad)* can be loaded onto T-Mobile phones that provide text-to-speech, short text messages (SMS) can be sent to other’s cell phones using a standard e-mail account, *Skype™* users can type a message to an individual or group to communicate. More about these applications and more can be found at [http://accessibilityportal.org/augcom_ideas.htm](http://accessibilityportal.org/augcom_ideas.htm).
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Text based device with Speech Synthesis

Students who have good keyboarding and literacy skills can consider a text based speech generating device. These devices have a text window with either a membrane or physical keyboard. Text-to-speech devices allow the student to input virtually any message which the built in speech synthesizer will speak. Most of these devices have features to increase the user’s keyboarding speed such as word prediction and pre-stored messages which can be retrieved by using a keyboard combination or abbreviation. Some are designed with telephone or internet features. While all of the devices are designed to speak back the text, some devices such as the Allora can also record and play back digital messages. The Allora can record a natural sounding voice to greet others, gain attention, play back MP3 files and more. Access considerations including scanning capabilities and keyguards are built into many of the devices. All of the text based devices have a text window so that the student can see the message typed. The LightWRITER™ is distinct in offering dual LCD windows so that the communication partner can also see the text window even if they are facing the student. The communication partner interacting with a text-based AAC user might support the student by using rate enhancement strategies such as predicting the user’s message. That should only occur after the partner has asked the student for permission to predict messages and should always be followed up by confirming with the student that the partner’s prediction is correct.

It should be noted that many of the devices using a dynamic display mentioned earlier also have text-to-speech capabilities using an on-screen keyboard.

These are some of the characteristics of text based speech generating devices using a speech synthesizer:
- Anything the student types can be spoken by the device
- Requires good literacy skills including grammar, spelling and punctuation
- Most have rate enhancement capabilities such as abbreviation expansion, pre-stored messages and word &/or phrase prediction.

Some devices (not an inclusive list) that use a speech synthesizer for text-to-speech include:

- Allora
- DynaWrite
- Dubby
- Freedom Toughbook™ and Extreme™
- LightWRITER
- TalkingAid Wireless
- Polyana and PolyTABLET

Another option for students who have the capability to key in words and phrases for communication is a portable word processor with text-to-speech capabilities. These devices are not manufactured as augmentative communication devices, yet have been successfully used with some students who don’t need a dedicated device. Many have the capability of either holding pre-stored messages or having a document saved with frequently used messages for quick access. Some students won’t need the text-to-speech capabilities and would be comfortable inputting or showing pre-stored text in the device to a communication partner.
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- Boardmaker Plus
- Boardmaker with Speaking Dynamically Pro®
- Dynavox System Software
- Gus! Multimedia Speech System
- PTP-PC (Point to Pictures-PC)
- Say-it! SAM
- SpeechPRO
- Talking Overboard
- Talking Screen
- Tobii Communicator

Some dynamic display devices (not an inclusive list) include:
- Conversa™
- Dynavox devices
- Freedom LITE™
- Optimist series
- Say-it! SAM series
- TANGO!
- Tellus series
- TuffTalker
- Tobii C series

Some dynamic display devices with icon prediction:
- ECO™-14
- Springboard series
- Vanguard
- Vantage

Some Palm or handheld computer based dynamic display devices:
- ChatPC series
- Cyrano
- Palmtop series
- MV-1000
- Say-it! SAM Communicator
- Tellus Smart

Some dynamic display devices use eye-gaze technology for access
- Tobii CEye
- ERICA
- Eye Max
- Eye Tech TM series
the “zoom” feature included on many SGDs and communication software in which the selected or scanned symbol enlarges on the screen to give it more prominence.

SGDs with dynamic displays may use digitized recordings, synthetic voices or both. Those that have both types of voices have the most flexibility for the student’s personalized voice. They can use a high quality synthetic voice for most messages or to speak any text the student has written. But when the student wants to sound like their peers (use slang, tell a joke, greet their peers) a digitized recording of a same age and gender peer can be used. Some dynamic display devices utilize only digitized recordings that are limited to pre-loaded or customized messages. A student would not be able to “write” a word or message and have the device speak it. These are some of the common characteristics of dynamic display speech generating devices:

- Pictures, words or symbols are represented on a screen, which is capable of touch or switch activation. Activating a picture on the screen produces a message or advances to a new screen or window.
- The device automatically changes the picture displays and corresponding messages.
  - For example, to ask for a cheeseburger at McDonald’s…
    - the student selects the symbol for food from the main page
    - the device automatically changes to a new page of food symbols, which includes one representing fast food
    - the student selects the fast food symbol
    - the device produces a page with symbols representing several fast food restaurants
    - the student presses the symbol for McDonald’s
    - the device changes to a page that includes items on the McDonald’s menu
    - the student selects the symbol of the cheeseburger
  - It should be noted that if a student ALWAYS orders the same thing from the menu, a quicker link could be programmed which would require fewer page sets and activations
- May require significant programming to personalize.
- One icon or “hit” can be programmed to produce a single word, a phrase or a long message such as a pre-stored speech or class presentation.
- Students need to navigate to different pages to communicate about different topics.

Another option for teams who are considering a trial or assessment with a speech generating device with a dynamic display is installing software with those features on a computer. This software can be installed on desktop, laptop or tablet computers. Many teams use AAC software on a computer as a way to emulate a dedicated device. The software programs have the same capabilities such as scanning capabilities, linking to new pages or programs, student specific settings for number of display items, visual settings, etc. Computer systems can have touch-screens built into the monitor or added on as hardware. Tablet computers can have a touch-screen that rotates and lays flat on the keyboard, emulating an SGD.

A few examples (not an inclusive list) of speech generating software with dynamic displays include:
Unity® symbol

- Student may press two or three keys in sequence to produce a message.
  - Using the Unity language system, the student presses a button with a picture of a dog with a newspaper in its mouth followed by pushing a button with a picture of a question mark. The device speaks the message, “What’s new with you?”
- The student (and communication partner if supporting an early user) must be able to remember the message code sequences.

Some examples of devices that use icon sequencing are:
- Vanguard™ Plus
- Vantage™ series
- ECO™-14
- Chatbox® series
- SpringBoard™ series

Speech Generating Devices using Dynamic Displays

Speech generating devices with a dynamic display have a screen that changes overlays depending on the student’s input either through direct or indirect (scanning) selection. The screens can show letters, words, phrases, symbols, photos, visual scene displays, small screens (pop-ups), even videos. Each time the student activates a message, there is potential for the screen to change. The screens can range from very simple displays to extremely complex ones depending on the student’s linguistic, cognitive, physical and visual abilities. A dynamic display device may start with displays for an emerging communicator and advance in complexity as the student’s abilities change. Some practitioners feel that dynamic display devices reduce the cognitive load for communicators because the user doesn’t have to remember symbol sequences and simply needs to recognize the message they wish to communicate. However, there are features of dynamic displays that can challenge some students. Because the screen can potentially change with every “hit”, some students “get lost” trying to navigate to a message. It can be difficult for a student without literacy skills to convey a novel message. Motor planning is difficult for students with physical challenges because the symbols can change location depending on the screen. As with any speech generating device, each has features that may support one student while challenging another.

SGDs with dynamic displays can range in size and weight from very small hand-held PDA based communicators to those that are large and heavy that need to be secured to a wheel-chair mount. Many SGDs with dynamic displays have capabilities in addition to communication. Some have built in environmental controls so that the student can not only voice their request to change the channel on the TV, but also do it through their device! Some devices have a built in keyboard with word prediction capabilities. Others can be used for writing and sending emails, text messages or talking on the telephone. Many devices have advanced accessibility features including scanning capabilities with single or multiple switches, auditory scanning, head mouse access or eye gaze access. Some students with visual or attentional difficulties could benefit from...
message frame and move up to a frame with more messages as their skills advance. It also has the unique capability of using the 1 message frame for a visual scene display but programming more messages (8 or 16) on the display. The SuperTalker and L*E*O also have the capability to be programmed in different message formats and have similar window frames as the 7-Level Communication Builder. The L*E*O recognizes each overlay according to a bar code affixed to the back.

A few other examples (not an inclusive list) of SGDs with levels include:

- AdvOCAte
- Boardmaker® Activity Pad
- ChatBox
- DigiCom 2000
- FL4SH™
- Go Talk
- Hummingbird
- L*E*O
- Macaw
- Message Mate™
- SuperHawk
- Tech™ series

### Speech Generating Devices with Icon Sequencing

In a category by themselves are speech generating devices that use icon sequencing as a language base for communication. SGDs from the Prentke Romich Company use semantic compaction, a language method that sequences a small number of multi-meaning icons to form words, phrases or sentences. Devices range from those that are designed for emerging communicators to word-based complex communication systems. Common characteristics of systems which use semantic compaction are:

- Icons have multiple meanings. Beginning communicators start with one meaning per icon, but more complex concepts and meanings are added to the icons as the student’s linguistic competence increases. For instance the icon “elephant” may be associated with concepts of big, strong and gray.
- The core vocabulary does not change location which increases motor planning and automaticity for students with physical challenges.
- Language “rules” are built in and taught using icon sequencing and icon prediction that students use when learning new vocabulary.
- A small symbol set is used. Rather than adding new symbols, pages and navigation to the communication system, new concepts and meanings are added to the existing icons.
  - For example the yellow, smiley-faced sun icon is used for a beginning communicator for just the word "like" (everyone “likes” a nice sunny day!). Next the concepts of fun, yellow, and smile are added by combining the sun icon with other icons.
Speech Generating Devices with Levels

As student’s communication skills continue to develop, their communication opportunities need to grow with them. One way of providing more communication messages to students in different settings, activities or environments is to use a speech generating device with levels. Each level can be programmed with specific vocabulary for each activity. Overlays are created with both core and topic specific (fringe) vocabulary. Overlays are changed as the student changes activities. SGDs with levels can range from very simple to quite complex. They have many of the same features as simple SGDs, but are more powerful. They are battery operated, but some use rechargeable batteries or can be plugged into an electrical outlet. They also use digitized or recorded speech, but have a greatly increased memory (some with over an hour of recording time). Some of these devices also have the capability for both visual and auditory scanning. Many of the single level SGDs listed previously also have leveled versions. When considering the many different choices of SGDs with levels, remember to consider the student’s abilities, the messages the student will need to communicate in different environments, overlay storage, student’s ability to change overlays and the tasks the student needs to do. Common characteristics of SGDs with levels include:

- Capable of storing several layers of messages.
- Allows uses for multiple situations or environments, for example Level 1 can be programmed with messages appropriate for group or calendar time, Level 2 can hold messages for lunch, Level 3 could be vocabulary appropriate for social exchanges on the playground, Level 4 could be programmed to support content messages in the general education classroom, etc.
- Changing from level to level usually requires activating a button, sliding a switch, or otherwise indicating a new level and physically changing the picture overlay.

Some devices with levels have unique features that are worth mentioning. The SMART™ series from AMDI have interchangeable flash cards, which increases the memory capabilities of the device. Each flash card holds the memory for additional overlays. Commercially created sets of visual scene display overlays containing a flash card of professional voice recordings are available for purchase from AMDI. Each overlay is “recognized” by the device from a series of holes punched on the side of the overlay. When the matching flash card is installed, the device senses the hole pattern in each overlay as it is inserted.

One of the issues with leveled devices is the reliance on the communication partner to change overlays and levels when the student needs to communicate messages on a different level. The Bluebird II attempts to address that issue by attaching up to 10 overlays on the front of the device with common “binder rings”. The student flips to the desired overlays (colored tabs could be attached to make the pages more accessible) and presses the numbered button on the side keypad to select the level.

Other leveled devices with unique features are those with “window frames”/keyguards. The 7-Level Communication Builder has 7 levels and plastic window frames for 1, 2, 4, 8 or 16 messages. A student with emerging communication skills could start using the device with either the 1 or 2
Most if not all simple SGDs can be used with a variety of symbol representations ranging from real objects to picture communication symbols and some can be used with visual scene displays. These are some of the most common characteristics of simple SGDs:

- One set of messages (represented on one overlay) are available to the student at a time.
- Pressing a key (or cell) produces one message (single word or short phrase).
- May have one, two, four, sixteen, forty, or more buttons with messages.
- Overlay must be physically changed, and device reprogrammed to change the messages.
- Devices are lightweight and portable.
- Most are accessed by a direct selection. A few have scanning capabilities.
- Some have switch ports so that they can be activated by a switch or can act as a switch to activate a battery operated device such as an adapted toy.

Patrick occasionally pointed to symbols on a communication binder display to communicate during snack, but often needed a prompt to do so. His team decided to try a speech generating device for a number of reasons. They wondered if Patrick’s reluctance to use the snack symbols was because his requests might have been missed if the adult wasn’t looking at him, the communication board didn’t have the “power” that students with voice had and having a voice might be more motivating. They introduced a simple Cheap Talk 8© to Patrick during snack because it was easy to program, had up to 8 messages that were easy to access and visually defined and had the capability of recording single words or short phrases (37.5 seconds per message). At first they only programmed 4 messages (“I want…..” drink & snack item, “uh oh” and “all done”). They were careful to use a boy’s voice so that the device reflected Patrick’s age and gender. The team used the device themselves to request snack items, make a comment when they “spilled” and were finished with snack as a model to Patrick and other students. The Cheap Talk 8 was placed close to Patrick, but he was not required to use it. When he gestured or otherwise indicated a desire for an item or to be finished, an adult would verbalize that request while pressing the appropriate message on the device. Other students liked to use the device to make snack requests even if they were verbal and were encouraged to do so. After a few weeks of daily snack, the adult paused waiting to see if Patrick would make a request using the Cheap Talk 8. With minimal prompts, Patrick started using the device on a regular basis. As Patrick’s success built, other messages were added (“more”, “sit here”, “please”, “good”) and modeled by adults and peers. Patrick may soon be a candidate for a more advanced device.

Some examples (not an inclusive list) of simple speech generating devices include:

- 32 Message Communicator©
- BIGmack® and LITTLEmack™ Communicators
- Cheap Talk©
- HipTalk®
- iTalk
- MessageMate™
- Step-by-Step™ devices (Big and Little)
- Tech Four™
- VoicePal
else when trying aided language stimulation with a student. She later reported that he followed every movement with his eyes! Using a visual signal may help the student locate and track the symbol(s) being used. This can be very helpful for beginning communicators or to model for students who are starting to combine symbols/cells.

Examples of Communication Systems with pictures, symbols, letters & or words include:
- Object choice board
- Visual Scene Display
- Topic Board
- Activity Board
- Story board
- Communication wallet/book
- PODD (Pragmatically Organized Dynamic Display)
- “School to Home” board
- Eye gaze frames or boards
- PECS (Picture Exchange Communication System)

Just because a communication system is low tech does not mean that it has a low cognitive or linguistic load. Literate individuals who are AAC users may prefer a low tech alphabet or word board in addition to or instead of an SGD. In addition to the standard QWERTY configuration, low tech alphabet boards can be configured with either an alphabetic or frequency of occurrence configuration which may actually be easier for the student to find letters. Grammar based boards such as Word Power OnBoard include single letters and 100 of the most frequently used nouns, pronouns, verbs and adjectives in a color coded grammatical display.

Some examples (not an inclusive list) of symbol-based software include:
- Boardmaker
- Clicker®
- GoTalk Overlay Software
- Imagine Symbols (free download)
- Overboard
- PictureIt
- Picture Master Board Designer
- Tobii Symbol Mate

### Simple Speech Generating Devices

Simple speech generating devices (SGDs) or voice output devices bring voice to a student’s communication system. They range from SGDs that speak a single message to devices with multiple cells or message options and those that play “looped” messages. All devices in this category use digitized or recorded speech and are usually quite simple to program or change messages. They are battery operated and have recording times from a few seconds per recording to total recording times of up to 5 minutes.
Regardless of the type of display or system used, try to involve the student whenever possible in the design and use of it.

Mark is a student with limited verbal abilities in an Early Childhood class. The EC teacher has a number of communication boards and single symbols around the classroom to enhance communication opportunities. Every day at “closing” group, she and her paraprofessionals take time with each student using a “School to Home” communication board. The student marks on or otherwise indicates what he/she did that day, songs they sang, snacks eaten, peers played with, etc. The teacher left plenty of blank spaces on the board so that the adult could fill in specific details. While the students originally were passive participants when the adults reviewed their day, they quickly became actively involved; drawing detailed lines between friends and activities, using different colored markers to indicate “really fun” activities, etc. The parents from the classroom were thrilled because as Mark’s mom put it “For the first time, when I ask Mark what he did today, he can tell me”.


Simple communication boards can also be used during “aided language stimulation” (Goosens’, 1989). Aided language stimulation is the process in which the partner points to picture symbols on a simple communication board in conjunction with ongoing verbal language stimulation. Some facilitators use a pen flashlight to highlight the symbol/cell or use a pointing device as they verbalize the message. One teacher “grabbed” a candy cane pen when she couldn’t find anything
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- Imposes a high degree of processing
  - Visual scene layout (either a digital picture of a familiar location such as the child’s bedroom or a “generic” scene of a common location like a public restroom)
  - Vocabulary is presented in context within the scene
  - Concepts are linked visually and conceptually
- Hybrid layout
  - Visual scene display with some vocabulary presented in a grid-type layout in the scene

Sample visual scene of a bathroom. Messages are “embedded” in the scene.

![Sample visual scene of a bathroom. Messages are “embedded” in the scene.](image)

Imagine Symbols©

Light indicates that traditionally practitioners have withheld vocabulary for emerging communicators when the navigational and or conceptual difficulty was too high for the student. Visual scenes, while reducing navigational demands, allows emerging communicators to have access to concepts and vocabulary in a familiar context. In fact, “Very young children are more accurate using visual scene layouts than traditional grid layouts” (Light, 2005, p. 26). Visual scene displays can be developed for low tech/paper communication displays, adapted to be used in mid-tech voice output devices and are integrated into many of the higher tech speech generating devices.

PECS (Picture Exchange Communication System) is a low-tech communication system developed by Bondy and Frost in 1985 to teach children and adults with autism and other communication deficits to initiate communication. It is a systematic program that starts with students exchanging a picture or symbol of a desired item with a communication partner. Specific prompts and reinforcement strategies are utilized in the PECS program. PECS requires specific training in order to follow the protocols in the program. More information about PECS can be found at [http://www.pecs.com/whatispecs.htm](http://www.pecs.com/whatispecs.htm). PECS should not be confused with PCS (Picture Communication Symbols) which are the actual picture symbols used for communicating. A device that may be considered as a “bridge” between a traditional PECS system and a communication system using voice is the Logan™ Proxtalker™. The device has five word zone buttons that attaches to a binder containing sound “tags”. The student places the tags on the buttons, then presses the button to speak the message. The sound tags use radio frequencies making it easy to record new messages or change messages.
Some students may need a “bridge” between three dimensional real objects and two dimensional representations. TOBIs (True Object Based Icons) may act as that bridge. TOBIs can be any picture or symbol which is cut out along the actual shape or outline. It is often mounted on a foam backing or other thick material to add dimensionality.

Examples of TOBIs

**Communication System with pictures, symbols, letters & or words**

One does not have to start with expensive or high tech augmentative communication devices to communicate effectively with others. In fact, one of the advantages of “low tech” systems is that they require both the student and their communication partner to be actively involved in the communication interaction. Low tech communication boards are not difficult to create. Simple communication boards with pictures of the people and places in a student’s environment can be made using a digital camera. For students who may be ready to use symbols, Boardmaker is a tool for educators or parents to create communication boards about a variety of topics and activities. Paper communication boards can be made with digital pictures, symbols, words/letters or a combination.

**Communication Boards**

- Communication boards may consist of one, a few, or many cells containing pictures, symbols, words, phrases, letters or any combination.
- The cells may be of various sizes, even on the same board depending upon student ability, visual tracking, ability to find important messages, etc. For example a student may have limited motor control in one quadrant. Those cells may be larger than the cells on the rest of the board.
- Paper boards may be used as an AAC option for an emerging communicator or as a back-up to a more complex voice output device.
- Paper boards may also be beneficial for a student during specific activities in the community or in congested and/or noisy environments where a voice output device may not be effective or practical (i.e. swimming pool).

Various displays or arrangements may be used to increase “effectiveness” of communication interactions. Janice Light (2005) has identified three of the most common layouts:

- Traditional grid layout
  - Vocabulary is represented with symbols in “boxes”
  - Language is taken out of context and is separated
Assistive Technology for Continuum for Communication

Concrete Representation

Concrete objects or parts of an object can be used when a student does not seem to understand photos or symbols or is visually impaired. The object represents the one that the student will actually use. A clear make-up bag might hold a variety of objects that a student enjoys during sensory activities such as lotion, a brush, powder, hand-held massager, etc. The student can select that activity after seeing the items in the clear bag and then choose which one they want to do first from an array of choices. When the student chooses lotion, use a different lotion bottle than the one in the sensory bag. As the student’s skills progress, photos or symbols can be affixed to the representative objects to help the student transition to a photo or symbol representation.

Calendar box- A calendar box is a way of representing a schedule. A box is segmented so that an object can be placed in each compartment. It can be set up in an independent or dependent sequence according to the activity. Each item in the box represents an activity or step. When all sections have been emptied the task is complete. An example might be a “grooming box” using interlocking Rubbermaid® trays. Each tray could contain items such as liquid soap, washcloth & hand towel, toothpaste & toothbrush, hair brush, etc. The activity is a combination of dependent (wash your hands before you brush your teeth) and independent (can brush your hair or wash your face) activities. As the student completes each activity, the object is placed in the “all done” container. The communication partner uses the calendar box and objects in it to facilitate communication by the student: making requests, continuances, comments and other communicative functions. The student does not use the actual items in the calendar box. Each item serves as a symbolic representation which may eventually be replaced with a less concrete symbol.

Tangible symbols- Tangible symbols are concrete representations of concepts/objects/activities about which the student needs to communicate. If a student wants to request a cup to drink, the tangible symbol may be a whole cup, the plastic handle of a cup, a piece of hard plastic (an associated object that represents cup), or more standard representations. Whatever is selected as a tangible symbol must be chosen from the perspective of the student and “transparent” to him/her. The advantage of 3-D tangible symbols are that students with visual disabilities can discriminate between the symbols even if they cannot read Braille. Tangible symbols can be: whole objects, parts of objects, associated objects, textures or shapes, line drawings, or photographs. More information about tangible symbols can be found at http://www.ohsu.edu/oidd/d21/ts/index.cfm. Evidence based research by Rowland and Schweigert (2000) supporting the use of tangible symbols can be found at the OSEP Ideas that Work website http://www.osepideasthatwork.org/toolkit/InstPract_tan_sym.asp

Real objects and miniatures- Real objects are just that, the real object. An example of using real objects would be having sandwich material on a communication display. When the student points to the bread he/she gets a piece of bread. The real object represents the actual item (i.e., the student gets a new piece of bread, not the one displayed on the communication board). Miniatures of objects may be a replica of the object the child is requesting or commenting on. Caution must be used when using miniatures to represent an object or activity. A miniature car may not look like the student’s family vehicle and even if it does, may not be easily recognized as such by a student with a cognitive impairment. If a student has poor vision, the relationship between the actual object and the miniature is poor and largely reliant on good visual perception.
A CONTINUUM OF CONSIDERATIONS FOR ASSISTIVE TECHNOLOGY

For Communication

Concrete Representation

Communication System with pictures, symbols, letters and/or words

Simple speech generating device

Speech generating device with levels

Speech generating device with icon sequencing  Speech generating device with dynamic display

Text based device with speech synthesis
(Environment and Task). Kirsten initially needed prompts to activate the next message on her device, but gradually learned to sustain an interaction, wait for her communication turn, look at her communication partners and other important functional communicative skills.

**Narrowing the Focus**

As a team, select student communication tasks that will have the most impact on his/her communication success.

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.

**Solution Generation: Tools/Strategies**

As a team, brainstorm and write on chart paper any assistive technologies &/or strategies you think will assist the student in successfully communicating.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for communication. The continuum is generally organized from low to high assistive technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of assistive technology.
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Tasks

As a team, discuss and write on chart paper the communicative tasks that the student needs to do.

One of the most important questions when assessing a student’s need for assistive technology is: What are the tasks the student needs to do? In this instance what does the student need to communicate? These are some questions to consider:

Communication Functions- A web search of communication functions results in a variety of definitions and lists. For our purposes, Janice Light (2005) identifies the following wide range of communication functions:

- Wants and needs.
- Social interaction.
- Joint attention leading to Sharing Information.

Additionally we want to build within those functions enough vocabulary to support a variety of topics, semantic concepts, greater complexity within messages, and for some students the phonological skills for future literacy development.

Other functional communication tasks that teams may want to consider include:

- Initiating - Asking for something, starting a communication interaction (“Can I have …”, “Let’s do this together”)
- Continuing - Using specific vocabulary to keep the interaction going (“Uh-huh”, “more”, “No way”, “Really?”)
- Ending - “All done”, “Good bye”, “See ya”
- Repairing – Asking “What?”, repeating the message or using messages that indicate a communication breakdown (“What I want to say is not on this board.”, “Did you understand what I said?”), “I didn’t get that.”)
- Requesting – “Can I have”, “want…”, “I’m really thirsty.”
- Denials/rejection – “NO”, “Don’t want”
- Communication turn taking – Answering and asking questions, sequencing messages, maintaining the topic, and waiting for communication turn.
- Social Etiquette - Brief interactions, greetings and closings, age appropriate etiquette (e.g. Please, Thank you, “Wassup”) depending on the communication partner.
- Social Closeness - smiles, head nods, eye contact, hugs or handshakes.

Kirsten is a 17 year old teenager in a CD classroom. She has had a long history of using low tech AAC devices, primarily for requesting (wants/needs) items or activities. She is very successful communicating those messages (Student Abilities), but her team wants her to do more to sustain an interaction with others (Task). They realized that when Kirsten requested and then received an item (“more juice please”), the communication interaction stopped. They needed to give her the opportunity and vocabulary (Environment) to sustain a social interaction (Task). They started by programming simple social scripts on her LITTLE step-by-step (“Guess what I did last night.” “I helped make my favorite snack.” “Can you guess what it was?” “I helped make brownies.” “What kind of brownies do you like?” “Yum!”). They also scheduled a social “talk time” within the school day in which available staff and students gathered in an informal area to socialize.
• Everyone feels safe enough to listen, understand and express themselves.

• Enables learners to develop their social, emotional and academic potential by reducing or removing barriers to communication.

• Provides an accessible learning environment for everyone.

For examples, pictures and more about the how to create a communication friendly engineered environment, visit http://www.symbolsinclusionproject.org/index.htm

**Assistive Technology: past and present**

What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not always discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Changes in skill development, maturity, a different environment or other factors may make all the difference. If the student is currently using assistive technology note the AT used, location, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low- and high-tech AT supports.

**Sensory Considerations**

Different environments have varying levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student’s learning, identify the sensory levels in each environment.

**Other Environmental Considerations**

There are many other environmental challenges and concerns that impact a student's ability to effectively communicate. Background noise may make a voice output device ineffective in the lunchroom so that staff may need to consider a low-tech paper alternative. The room arrangement in some classrooms may need to be adjusted so that the student isn't next to a window with glare. When staff is not available to support the student, peers or peer helpers may need to be assigned as communication partners.
All of these examples of communication supports in the environment might fit into the general category of creating a communication rich engineered environment. Goosens’, Crain and Elder first introduced the concept of engineering environments in 1994. Their concept has continued to develop with the field. An engineered environment has visual supports including symbols, words, signage for adults, students, readers, non-readers, visitors, staff, virtually anyone who enters the environment. A universally accessible environment that is communication-based is one in which:
Daily Schedule
When a student does not seem to understand or anticipate a routine schedule or the steps of an activity, try an object or picture schedule. A schedule using objects, parts of objects, pictures or symbols can be a useful tool to help a student begin to understand and anticipate the events of the day or the steps of a specific activity. The items are presented in the order in which they will occur (or need to be completed). They may be crossed out, covered up, or put away as each one is completed. Digital cameras are useful for making picture schedules of the various locations or activities of the day. Boardmaker, Picture It© and Tobii SymbolMate are good tools for creating schedules for a student who uses symbols. These software programs contain libraries of picture symbols to give a visual representation of each step in the student’s schedule. A schedule can be just one of the many components in a student's communication system about their environment. It may be that the primary purpose for the schedule is for self-regulation or receptive language. But, the student may also use the daily schedule to ask questions about an activity, person or location. Daily schedules are useful across environments whether it is at school, home or in the community. They can serve as a way for a student to “report” happenings in different environments to different partners (e.g., tell mom what happened at school today, tell the paraprofessional what happened on the bus, etc.) in a motivating and functional way. Schedules can be presented in a paper or digital form.

These schedules are examples from Special Education Technology - British Columbia - Assistive Technology for K-12 Students (http://www.setbc.org/)

Home to School Schedule

It can help to leave some “blank” messages or cells on a student’s system so that specific vocabulary can be added “on the fly” for new fringe messages. The communication partner can carry a packet of “sticky notes” with them to add quick content, environmental or activity specific vocabulary. Paper boards can be easily changed when they are placed in plastic sheet protectors rather than laminated. If an emerging communicator only has a few messages on their paper board, put those messages in their final location and have blank cells on the rest of the board. You can add new vocabulary easily without changing the location or “look” of the communication board. Slide protector sheets and or baseball cardholders also work well for students with a small vocabulary set. “Scripts” such as the sample ones included in Communication Displays for Engineered Preschool Environments (Goossen’s, Crain, & Elder 1994) give communication partners an idea of how to communicate with a student using a topic or activity communication display. Check vocabulary and its placement on a communication board by trying to complete the activity using only the student’s vocabulary set. Can you do it? What is missing?

The student’s communication device does not always need to be utilized for teaching concepts and curriculum. Remember that the device is the student’s voice, not a chalkboard! Use low- to high-tech methods to teach and use curriculum-based vocabulary such as sticky notes, dry erase boards, note cards, computer programs, white boards, etc. If a communication device is used primarily for “drill and practice”, the student may view it as “work” and not for communication and may eventually abandon it.
computer) is compatible with the system and available to the student. However, there are many times during the student's day when a “low-tech” alternative or back-up system is more appropriate or easier to use than the student's high tech system. The typical AAC user requires multiple components in their communication system to meet his/her communication needs throughout the day in various environments and in differing situations. The particular device used to participate in academic activities within a regular education class may differ from the device or tool used to communicate at lunch, on the playground, or during swimming lessons. Also remember that the more advanced the system is, the more likely that repairs will require expert technicians. When a student's device is sent to the company for repairs, it may be unavailable for weeks. A low-tech "back-up" is essential during that period and can be as simple as printing paper versions of the student’s high tech overlays.

Vocabulary to Support the Environment
Just as the tools need to match the environment, so does the vocabulary. Vocabulary selection to support environments is a dynamic ever-changing process. As the student changes interests, classroom topics shift, and the student participates in different activities and environments, the vocabulary on their communication system needs to change. It should have a combination of both “core” and “fringe” vocabulary. “Core” messages are those words or phrases that are used across environments giving the student quick access to frequently used messages. Core messages include social comments, questions, continuing or stopping an activity, repair messages (“oops”) and vocabulary specific to the student. “Fringe” vocabulary messages are specific to a topic or environment (lunch room conversation), with content rich and unique. Students may use fringe vocabulary repeatedly in those specific environments, but not anywhere else. Even emerging communicators should have access to both types of vocabulary. Fringe vocabulary for beginning communicators could include songs for a preschooler or CDs for a high school student with song names, as well as messages to “play it again”, “do something else” and “stop”. Gail Tatenhove (2007) more thoroughly describes the difference between core and fringe vocabulary with suggested core language vocabulary lists, normal language development and how to apply that information with AAC users in the web article Normal Language Development, Generative Language & AAC. ISAAC (International Society for Augmentative and Alternative Communication) also has core vocabulary lists that can be downloaded from http://www.aacawareness.org/Vocabulary.html. When a student is in different environments with varying curricular vocabulary, it can be helpful to survey regular and special education teachers and the student’s peers about the words, phrases and content specific vocabulary the student needs to use.
jobs, art, cooking, etc. Some students may request choices during snack or lunch (i.e., what to eat first, which utensil to use, milk in a carton or cup), request more of an item (more paint, glue, glitter, during an art activity), reject undesired items, request continuance (read the story again), indicate cessation of an activity (all done, clean-up), make comments or ask questions about the activity (Borrrring! Why did he do that?) or any number of specific messages that relate to an activity, person or situation. After a student begins to communicate messages in one situation, expand the opportunities (and vocabulary) throughout the day. Remember to keep in mind that the messages need to be reinforcing to the student rather than messages that adults want students to communicate (i.e., request to use the bathroom).

If presenting multiple communication opportunities during the student’s day does not increase the student’s spontaneous messages, analyze the environment. The environment may be hindering rather than encouraging communication.

Justin is a preschooler who rarely spontaneously communicates. He is very active, independent and has many age appropriate skills. He just doesn’t “talk” unless he is prompted to do so (Student Abilities). In Justin’s classroom, each student has jobs that they are responsible for. One of Justin’s favorite jobs is getting ready for snack. He sets the table with placemats, napkins, utensils... all of which are easily accessible to him. His team decided to limit the accessibility of the necessary snack supplies for Justin by putting them in the “teacher’s cabinet” or on high shelves (Environment). Now Justin has to ask an adult for the placemats, napkins, straws, etc. Sometimes the adult sabotages the activity/environment even more by handing Justin an almost empty container of straws or an inappropriate utensil for the snack (forks for cereal). His team utilizes the prompt hierarchy mentioned previously so that every team member only prompts Justin as much as necessary. He has become much more vocal; spontaneously requests the necessary supplies, makes occasional comments about snack and is starting to become more spontaneous in other activities and environments.

Sometimes when a student is very independent, it reduces the necessity for communication with others. For those students use environmental strategies such as

- Sabotage.
- Limiting the amount of materials the student has access to.
- Materials are visible, but out of reach.
- Highly motivating materials are available, but inaccessible (piece of candy in a tightly closed clear container).
- “Accidentally” give student something he/she doesn’t like (water instead of juice).
- “Misplace” necessary equipment.
- “Forget” to do something.

You are only limited by your creativity to make environmental communication opportunities.

**Tools/Technology Availability in the Environment**

When considering the environment, don’t forget to find out which communication tools are available in each setting and if those tools are appropriate. When high-tech systems are used to access the curriculum, make sure that any additional technology (e.g., keyboard, printer,
(high- or low-tech) with all of the symbols is not enough. Students need to see how one uses the symbols to respond to others, initiate topics, make comments, answer questions, and make jokes… all of the different social ways we communicate. One way to do this is to use the Aided Language stimulation technique.

**Aided Language Stimulation** is a technique developed by Goosens’, Crain and Elder (1994) to improve a student’s expressive and receptive language skills. The communication partner simultaneously points to symbols on the student’s communication system while conversing with them. This provides the student with a model for using symbols to communicate. It is important for students to see how “traditional communicators” use a symbolic system to communicate. It also helps the communication partners use the system in a real and functional way to identify missing vocabulary and organizational flaws. A small flashlight, laser pointer, or even a pen can be used to point to the symbols. The advantage of using light cueing is that it can be easily faded and does not obstruct the student’s view of their symbols. Light cueing can also be provided along a prompt hierarchy with a general progression as follows:

- Sweep of light in the general location of the message.
- Short flash of light directly on the message.
- Fixed light directly on the message.

**Daily Communication Opportunities**

Communication opportunities are present or can be created throughout the student’s day within natural routines from the time the student gets up in the morning until they go to bed at night. The student can choose what to wear or eat for breakfast; say “Good morning” to a teacher or “Wassup?” to a friend; announce a message from home and communicate social, informational, and "choice" messages throughout the day. In order for the student to maximize the use of their communication system and skills, the team should generate a list of all possible communication opportunities that occur. The easiest way to do that is to list all of the activities that happen throughout a student’s “typical” day. Identify those that offer communication opportunities for the student to initiate topics or comments, make requests, share information or knowledge, make social “chit-chat”; in other words, the standard communication opportunities we all have. Prioritize your list according to the following:

- Motivating to the student.
- Frequency of occurrence.
- Potential partners.
- Vocabulary.
- Staff availability.
- Device accessibility.
- Time.
- Student specific factors (e.g., fatigue, behavior).
- Environmental factors (e.g., noise, glare, water).

After generating that list you should choose one or two communication opportunities for the team’s initial focus. If possible concentrate on communication opportunities within the natural routine that occur 3-4 times a day and at least 3-5 times a week. It is easier to focus on natural communication opportunities that occur during a single activity such as snack, grooming, work...
the communication partner pauses, it gives the student the necessary time to process information and to formulate a communication message (McCloskey & Fonner, 1999-2000).

1. **Environmental Cue** (e.g., snack is on the table, but student can’t reach it.)
   The Environmental Cue signals a communication opportunity for the student. The environmental cue is set up, the communication partner **pauses**, looks expectantly at the student and waits for the student to initiate communication. If the student initiates, the partner provides **Descriptive Feedback** (e.g. “You asked for milk, here’s some chocolate milk.”). If the student does not initiate, proceed to step 2.

   **A Note about Pausing:** The partner should provide the student with the necessary time to process the request/statement and then respond. The amount of “pause time” will depend on the student’s ability to understand information and the time needed to physically access their response. During the pause time, it is important that the adult does not repeat or restate the request so that the student can concentrate on the original message.

2. **Open question** (e.g., “What do you want?”)
   The communication partner asks an open question **one time.** The communication partner **pauses**, looks expectantly at the student and waits for the student to initiate communication. If the student responds, provide **Descriptive Feedback** (e.g. “You asked for milk, here’s your milk.”). If the student does not initiate, proceed to step 3.

3. **Partial Prompt** or **Request for Communication** (e.g., “Do you want milk or juice?” or “Tell me what you want.”)
   The partial prompt or request for communication is stated by the partner **only once.** The communication partner **pauses**, looks expectantly at the student and waits for the student to initiate communication. If the student responds, provide **Descriptive Feedback** (e.g. “You asked for milk, here’s more milk.”). If the student does not initiate, proceed to step 4.

4. **Full Model** (e.g. partner says “I want chocolate milk.” while pointing to those symbols on the communication system)
   The communication partner provides the full model. The partner should still **pause** and wait to see if the student responds or imitates the model. If he does, provide **Descriptive Feedback.** Even if the student does not imitate the full model, provide the requested item/action as if he did.

   *Repeat the prompt hierarchy from the beginning as many times during an activity as possible so that the student starts to understand the expectation for initiated communication.

Communication by the student can be as simple as gazing to a choice or selecting a picture communication symbol from a binder, or as complex as creating a novel comment or asking content related questions using a high tech speech generating device. Communication partners should respond to the exchange in a natural manner (e.g., “Oh, you want to go on the swing? Let me get you out of your chair” vs. “good asking”). Partners also have a responsibility to model appropriate language using the student’s communication system. Simply providing a system
Arranging the environment to increase the opportunities for communication.

Communication Partners

Communication partners are part of every student’s environment and social network (Blackstone, 2003). One of the first steps in enhancing communication in the environment is to identify the student's communication partners. There should be a healthy mix of adults, family members and peers. Partners should come from a variety of sources including school, community, family, friends, health practitioners and others. Partners’ behaviors, attitudes, and expectations play a significant role in how much and what types of communication the student is motivated to demonstrate. Anyone who interacts with the student should expect him or her to communicate. Students will develop more and better communication competence as they interact with partners in their social network. The Social Networks Inventory (Blackstone, Hunt-Berg, 2003) is an assessment that recognizes that communication varies across partners and environments. It can assist teams who are struggling with providing appropriate communication strategies across contexts.

Partner Behaviors and Attitudes

Recent literature suggests that when a student is an AAC user, the relationship with their communication partner is “lopsided”. Partners of AAC users tend to dominate the interaction and ask primarily yes/no questions. Light, Binger & Kelford-Smith (1994) also suggest that adult partners provide very few opportunities for the student to initiate or even make comments that pertain to the conversational topic. They tend to focus more on the AAC device than the child’s communication (i.e., “Use your talker”). Also, children who use AAC typically are described as “passive communicators” who rarely initiate messages and respond infrequently with limited vocabulary (Kent-Walsh & Rosa-Lugo, 2006). It is easy to conclude that communication partner behaviors directly impact the student’s communication behaviors and skills. Adult behaviors, attitudes and expectations may unwittingly create obstacles for the student’s success. One resource for increasing awareness of participation in the regular curriculum is Project Participate (<http://www.projectparticipate.org/>). The project promotes the participation of students in all environments, from young children playing in early childhood environments to adolescents grappling with high school. Teams can use their resources, curricular ideas, inclusion strategies and forms to help the team reduce barriers to the student’s participation. It is imperative that we analyze our own behaviors rather than focusing only on the student. Familiar adult partners frequently anticipate the student’s wants/needs, next activity, message, recreational choice, etc. Unfortunately, when we anticipate a student’s communication message over time, it begins to erode the student’s desire to communicate independently and promotes “learned helplessness”. One way to break that cycle is for communication partners to pause and wait for the student to communicate (even when they “know” what the student is going to say). Sometimes using a “least to most” prompt hierarchy can give partners a guide for when they should provide a model for the student and when they should wait.

Prompt Hierarchy - The prompt hierarchy listed below is employed when students do not consistently initiate communication without a prompt. The prompt hierarchy progresses from least to most directive and provides a structure that encourages communication. The most difficult component of the prompt hierarchy for communication partners is remembering to pause. When
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- Fluorescent lighting versus full spectrum lighting
- Classroom and background noise
- Awareness of physical space
- Other individual specific sensitivities

Although these factors are not directly related to communication, they impact the student’s ability to focus on instruction and learning so should always be considered. The student’s communication system could be customized to reduce or increase sensory stimulation as appropriate for the student.

Other Considerations
Each student will have unique challenges and concerns that may not be directly related to communication yet greatly impact which system is chosen. Factors such as fatigue level and student behavior should be considered. Some students are more alert and/or physically able at certain times of the day/week. Many times inappropriate behaviors are a form of communication or a response to communication frustration. Given an appropriate system, training in use, and proper vocabulary and support, inappropriate behaviors may decrease or be eliminated. In the meantime, include behavioral considerations in your decision making process.

Other considerations may include visual concerns, including both acuity and processing. Larger symbols, darker or colored borders/symbols, increased spacing between symbols, including “blanks” for more visual spacing, using the “zoom” feature on electronic devices are all options that could assist a student with visual regard. Some students may benefit from a tactile cue on paperboards or overlays. If a student is not responding to a communication system or specific symbol, consider whether visual modifications could make a difference.

Every student’s communication system and needs will vary. No one system can possibly meet every communication situation the student will encounter. Students should be provided with as many different communication options as possible and taught when and where to use each one.

Environmental Concerns
As a team, discuss and write on chart paper any environmental considerations that might impact the student’s communication such as auditory or visual distracters, placement in the classroom, number of different communication environments or any other environmental impacts.

Each student needs to communicate in various environments including home, school and/or community. Environmental considerations include a variety of factors such as communication partners and their skills as a communication facilitator, daily schedules, and availability of tools and technology. Other challenges that factor into the environment can include: background noise, room arrangement, glare, weather, power source or staff availability to name a few. Each environment will have its own unique set of considerations. Basics for creating a successful communication environment include:

- Expectations for the student to communicate.
- Identifying and using communication opportunities within natural routines.
Chapter 3 – Assistive Technology for Communication

- Initial letters of words.

Janice Light and David McNaughton (2006) have completed one study about the literacy requirements for students who use AAC and are still investigating further issues through AAC-RERC (http://aac-rerc.psu.edu/index-1023.php.html). A summary of their findings follows:

- We need to allow sufficient time for literacy instruction for AAC users.
  - The average student in 1st-3rd grade receives 90 minutes of literacy instruction.
  - The AAC user needs to receive at least the minimum with up to 40 minutes more of literacy instruction.

- Instructional content should be based on the National Reading Panel’s recommendations (2000) and should include:
  - Direct instruction in basic skills.
  - Reading interesting text to students.
  - Phonological awareness skills.
  - Letter-sound correspondence.
  - Reading and understanding books and other text.
  - Early writing experiences.

Further studies have resulted in the development of literacy instruction curriculum. Accessible Literacy Learning (ALL) is specifically designed for the AAC user and based on the work of Light and McNaughton (2006). Tango to Literacy is another instructional literacy curriculum that has been developed specifically for the AAC user.

Students can use their communication device for writing as part of their literacy instruction and for written communication. Many of the “high tech” communication systems are built on a computer platform with all the standard capabilities including word processing, word prediction and more. If the student will be using their communication device for written output, please review the ASNAT chapters on access and composition of writing. Also review the operating system requirements of the communication system to check for compatibility with computers, printers, Internet accessibility, etc. For more information about literacy, please refer to the ASNAT Reading Chapter. For specific information about literacy assessment and instruction for students with complex communication needs, a new resource is available by Soto and Zangari (2009) Practically Speaking: Language, Literacy & Academic Development for Students with AAC Needs.

Sensory Considerations
Some students are adversely affected by environmental stimulation that others can filter out or ignore. Some common factors that can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as:

- Voice type and volume on the device
- Velcro noise and/or sensation
- Weight of the communication system
- Tactile sensations
- Visual layout (e.g., color, white space, font style, glare)
- Switch feedback (audible click)
An alternative access method for students with physical limitations is Morse code. Compared to some of the difficulties students encounter with scanning, Morse code may be a viable alternative. Many AAC devices have removed Morse code as an input method, but *Words Plus* has continued to support that input method. If a student can accurately use two switches, Morse code can be used with the proper devices.

Digital switches offer more flexibility in programming, sensitivity and placement than most mechanical switches. For more information about switch options including digital switch capabilities, please see Chapter 4 – Assistive Technology for Computer Access.

Regardless of the switch type or location, it is important to stress the communication activity and message, not the switch activation. Adults can frequently be heard prompting a student to “hit the switch”. Thus, “hitting the switch” becomes the focus of the activity instead of the *message* the switch activates. Use natural cues such as expectantly waiting for a student to activate the switch or when a full model is necessary, use cues that focus on the communication such as “tell me”.

**Making Choices**

The student’s ability to make choices increases their communication options, allows them to control their environment, increases engagement and improves their behavior (Stafford, 2005). The student can make choices using real objects, photos, line drawings, or using a speech-generating device. Another alternative for “choice making” is when the communication partner presents auditory choices. Choice making options should be presented throughout the day. Whenever possible present as many choice options to the student as they can cognitively, physically and visually discriminate between. When a student is only given two choices, it is difficult to know whether the student really selected that choice. When there are only two choices, the **range** of chance is between 25%-75% that the student will select the preferred item. When the communication partner increases the number of choices for the student, there is a better chance that the student is making a “real” choice. Choices can and should include more than “milk” or “juice”. They can be integrated into all classroom activities, including choices such as who to sit next to, what to do next, who to walk by, which book to read, who answers the next question, who is assigned to which job, which route to go to the library, what sweater to wear, what to eat next… the list is unlimited!

**Literacy**

When a student is using a communication system, literacy skills need to be considered. All symbols should have clear text labels for both the student and the communication partner. Little is known about how communication symbols affect literacy development (Light, 2003). However, when students use symbols as their communication system, they are using a different mode of expressive communication (written, graphical, pictorial) than a “typical” communicator. Therefore, consideration should be given to their current skill levels as well as their ability to learn:

- Phonemes in words.
- Sight vocabulary of words.
- Sight vocabulary of symbols (e.g., stop sign).
- Environmental print.
**Linear** - the scan indicator moves item by item in a linear pattern.

**Row-Column** – after scanning starts, one row at a time is highlighted. When the row with the desired item is highlighted, the student activates the switch and each item in that row is then individually scanned.

**Block** - scan is similar to Row-Column, but instead of presenting one row at a time, a particular group of items (block) is highlighted. When that group is selected, the device automatically scans a smaller grouping such as a row or individual items.

**Auditory** - used in conjunction with any of the visual scan patterns. The student hears a message prompt.

The scan mode refers to the way the switch is used to start, stop, and maintain the scan and to select the target item.

**Automatic Scanning** - The student activates and releases the switch to start the scan and then waits while each item is presented. The device automatically advances in the set scan pattern and speed. When the desired message is reached, the student activates the switch again to select the message, which is then spoken by the device.

**Inverse Scanning** - The student maintains or holds the switch while the items are presented in the set scan pattern and speed. The student lifts up or releases the switch when the desired message is reached. The device automatically speaks the message.

**Step Scanning** - The switch is activated and re-activated to advance the cursor item by item. Once the desired item is highlighted, the student ceases activating the switch for a specified length of time and the message is spoken by the device.

**2 Switch Step Scanning** - One switch advances the scan with each activation, the second switch (in a different location) selects the item. For more information about this scanning technique see the article on Linda Burkhardt’s website, *Two Switches for Success: Access for Children with Severe Physical and/or Multiple Challenges* (http://www.lburkhardt.com/handouts.htm).

While scanning might be less physically demanding for some students, the cognitive demands are usually higher than when a student directly selects the message. The student must visually locate the target message, maintain attention to the display, anticipate when the scan indicator will highlight the target message (when using automatic or inverse patterns), physically ready their body to activate the switch at the correct time, and then activate the switch when the target message/row/column/block is highlighted. If the student “misses” the message, not only does the entire procedure need to be repeated, but the student must wait for the scanning pattern to start from the beginning. Increasing the scanning speed on a device can reduce the amount of time it takes to scan the entire array, but may make it more difficult for the student to accurately activate the switch. For more information please refer to the access chapter in this manual. Not every scanning capable device offers all of the scanning options mentioned such as 2 switch scanning, auditory prompts, row/column scanning, etc. Some devices highlight the entire message symbol to let the student know where the scanning indicator is, other devices only use a small light to indicate the scan indicator location. These are all important factors that need to be considered when setting up a scanning system for a student.
Computer-based eye gaze systems use a camera to “read” the student’s eye movements and select the message based on the length of time the student’s eyes dwell or stay on a message. A “head-mouse or Head Pointer” system is different from eye gaze. The student wears either a reflective dot on their head or glasses or some type of “head gear” affixed with an infrared transmitter. Using wireless technology, a head mouse translates the movements of the student’s head into movements of the computer mouse pointer or is recognized by the AAC system. The head mouse system integrates with “dwell” technology so that when the student maintains their “point” on a target for a specified length of time, it is interpreted as a mouse click or direct selection. It can help to train a student to “nose point” to their desired choice in anticipation of a head-mouse system.

Even with options such as eye gaze and head mouse systems, some students are not able to directly select messages because of physical limitations. Those students may need to use a low to high tech scanning system. Scanning can be done with or without technology. Partner assisted scanning does not involve technology. The communication partner systematically presents message choices to the student as they name or point to the potential messages. The message choices could be represented with objects, photos, symbols, letters, words or phrases. These can be presented individually or as a grouping. For example four topics could be presented as individual options or as groupings such as “family members”, “teachers”, “friends at school”, “friends from church”. The partner gradually narrows down the selections until the student signals when the desired message is reached. The student’s signal can be a gesture, vocalization, eye blink or any reliable indicator that the student can make volitionally. While initially time-consuming, familiar partners and students can quickly communicate in any setting using this method. Pragmatically Organized Dynamic Displays (PODD) (Burkhart & Porter, 2006) communication boards are paperboards that are organized much like “high tech” dynamic screen communication devices and are very effective when used with partner-assisted scanning strategies. The boards have main categories, “branch” to topics, have “quick chat” messages, and operational commands. Linda Burkhart has resources, examples and handouts about PODDs and a link to the commercial product (http://www.lburkhart.com/handouts.htm).

Other students may use an electronic communication system with built-in scanning capabilities. The device scans the messages in a selected scan pattern. Scanning speed, pattern, and mode can usually be adjusted to meet the physical, visual and cognitive skills of the student. The student selects the desired message by activating a switch. Some of the scanning patterns that are common to systems include:
his picture as a “choice” of things to talk about, etc. Janice Light (2005) suggests that you use motivating topics and activities that sustain social interactions and incorporate popular characters, music/sound effects, laughter, decorations…in other words, have fun!

Another communication interaction skill that frequently arises is the issue of intentionality. While there are no prerequisites that a student needs to acquire before being considered for a communication system (Blackstone, 2006), some students may need to be taught skills and strategies that make communication meaningful such as pointing, gazing, turning towards a partner or vocalizing in response to stimuli. Sometimes our first “communication lesson” is to teach a student the connection between their actions and the response they get from the environment (including communication partners).

**Access**

Access refers to how the student will physically operate the system. This can range from a student selecting the desired message (direct selection) to using 1 or more switches to scan to the message and then selecting it (indirect selection). Direct selection can be achieved using a body part such as hand, finger, foot, head, eyes or by holding a “pointer”. Many students prefer to use a direct selection approach even when they have physical limitations. Keyguards can help students isolate messages/symbols/keys visually and physically. Many devices come with a variety of keyguards depending on the size or number of messages on the overlay or they can be customized for a student. School district tech classes are a great resource for making custom keyguards out of Plexiglas.

Eye gaze is a system where objects, pictures, words, letters or symbols are placed in such a way that the student can communicate by looking at the desired item. In low-tech eye gaze systems, the communication partner is positioned so they can see both the target and the student’s gaze. Depending on the student’s ability to visually track, scan, control head and/or eye movements and hold their gaze, the adult may have to make accommodations such as holding symbols/objects loosely by their face and moving them apart so the student can “follow their choice”. Another low-tech strategy is the 3-point eye gaze system in which the student looks at their partner to signal that they are ready to select a message, looks at their desired choice, then returns their gaze to the partner to indicate the final selection. Additional considerations are whether the student will be moving to a computer based eye gaze system where they need to learn to “dwell” or maintain their gaze on their choice, so need to keep a steady gaze on their selection. Regardless of the system, it is important to remember to: place frequently used messages in the same location every time (to increase motor automaticity); accept the student’s first response (don’t ask again just to confirm the message); as soon as possible give the student an option of saying they don’t want any of the choices (“something else”, “not here”); and to be flexible depending on “good days” and “bad days”.

*Assessing Students’ Needs for Assistive Technology (2009)*
What is the clarity of the gestures the student uses?
How many symbols/signs/words does the student use regularly without a model/prompt?
Does the student combine symbols/signs/words without a prompt?
Does the student attempt to repair communication breakdowns? If so, how?
Does the student reliably indicate “yes” & “no”?

What are the student’s current receptive language skills?
Does the student attend to communication partners?
Does the student “follow directions” (to the best of their physical ability)?
Is the student aided by visual supports (i.e., objects, symbols, pictures, words)?
Does the student respond appropriately to yes/no questions?
The student makes appropriate selections from a field of _____ choices?
Does the student recognize communication breakdowns?

Some standardized assessments lend themselves to adaptations such as cutting apart the plates from the Peabody Picture Vocabulary Test (PPVT™) so that the student can eye gaze to the correct picture.

**Communication Interaction Skills**
Besides the expressive and receptive language skills noted above, consider the student’s pragmatic skills. A student who uses an alternative communication system needs to learn the social “rules” of communication. Some of those skills include:

- Attention to the communication partner
- Communication turn-taking
- Awareness of communication topics and topic shifts and topic maintenance
- Awareness of different communication styles with different partners (e.g., using slang with peers, but not teachers)

While some of these pragmatic skills seem very advanced, beginning communicators can and do learn these skills at their level by playing games, “sharing”, using simple communication devices to tell “knock-knock” jokes and other fun and motivating activities. Does the student show an indication of having some/all of these pragmatic language skills?

**Motivation for Communication**
We cannot overstate the need for motivating messages! Rather than looking at the student’s motivation, look at the motivation factor of the messages. Reluctant communicators have to want to communicate. The way to make that happen is by using fun messages during motivating activities. Motivation comes from internal sources, so messages are going to be different for a preschool boy compared to an adolescent girl (“ewww, gross!”, “Did you see *American Idol* last night?”). The team can interview family members, peers, and oftentimes the student will “tell” you which topics are their favorites. One student went into “full extension” whenever Clay Aiken’s name was brought up in the classroom. The team quickly discerned that he was a highly motivating topic for this reluctant communicator. They developed stories about him on a *LITTLE Step-by-Step*™ communicator, created a topic page about Clay in her communication book, used
Student’s Abilities and Difficulties

As a team, discuss what the student’s abilities and difficulties are related to communication. Please complete and review Section 2 of the WATI Student Information Guide: Communication (Chapter 1, page 23).

Current Communication Modes

An augmentative communication system does not replace the student’s current communication modes, but rather augments or supports them. Students should be encouraged to use multiple means of expression including: gestures, signs, body language, eye gaze, vocalizations, facial expressions and other natural means of expression. Even when a student has a “high tech” communication device/system, a low-tech back-up system should always be in place. There are times when the advanced system isn’t available, convenient or operating correctly. There are also times when medical conditions change and the student will need to use other means of access. Low- and no-tech versions of frequently used messages should be easily available to the student and the communication partners. When a student uses reliable signs and gestures to communicate, they should be encouraged to continue to do so even in the presence of an electronic communication device. Michael B. Williams, a long time AAC user has said

No one communication mode, no AAC device, no low-tech board, no gestures, signs or speech, could possibly meet all my communication needs all of the time. I use multiple communication modes. I communicate in many ways. I select the best mode depending on the location, with whom I am communicating and the purpose and content of the communication. (Williams, 2004)

How is your student currently communicating? Is he/she using traditional methods of communication (vocalizations, verbalizations, gestures, symbols) or non-traditional methods (behavioral outbursts, perseverative utterances or behavior(s), physically abusive behaviors, self-stimulation, etc.). When a student presents challenging behaviors, one of the first questions the team should ask is “What is the student trying to communicate?” Is it adult attention, frustration with a task/activity, desire for a change, or some other communicative message? The team may want to go through the steps of a functional behavioral assessment (FBA) to help identify the student’s communication message and teach an appropriate alternative. Wisconsin school teams can start by going to the Department of Public Instruction’s Special Education Subject Reference page on Functional Behavioral Assessment [http://dpi.wi.gov/sped/sbfba.html](http://dpi.wi.gov/sped/sbfba.html).

Expressive and Receptive Language Skills

Although many students who use or need an augmentative communication system are difficult to assess using standardized measures, most members of the team can contribute information regarding the student’s abilities such as the student’s current communication skills and strategies:

- What are the student’s current expressive language skills?
  - How does the student communicate?
  - What types of “messages” does the student communicate?
  - What is the intelligibility of the student with familiar and unfamiliar partners?
  - What is the student’s intelligibility within an unknown context?
WATI Assistive Technology Decision Making Guide

Area of Concern: Communication with others

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<th>Tasks</th>
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<td>Environmental considerations impact the student’s communication?</td>
<td>What communication task(s) do you want the student to do?</td>
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<td>What are the student’s abilities &amp; difficulties related to the area of communication?</td>
<td>Communication partners</td>
<td>Communication Functions of:</td>
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<td>• Feature Match for access and physical considerations</td>
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<td>• Other challenges /concerns?</td>
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<td>Exchanging Information</td>
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</table>

Sensory Considerations

What sensory challenges does the student have that impacts Communication? (i.e., visual, auditory, tactile)

Narrowing the Focus

Specific communication task(s) identified for solution generation

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<th>Solution Selection Tools &amp; Strategies</th>
<th>Implementation Plan</th>
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<td>Use a Feature Match Process to Discuss &amp; Select Idea(s) from Solution Generation</td>
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<td>Brainstorming Only No Decision</td>
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<td>• Person(s) Responsible</td>
</tr>
</tbody>
</table>

Follow-Up Plan

Who & When

Set specific date

Important: It is intended that you use this as a guide. Each category should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
There is an AAC “myth” that students must go through a hierarchy of symbols starting with real objects and ending with letters and words in order to learn to communicate effectively. Romski and Sevcik (2005) suggest that there is not a specific representational hierarchy that individuals “must” progress through. In fact young children don’t seem to discriminate between abstract and more concrete symbols for communication and appear to treat them all the same. It is however, important to determine what types of symbols are meaningful to the student. Many students effectively use a combination of real photos, picture communication symbols and words/phrases in their communication system.

One of the AAC “myths” we have tried to debunk is that AAC is synonymous with technology and the team’s most important task is to find the “perfect” device. Nothing is further from the truth. You will notice that we refer to a student’s “communication system” in this chapter. An effective system should include a variety of technologies and strategies that can include speech, vocalizations, signs, and low to high tech interactions and technologies. No one device can possibly meet the needs of an individual in all settings. Just as “typical communicators” use a variety of communication systems (i.e., body language, sighs, printed and spoken words/phrases/sentences, “IM’s”, email, tone of expression, etc.) our students who use augmentative communication need to have the fullest variety of communication options available to them in all settings. The Decision Making Guide and SETT process can help your team start to identify which communication system is most appropriate in each setting.

Using the SETT process and Decision Making Guide

It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. Additional categories include:

- Narrowing the Focus to help identify a specific task in order to select appropriate assistive technologies.
- Implementation Plan to assign trials, dates, responsibilities and data collection.
- Follow-Up Plan to set a date for the team to reconvene and review the student’s progress.

Again, this is intended as a guide; during the actual assessment process, each category should be written in large print where everyone can see (i.e., on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology tools and strategies for their students.
This is a communication board made with Boardmaker symbols without text labels. What message would you attach to the symbols? See the same board with the text labels inserted at the end of the chapter. (Page 50)

To complicate the picture issue, Schank (1972) divided words into two categories: those that are picture producers (e.g. car, cat, house) and the non-picture producers (e.g. hard, fun). Only 10% of the 330 most frequently used words by preschoolers fall into the picture producer category. The rest, are non-picture producers. Learning any words in this category will require the use of memory and metaphor. Many of these metaphors come from life experiences, which may be limited for many students (e.g., a finger with a string around it means you have something important to remember). That symbol may only be meaningful to adults of a certain age!

Unity® symbol for “remember” (Unity is a registered trademark of Semantic Compaction Systems and the icons are used by permission)

Janice Light’s (2005) research indicates that symbols we select should reflect the child’s understanding of the concept (rather than an adult’s) and be taught and used within meaningful contexts. It may be that photos of familiar people, events and activities are more meaningful to a young communicator than traditional black or colored line drawings.
When considering motivational messages, it is important that the content reflects age appropriate language. Most preschoolers do not say “I want more milk please” and the average teenager speaks differently with friends than with adults. Students want to sound like their peers. Listen to other students or ask peers to provide age appropriate messages. University of Nebraska-Lincoln has core vocabulary lists for young children to adults - [http://aac.unl.edu/](http://aac.unl.edu/).

Vocabulary selection can impact how the student is viewed by their communication partner. For example, a preponderance of “I messages” (e.g., “I want to go outside, I want to wear that”) may have a tendency to turn the listener off. Keeping the communicative intent of those messages but rewording them to be more engaging can have a positive impact on listener response (e.g. Let’s go outside!, Purple is my favorite color—I want to wear my purple shirt today”).

Another decision to make when selecting vocabulary for a student’s communication system is whether to use words, phrases or sentences. Each message type has advantages and disadvantages. One advantage to a word based system is that the student can say what they want in the way they want. The drawback is that it takes time to compose messages word-by-word. While using phrases or sentences can speed up message composition, the student may be limited by vocabulary that does not exactly match the message they wish to communicate. For example, they might be thirsty for chocolate milk but only have a generic message requesting milk. First they would use their generic milk message. Then they would have to find a way to clarify that they wanted chocolate milk. In a phrase-based system, this could be exceedingly difficult. Thus the advantage to phrases and sentences is potentially improving the speed of communication. The disadvantage would be whether the selected messages are specific enough to meet the student’s needs.

The most versatile communication system has a combination of words or even letters to create novel words and phrases or sentences of the most frequently used messages. The addition of clarifying messages (“That’s not exactly what I meant”) helps clear up communication breakdowns even more.

**Vocabulary Representation**

Unless the student has good reading skills, the vocabulary selected will need to be represented with some type of symbol. Examples include photos, line drawings, *Picture Communication Symbols (PCS™)*, Unity® Symbols, SymbolStix®, DynaSyms® or other symbol sets (Imagine Symbols®, PixAide™ rebus symbols, etc.). *Picture Communication Symbols* are those used with the popular *Boardmaker®* software from Mayer-Johnson. Many assume that boards made with these or any other symbol set will be easy for the student to understand and interpret. One way to “see” these as the nonreader “sees” them is to print the symbols without the accompanying text. Using this version, try to decipher what the pictures represent. Present the wordless version to someone who is not familiar with this program and ask them to name all the pictures/messages shown. It is highly likely that you will come up with some very interesting answers. It is believed that one of the reasons for this is that when literate individuals encounter these boards, they look past the pictures to the text. This is in no way meant to discredit the Picture Communication Symbols or any other picture set, it is just to create an awareness that pictures are not necessarily easy to understand if the individual using them can not read.
of an individual’s needs. For example, a student may be able to use head nods to clearly and efficiently communicate yes and no to caregivers. However, when discussing course choices for the coming academic year with family and teachers, an electronic system with the option of spelling and accessing pre-stored messages may be more appropriate and efficient.

The success of any communication system is highly dependent upon the skills of the communication partners. The communication partners need skills such as modeling the use of the system, interpreting the symbols selected by the communicator and even low-level technical problem solving. Often when a communication system is introduced, it is the first time a student has ever seen or used such a thing. From an intervention standpoint, it is helpful to think of how an individual learns a foreign language. One would not give a student a Spanish/English dictionary and expect them to be a proficient Spanish speaker. That proficiency would be gained only through listening to the language and by repeated practice with an experienced Spanish speaker. The same holds true for learning to use an augmentative communication system. Good communication partners will provide modeling and feedback as to the accuracy and efficiency of the communication attempts in addition to actually using the system itself to communicate with the student.

To increase the chances of success in learning a new system, activity-based intervention should be used. This model relies on selecting initial intervention activities that are highly motivating to the student, occur regularly and present multiple opportunities for communication. One way to identify these activities is for the team working with the student to use an ecological inventory, that is to make a list all the activities that the individual engages in throughout the day. Consideration should also be given to activities that occur in environments other than school. Once the activity list has been generated, the team can prioritize the activities depending on their potential for communication opportunities for the student and motivation by the student to engage in those activities.

**Vocabulary Selection**

Regardless of the activities selected for intervention, success with an augmentative/alternative communication system is highly dependent on appropriate vocabulary selection. Motivation plays a huge role in selecting appropriate vocabulary. Many times, teams begin with vocabulary such as “eat”, “drink” and “bathroom”. While these may be key statements in the eyes of caregivers, for most augmentative communication students, these basic needs are met whether communication occurs or not. Therefore, their motivation to communicate these basic needs is greatly reduced. Bruce Baker (2005) proposed the following “motivation formula”:

\[
\text{Motivation} = \text{Physical effort, cognitive effort, time}
\]

This formula illustrates that when the **motivation** to communicate a message is greater than the physical effort, cognitive effort and time to compose it - communication will occur. However, if the **effort or time** required to produce a message is greater than the motivation to communicate it, communication will not occur. Motivation comes from the student when he/she realizes that communication can be a powerful and pleasurable thing. For example, it can be highly motivating to say “Tickle me” using a single message device.
Getting Started with AAC

Augmentative/Alternative Communication (AAC) refers to the methods used to maximize the communication abilities of individuals whose natural speech is either temporarily or permanently impaired. These methods involve the use of aided and/or unaided symbols. Aided symbols require some type of tangible representation. Examples include: real objects, Picture Communication Symbols, letters and/or words. These can be presented on a non-electronic communication board or displayed on an electronic communication device. Unaided symbols are those that are produced using the individual’s body and may include gesture, sign and/or fingerspelling (ASHA, 2002).

Regardless of the symbol set selected or the display used, it is critical to keep in mind that augmentative/alternative communication systems are not meant to replace speech. Many families fear that the introduction of an augmentative/alternative communication system means that professionals are “giving up on speech”. Nothing could be farther from the truth. Millar, Light and Schlosser conducted a meta-analysis of research published between 1975 and 2003 on the impact of speech before, during and after using AAC. Of those studies that met the criteria for evidence-based analysis, none of the individuals lost speech production as a result of using AAC. Some of the subjects did not increase their production, but most (89%) had at least modest increases in speech production (Millar, Light & Schlosser, 2006). Linda Burkhart made this statement in her book *Total Augmentative Communication in the Early Childhood Classroom* (Burkhart, L, 1993, p.37)

By providing a child with a variety of means to communicate, including speech, the pressure to produce speech is diminished. In the past, clinicians and parents worried that giving a child another means to communicate would hinder speech development. Children who are given augmentative skills develop speech as quickly as the control group and often surpass them.

Several reasons are cited for this phenomenon. The pressure to produce intelligible speech may be reduced knowing that the child has an alternative way to say something. The use of augmentative communication systems allows the child’s language skills to continue to grow and develop. Using speech is the easiest way to communicate. If the child is able to use it, they will choose speech over an alternative form of communication. There is research that supports introducing AAC at an early age before a student experiences communication failure because of a lack of speech production or intelligibility (Romski & Sevcik, 2005).

For those who cannot use speech effectively, there exists a wide range of augmentative communication system options. These range from simple communication boards or displays presented on paper to high tech electronic systems with voice output. No one system can meet all
Communication is who we are and who we will become!

Communication is a complex process that uses different forms and serves different purposes based on the context, the intent of the communication, and the communication partner. It is the method of exchanging information and ideas between communication partners or across a group of communication partners. Communication is the process of exchanging information about our wants/need, experiences, ideas, thoughts and feelings. The basic elements of a successful communication exchange requires that there be a

- sender (communicator)
- receiver (communication partner)
- shared understanding of the communication mode being used
- reason (intent) for the communication exchange to take place

Communication is a multi-modal process, which can include speech, vocalizations, gestures, facial expressions, as well as a variety of electronic (high-tech) and non-electronic (low-tech) assistive technology. Individuals with complex communication needs (CCN) have few of the conventional means of communication. The goal for students with CCN should not be to find an assistive technology (AT) solution to a student’s communication problem but rather to provide AT that enables the student to efficiently and effectively engage in a variety of communication interactions with various communication partners.

This chapter provides guidelines and best practices for assessing the communication strengths and needs of students with CCN in a systematic and functional way. The process matches student’s strengths and communication needs with the features of assistive technology for communication purposes. Along with this assessment and feature match approach, this chapter presents different intervention strategies, techniques and suggestions that will support and facilitate students’ communication. Caregivers, teachers, and speech language pathologists must be reminded of the motto of a handyman “to do a job right you need the right tool(s)”. The same notion can be made about communication; you need the right communication tool, be it a high-tech or low-tech tool (communication system) to successfully complete a communication job.
## Products

<table>
<thead>
<tr>
<th>Product</th>
<th>Vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desk-a-Doo</td>
<td>Walker Enterprises</td>
</tr>
<tr>
<td>Dycem®</td>
<td>Sammons Preston Rolyan</td>
</tr>
<tr>
<td>GoBot</td>
<td>Innovative Products Inc.</td>
</tr>
<tr>
<td>Velcro™</td>
<td>Available locally</td>
</tr>
<tr>
<td>FitBall Balance Disc</td>
<td>Pocket full of therapy</td>
</tr>
<tr>
<td>FitBall Seating Disc Jr.</td>
<td>Pocket full of therapy</td>
</tr>
<tr>
<td>Move ‘N’ Sit Wedge® Seat Cushions</td>
<td>Pocket full of therapy</td>
</tr>
<tr>
<td>Bumpy Disc Junior Seat Cushion</td>
<td>Pocket full of therapy</td>
</tr>
<tr>
<td>“T” stool</td>
<td>School Specialty/Abilitations</td>
</tr>
<tr>
<td>Ball chairs</td>
<td>Pocket full of therapy</td>
</tr>
<tr>
<td>Bean Bag chair</td>
<td>Available locally</td>
</tr>
<tr>
<td>Thera-band</td>
<td>Thera-band</td>
</tr>
<tr>
<td>Switches</td>
<td>Adapted Switch Labs</td>
</tr>
</tbody>
</table>


RESNA Position on the Application of Wheelchair Standing Devices retrieved 3-29-09 http://www.unitedseating.com/USM/Website/Website.nsf/1f0078027ef850968625731b006a305d/$FILE/Resna_position_on_wheelchair_standers.pdf


Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility


Lange, M. (2007b) Which cushion is Best?: Picking the right combination of materials for your client *Advance for OT Practioners* July 9:58-59, 64

Lloyd, L. (2005) Update: Mobilizing for Power Mobility Coverage *OT Practice* March 21, 6


Durkin, J., Miller, C., & Mandy, A. (1999). Developing Powered Mobility with Children who have Multiple & Complex Disabilities: “Moving Forward”


Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility

Resources

Check list for choosing a wheelchair
http://www.healthcare.uiowa.edu/cdd/multiple/wc/wc_list.asp

Manual of Checklist for manually propelled wheelchairs

Comparison of w/c electronics 6-1-08 M. Lange

List of support walkers and mobility devices Part of the Escobar article
http://www.seatingandmobility.ca/ISS2002/ToSunnyHill2/iss2002html/031_SELFInitiatedMobility.htm

Web sites
http://callcentre.education.ed.ac.uk/
Resources, publications, Smart wheelchair

http://www.daneverard.co.uk/mobility/article01.php
Support for early powered mobility

http://www.atilange.com/index.htm
Resources- positioning chart, Powered w/c electronics comparison chart, MULTI-FUNCTION ELECTRONIC AIDS TO DAILY LIVING Comparison Chart

http://www.wheelchairnet.org/
WheelchairNet is a virtual community for people who have a common interest in (or in some cases a passion for) wheelchair technology and its improvement and successful application.

References


### Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Elevating seat</td>
<td></td>
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<tr>
<td>Elevating leg rests</td>
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<tr>
<td>Sit to stand</td>
<td></td>
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<tr>
<td>Seat belt, Sub ASIS bar</td>
<td></td>
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<tr>
<td>Lateral support</td>
<td></td>
</tr>
<tr>
<td>Chest support</td>
<td></td>
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<tr>
<td>Head rest, support, strap</td>
<td></td>
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<tr>
<td>Arm rests, support, strap</td>
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<tr>
<td>Foots rests, support, strap</td>
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</tbody>
</table>

**Seating purpose**

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Functional use of head, arms</td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
</tr>
<tr>
<td>Prevent address deformity</td>
<td></td>
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</tbody>
</table>

**Modifications**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Need for short term modifications eg coat</td>
<td></td>
</tr>
<tr>
<td>Need for long term modifications eg growth</td>
<td></td>
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</tbody>
</table>

**Vision**

**Vendor**

<table>
<thead>
<tr>
<th>Contact info</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Access to trials</td>
<td></td>
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</table>

(K. Stindt 2009)
**Feature Match**

The following chart is an example of a way to organize the variables one may consider when assessing seating, positioning and mobility. By reviewing this checklist, the team can discuss the various components and issues with the vendor, funding source or any other interested persons. It is not meant to be all inclusive, but rather to generate ideas about what the child could benefit from in the area of seating, positioning and mobility.

<table>
<thead>
<tr>
<th>Area</th>
<th>Specific issue</th>
<th>Concern Yes or No</th>
<th>Rationale or question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Family issues</strong></td>
<td></td>
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<tr>
<td></td>
<td>Needs</td>
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<td></td>
<td>Funding</td>
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<td></td>
<td>Aesthetics</td>
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<td></td>
<td>Transportation</td>
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<tr>
<td></td>
<td>Preferred vendor</td>
<td></td>
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<tr>
<td><strong>Environmental</strong></td>
<td>Home</td>
<td></td>
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<tr>
<td></td>
<td>School</td>
<td></td>
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<td></td>
<td>Community</td>
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<tr>
<td><strong>Physical parameters</strong></td>
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<td></td>
<td>Size</td>
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<td></td>
<td>Weight</td>
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<td>Growth</td>
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<tr>
<td></td>
<td>Width</td>
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<tr>
<td></td>
<td>Seat depth</td>
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<td></td>
<td>Seat height</td>
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<tr>
<td></td>
<td>Power for other devices</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Manual W/C</strong></td>
<td>Access</td>
<td></td>
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<tr>
<td></td>
<td>Ability to collapse</td>
<td></td>
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<tr>
<td><strong>Power W/C</strong></td>
<td>Access: joy stick, switches, sip puff</td>
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<tr>
<td></td>
<td>Power tilt</td>
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<td></td>
<td>Power recline</td>
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<tr>
<td></td>
<td>Sit to stand</td>
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<tr>
<td><strong>Seating</strong></td>
<td>Pelvis</td>
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<td></td>
<td>Trunk</td>
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<td></td>
<td>Neck</td>
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<td></td>
<td>Head</td>
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<tr>
<td></td>
<td>Legs</td>
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<td></td>
<td>Feet</td>
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<tr>
<td></td>
<td>Cushion</td>
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<tr>
<td></td>
<td>Tilt</td>
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<td></td>
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<tr>
<td></td>
<td>Recline</td>
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</tbody>
</table>
Implementation Plan - Mobility

After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial materials, team member(s) responsibilities, start date and length of trial, training needed and any other student/staff specific issues. Be certain to identify objectives and criteria of performance to determine the effectiveness of the trials.

Writing AT into the IEP

There are many correct ways to write AT into the IEP. It must be considered on the special factors form of the IEP and a listing of AT may be included there. It may be included as a related service and maybe also be included as a supplemental aid or service. (Purcell & Grant, 2002, 2004, 2007) and (Bateman & Herr, 2003) state many examples of writing present level of performance, objectives and goals.

The following is a four-step formula for writing an IEP goal.

**Time Frame:** In 36 weeks

**Conditions:** given a movement cushion

**Behavior:** Eric will stay seated

**Criterion:** during writers workshop

Another example would be the following:

Given access to a power wheelchair (condition), the student will move 10 feet forward (behavior) by hitting a switch (criterion) to get to a preferred place or activity 5 or more times within 10 minutes (time frame).
Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility

**Walking devices: Crutches/Walker** - Students who have difficulty with strength, balance or coordination may benefit from using external devices to support and stabilize them while they learn to walk or move from place to place. The PT will be able to assess and recommend the appropriate device as well as be able to correctly fit it and train others in its use.

**Grab bars and rails** - Since the advent of the ADA, most public restrooms have been equipped with grab bars and rails. These allow students who need additional support and stability to be as independent as possible. The height and diameter may influence the ability of the student to use the bars effectively. Grab bars may be also added to classroom areas.

**Manual wheelchair** - Students who have upper extremity strength and coordination but lack the necessary strength, coordination and balance in their legs may be able to use a manual wheelchair. Sometimes the wheelchair can be used for long distances to supplement students who are ambulatory for short distances.

**Powered scooter or cart** - Students who have use of their arms may benefit from using a powered scooter or cart. Generally less expensive than a powered wheelchair, this can give mobility to some students who are in need of powered mobility. Another alternative is the powered mobility car. The GoBot is an example of this type of mobility designed to give young children the ability to move while standing upright.

**Powered wheelchair** - Some students with significant motor disabilities may need to have a powered wheelchair to access their environment. Many new innovations have been designed to allow even the most motorically- or cognitively-challenged students to be able to access the controls to engage a powered wheelchair. There is a movement to get very young children into powered wheelchairs so they can begin to explore their environment through mobility. Students can control the wheelchair through innovations that allow a single-switch user to access the controls of the powered wheelchair.

**Adapted vehicle for driving** - If a student is interested in pursuing driving a car, the student should be referred to an OT who specializes in driving evaluations and adaptations.

**Solution Selection: Tools and Strategies - Mobility**

Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the reading tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time or require additional or significant staff training.
Narrowing the Focus - Mobility

As a team, identify by circling or other means those few tasks the student needs to do for mobility that will have the most impact.

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.

Solution Generation: Tools and Strategies - Mobility

As a team, brainstorm and write on chart paper any assistive technologies &/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for mobility. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology.

A Continuum Of Considerations for Assistive Technology - Mobility

Walking devices - Crutches/Walker

- Grab bars and rails

- Manual wheelchair

- Powered scooter, toy car or cart

- Powered wheelchair w/ joystick or other control

- Adapted vehicle for driving
Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility

- What are the areas the student needs to move in (maneuver about the room/school, travel from class to class, the number of class changes, sufficient time for transitions)?
- Are there adults that need proximity to the student (lecture or small group, the ratio of adults to students, does the student have an adult specifically to aid them)?
- What are the teacher expectations?
- Is the student positioned in clear view of the teacher, the board, or displays?
- Is there sufficient light, and is the board free of glare?
- Are there auditory factors such as the ability to hear the teacher; the level of auditory stimulation in the room, talkative/distracting students nearby, excessive noise outside the room?
- Does the student need background music in order to focus?
- Is there visual stimulation either in or outside the room or distracting clutter?
- Is the student able to organization their desk/workstation?
- What are the physical aspects of their work area such desk, chair, access to materials?
- Does the student need assistance with positioning to maintain good trunk stability?
- Do materials need to be stabilized for them to prevent materials from falling on the floor?

Sensory Considerations
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student’s learning, identify the sensory levels in each of the student’s environments.

Assistive Technology: past and present
What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference. If the student is currently using assistive technology note the AT used, location, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low and high tech AT supports.

Tasks - Mobility

As a team, discuss and write on chart paper the mobility tasks that the student needs to do.
One of the most important questions when assessing a student’s need for assistive technology is: What are the tasks the student needs to do?
- How do the student’s mobility issues impact their daily task performance?
- What tasks does mobility impact in a positive or negative way?
- Where does the student need to move on a daily basis within the classroom and between classrooms?
Student’s Abilities and Difficulties - Mobility

As a team, discuss what the student’s abilities and difficulties are related to mobility. Please complete and review Section 1 of the WATI Student Information Guide: Seating, Positioning and Mobility (Chapter 1, page 22).

What method(s) is the student currently using to move?
- What does the student need in order to move within and around his educational setting?
- What strengths does the student demonstrate that could assist with mobility?
- Does the student have any of the following skills either emerging or mastered: cause and effect, spatial relations, problem solving, ability to interact with their environment, motivation/initiation.
- What is the student’s level of alertness?
- Are there behavioral issues (positive or negative) that could impact mobility?
- Is the age of the student a factor? (Students as young as 10-12 mos. can be considered for mobility devices.)
- Are there issues with strength, coordination, fatigue or other physical abilities?

Sensory Considerations
Some students are adversely affected by environmental stimulation which others can filter out or ignore. Some common factors which can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as
- Visual clutter
- Fluorescent lighting versus full spectrum lighting
- Classroom and background noise
- Tactile stimulation
- Awareness of physical space
- Other individual specific sensitivities

Although these factors are not directly related to mobility, they impact the student’s ability to focus on instruction and learning so should always be considered.

Other Considerations
Each individual student has specific skills and areas of concern. Be certain to address those as you capture the particular traits of the student in this part of the SETT process.

Environmental Considerations - Mobility

As a team, discuss and write on chart paper any environmental considerations that might impact the student’s mobility such as auditory or visual distractions, placement in the classroom, number of different environments or any other environmental impacts.

Environmental considerations pertinent to the student’s success may include:
## WATI Assistive Technology Decision Making Guide

**Area of Concern:** Seating, Positioning and Mobility

### Problem Identification

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the student’s abilities and difficulties related to seating, positioning and mobility?</td>
<td>What environmental considerations impact seating and positioning?</td>
<td>What task(s) do you want the student to do once they are seated?</td>
</tr>
<tr>
<td>• Does the student have strengths in any areas that would facilitate their seating and mobility?</td>
<td>• Where is the student expected to move about?</td>
<td>• Use hands?</td>
</tr>
<tr>
<td>• Does the student have issues in Physical-Muscles- strength or weakness; Coordination or other physical issues?</td>
<td>• Do different locations require the same or different types of seating or mobility?</td>
<td>• Use device or learning tool?</td>
</tr>
<tr>
<td>• Stability- trunk, extremities; standing, seated or other position?</td>
<td>• Does the child have an environmental preference?</td>
<td>• Stay on task?</td>
</tr>
<tr>
<td>• Endurance-fatigues easily?</td>
<td>• Does the child require physical assistance in some areas, but not others? (restroom, classroom, bus, etc.)</td>
<td>• What task(s) do you want the student to do once they are moving?</td>
</tr>
<tr>
<td>• What is the student currently using for: Seating? Positioning? Mobility? Transfers?</td>
<td></td>
<td>• Get to and from class?</td>
</tr>
</tbody>
</table>

### Sensory Considerations

- Hypersensitivity or hyposensitivity to stimuli such as visual clutter, different lighting; classroom and background noise; tactile stimulation-surfaces; awareness of physical space / personal space; other individual specific sensitivities

### Narrowing the Focus

- i.e. Specific task identified for solution generation

### Solution Generation Tools & Strategies

- Brainstorming Only
- No Decision

### Solution Selection Tools & Strategies

- Discuss & Select Idea from Solution Generation

### Implementation Plan

- AT Trials/Services Needed: Date/Length/Person Responsible

### Follow-Up Plan

- Who & When--
- Set specific date now.

---

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
Using the SETT process and Decision Making Guide

It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. Additional categories include:

- Narrowing the Focus to help identify a specific task in order to select appropriate assistive technologies.
- Implementation Plan to assign trials, dates, responsibilities and data collection.
- Follow-Up Plan to set a date for the team to reconvene and review the student’s progress.

Again, this is intended as a guide; during the actual assessment process, each topic should be written in large print where everyone can see (i.e., on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology tools and strategies for their students.
skills much more easily accessible for therapists or others interested in determining if PMD would be beneficial to their student.

**Access Issues**

Another barrier to providing powered mobility to students is the need for a variety of access methods, ranging from the most common such as the joystick to digital switches. The joystick is often the first type of access tried, as it is readily available. If the student can be successful with it then there is no need to look further. However, the joystick can be difficult for many students with motor disabilities. Before looking further at other types of access methods, one avenue that can be considered is the use of programming changes. By changing the parameters of the different types of control, students may be more successful with the joystick. In the past, the wheelchair suppliers and vendors have maintained sole access to the controller or programmer of the powered wheelchair. However, as they see the benefit for more frequent changes in the control parameters, therapists are being given access to and training in the adjustment of the parameters. *Independence By Design (IBD)*, the WATI-sponsored powered wheelchair trial, has focused on giving the school staff and parents access to the control parameters and training on how to maximize these settings to increase student success in safely exploring their environment with their powered mobility device. The parameters of a powered wheelchair that most affect learning how to use the access method are: forward speed, forward acceleration, forward brake, reverse speed, reverse acceleration, reverse braking, turn speed, turn acceleration, turn deceleration, power level, torque. The fine tuning of these parameters can be an essential key to making the PMD responsive to the student but at the same time, not scaring the student by going too fast or reacting to quickly or slowly.

There are many different types of access or controls for PMDs. Ramsey (1999) and Sweet-Michaels (1999) also address the variety of access methods for controlling a powered wheelchair. Besides the joystick, the use of a switch-adapted proportional joystick, switched control (with and without proportional access), sip and puff, tongue activated keypad and the use of scanning with a switch are other examples of access methods. Different access points including the hand, chin, head, foot, mouth and tongue can be used. Different types of mounting devices, lap trays and other accessories can also be used to help meet the mobility access piece for more complex students.

**Access to AT**

When addressing powered mobility devices, another factor to consider is whether or not the student will need access to additional AT such as alternative augmentative communication (AAC), environmental control unit (ECU) or the computer. Lange (2000a) in the article *Interfacing Assistive Technology With Power Wheelchairs* provides examples of various AT and what to consider when in addition to a PMD, the student may also need other AT.

**Feature Match**

The use of powered mobility is a multifaceted decision-making process. Involving the entire team and including the parents or other care givers is vital for success. The feature match at the end of this chapter is a checklist of items that may need to be considered when determining what features of the powered mobility would be the best match for the student.
skills. In addition to the lack of evidence supporting the belief that PMD will prevent or interfere with ambulation (Carden et al., 2006) cite Bottos and Gerickle (2003) in their findings that provision of mobility does not interfere with the development of a student’s ambulatory skills.

Framework Issues
Cardin et al. (2006) also noted that therapists were concerned about the lack of a format or framework with which to evaluate the potential for powered mobility use. Trial and error, observation and simple checklists were cited as ways to assess the students, but varied between therapists based on experience, access to equipment and other factors. The lack of access to trial equipment, access methods, and seating and positioning equipment also impacted the prescriptive recommendations of powered mobility. Therapists also had concerns about the possible negative effect of powered mobility on ambulation indicating an inconsistent knowledge of powered mobility’s influence on this skill.

Funding Issues
Funding is also a central issue. The time it takes to locate funding, use funding or the lack of funding as a guideline often impact who receives powered mobility. Schmeler, Boninger, Cooper, & Vitek (2002) provide a peer review of literature for justifications of seating and mobility interventions with their aim to “provide strategies in using evidence to justify the interventions”. Despite the fact that it is likely that the majority of a practitioner’s knowledge base comes from clinical experience and less on higher levels of evidence such as peer-reviewed research, it is paramount for those writing justification for funding to be familiar with literature that supports evidence-based practice in this area. This research addresses the importance of providing funding sources with evidence to support the provision of wheelchair seating and mobility interventions. Schmeler et al review targets, specifically ultra-lightweight manual wheelchairs, powered mobility, pressure reducing seat cushions and the clinical application of pressure mapping, as well as tilt, in space and recline seating. These areas are supported with evidence-based practice and or research that can help the practitioner who is writing a justification for these specific types of seating and mobility.

Funding is also influenced by the inability of therapists to have adequate time for the student to try the powered mobility. The student may need an extended amount of time to fully determine if they will be able to learn how to use the PMD. The funding sources may not pay for even a short trial loan. Often funding sources will not approve the prior authorization for payment unless the student has demonstrated proficiency. However, the student is unable to demonstrate proficiency without access to the device. Working with vendors to obtain trial PMDs may give some students enough time to demonstrate proficiency. Developing a program similar to WATI’s Independence By Design wheelchair loan service may be another way to assist students with obtaining a longer trial access to a PMD.

Independence By Design was developed by WATI Director Jill Gierach with the assistance of Karen Kangas and Lisa Rotelli from Adaptive Switch Labs (ASL). The goal of the initiative was to obtain 2 PMDs outfitted with digital head arrays, and train WATI OT staff on their use, both the PMD and the digital switches to access them. The procedures and forms were created, and supporting data was collected. For those interested in pursuing this model, please contact WATI. Current changes in technology have made using PMDs with many types of students with varied
Early use of mobility devices

Early learning is impacted by movement. Therefore the early use of mobility devices can impact the students learning. The student’s potential for ambulation can be predicted as early as age three. Even students with motor skill deficits who are able to walk may not be able to maintain this skill as they continue to grow through adolescence and into adulthood. Provision of mobility through manual or powered means does not impede the development of ambulation skills (Bottos and Gerickle, 2003). Just as most people use multiple means for transportation—walking, biking, public transportation, driving or other means to get where they need to go—so can the student with disabilities use multiple methods to get where they need to go.

Many authors have begun to address the unique needs of using powered mobility with students and very young children The consensus is that powered mobility should be considered as an option even for, if not especially for, young children [(Bundonis, 2003); (Buning, Angelo, & Schmeler, 2001); (Deitz, Swinth, & White, 2002); (Durkin, 2002); (Escobar, Leslie, & Wright-Ott, 2002); (Furumasu, Treft, & Guerette, 2002); (Hardy, 2004); (Kangas, 2006); (Lange, 2000f); (Lange, 2000g); (Meyer, 2008); and (Nilsson, & Nyberg, 1999)].

Professional issues/barriers
The professionals who work with students with disabilities have a wide range of perspectives when it comes to the use of powered mobility. In their survey of therapists beliefs, (Carden et al., 2006) found several areas that impacted the decision-making process. Therapists’ beliefs regarding readiness, safety, “driving” ability, powered mobility as a last resort, and full functioning before seeking funding were assessed and responses varied widely. Barriers to the therapists’ prescription of powered mobility included a lack of confidence, lack of consistent format or framework, lack of trial equipment, difficulty in setting up access to powered devices for students with complex issues, lack of knowledge of whether or not the powered mobility could or would interfere with self ambulation and very long wait time frames (up to a year) to get funding for powered mobility devices.

Readiness/Safety
Therapists’ beliefs about readiness for powered mobility varied widely. Readiness factors may include physical, cognitive, and sensory skills as well as a minimum age. Some students have been excluded because of these issues. However, more and more students are being considered for powered mobility despite significant issues in these areas. Mobility is not driving and students can, in a controlled situation, learn to move safely through their environment before they are allowed to roam free. Just as a parent stops their child from harming themselves if they crawl towards an open stairway, the powered mobility beginner can be assisted to be safe in learning to use a powered mobility device. The use of a safety switch or kill switch accessible to the caregiver will allow them to immediately cut off power to the wheelchair in the event of a safety concern.

Last resort
Some professionals also believe that mobility (powered or manual) may interfere with ambulation skills. Lack of access to evidence-based practice information or research articles can prevent the therapist from understanding the positive outcomes associated with the use of PMDs. PMDs have been shown to positively impact cognitive, social, emotional, and communication
Individual mobility
Some students require different types of AT to enable them to move independently around their environment. They may require devices to position their feet or legs (AFOs), external devices to help them balance while walking (crutches) or they may require a wheeled mobility device, either powered by themselves or by mechanical needs. Many improvements have been made in both the manual wheelchairs and power wheelchairs. However, there are multiple issues and barriers to using mobility devices.

Issues/ Barriers
When using AT for mobility, there are numerous factors to consider. Carden, Potgieter and Woods (2006) surveyed therapists who work with students that need to use mobility devices, and identified a number of reasons that there is difficulty in using mobility devices. In researching the area of powered mobility for students, they found a lack of randomized controlled research. However, several themes arose in their search for literature to address the issue of powered mobility. Parental perspective and acceptance of disability, prediction for potential and/or maintenance of ambulation, the use of powered mobility as a therapeutic tool, the use of powered mobility with very young children, and lack of knowledge or access to equipment by the therapists were all factors in using powered mobility.

Parental issues
The issue with use of mobility devices from a parental perspective is that it is often seen as a last resort when the child has exhausted all other means of independent ambulation. Parents may think that by providing mobility they are giving up on ambulation. As often seen with voice output devices, parents and even professionals have made the assumption that if the device does the talking (or walking) for them, they will not learn to do it for themselves. Research does not support this reasoning in either the use of AAC or with mobility devices. Although considered logical deductive reasoning, if you use something to do the activity for you, you may not develop the skills. Bottos and Gerickle (2003) as cited by Carden et al point out the opposite—providing mobility through the use of a manual or powered wheelchair does not impede the development of ambulatory skills. Also, ambulation potentials can often be predicted by age three and even though students are able to ambulate either independently or with external aides, this does not mean that this skill will be maintained through adolescence and/or adulthood.

Another barrier in acquiring a mobility aid is that it is also a major milestone in the adjustment to and acceptance of the student’s disability. Along with the thoughts of “giving up” on walking, use of a mobility device is a visual indicator that a student is disabled. Many parents of young children with disabilities are only beginning to go through the stages of grief associated with the acceptance of their child’s disability. They may not be ready to make this step emotionally. It is important to educate them on the importance of using mobility device not only to move but also as a therapeutic intervention. Movement using a device can impact the student’s cognitive, social, emotional and communication skills, just as development of movement impacts these areas of a typical student’s development (Hardy 2003).
Moving around the building and/or community
Students with visual impairments will often work with an orientation and mobility (OM) instructor when they begin to travel around the building and out in the community. These instructors may be able to offer some helpful tips to use. Students may be working with tactile or auditory maps or compasses as they learn to find their way. Electronic location systems, such as GPS, can also help a student pinpoint where they are and locate a specific destination.

Efficiency of movement between locations, access to playground equipment or some school locations may be affected by fatigue and/or pain for students with physical issues. Pain can come from many sources. Students may be fitted with orthotics or braces that help stabilize and/or position parts of the body as it moves. A therapist or doctor usually fits these. Bunched socks or a growth spurt can cause skin to breakdown so caregivers should attend to complaints of pain or discomfort. They should also alert family, other caregivers and medical staff about reports of pain so that adjustments can be made, as needed. Pain may also come from lack of movement so frequently repositioning the student within their seating or between positioning devices may help relieve pain and may prevent possible skin breakdown with students who have limited sensitivity. Students may also use a walker or crutches. Allowing extra time for these students to move between classes or locations if needed is helpful. Lots of walking with braces or crutches can result in fatigue and make it difficult for the student to keep pace with peers. Using alternate transport such as wagons, tricycles or sleds to go out to the playground or on field trips can help decrease fatigue and make the trip much more enjoyable. Alternating between different types of mobility may also decrease fatigue. For example, using the wheelchair for long distances and crutches within the classroom is one way to reduce the fatigue component.

For students who have difficulty standing and moving on their own, a variety of wheeled vehicles, such as manual wheelchairs and strollers, may offer them increased movement opportunities around the school. For those students who can control where they go by steering or switch controls, a scooter or powered wheelchair can offer increased independence with regards to mobility. Special seating systems can be fitted by a therapist or doctor to help position a child for maximum function. Powered mobility is now being accessed by switches so even students with severe motor and or cognitive impairments can learn how to move within their environment using a powered wheelchair device (PMD).

Transportation
Students may ride a bus to school and use their wheelchair or a specialized seating system to maintain upright posture or safe positions while being transported on the bus. ADA requires that transportation be available for people who use mobility devices. For students who are unable to transfer into a vehicle seat a WC19-compliant wheelchair can enhance safety. WC19-compliant wheelchairs are tested to withstand frontal impact and have demonstrated structural integrity and crashworthiness. They have four labeled and easily identified securement points for the tie down straps. Additional information on WC19-compliant wheelchairs is available at www.rercwts.org. This site lists all the wheelchairs that are currently WC19-compliant as well as industry standards for WC18 wheelchair tie down and occupant restraints and WC20-crash tested seating systems for wheelchairs to insure safe transportation of students.
Assistive Technology for Mobility

Background
Classrooms are not static. Students need to move in, around or between them throughout the school day. For students with mobility issues, transitioning can add some additional challenges. Key areas to assess are school building accessibility, movements within the classroom, moving around a building, grounds and community and safe transport to and from the school or to and from school events. After the environment is assessed, the individual student’s needs for mobility is the next area to assess. It is also important to understand the issues and barriers surrounding the provision of mobility devices for students.

School Accessibility
The Americans with Disabilities Act (ADA) has encouraged many schools to address accessibility. Room numbers in Braille, ramps on the side walk, wheelchair-friendly thresholds and elevators to reach upper levels are now in place at many schools so that all children can participate in rooms that were once not accessible to them. Additional information on ADA access requirements can be found on the ADA web page www.ada.gov.

Movement in the classroom
Envision a typical classroom. How are the desks arranged? Where are the key materials located? How many items are strewn on the floor? How wide is the space between desks? Are there clear pathways? Would you be able to negotiate the room with your eyes shut or roll through it in a wheelchair without bumping into things?

When a student with physical or visual issues arrives in the classroom it is critical to create an environment that accommodates their movement issues. When the issue is physical, what kind of equipment will the student be using to get around the room? They will need to move from desk to teachers’ desk to small group tables. Are there pathways to these key areas that are clear and large enough to accommodate a walker or wheelchair as it goes past? Will the student need to transfer to and from a desk? Do they need rest breaks from the chair? Do they need varied seating for different school tasks? Is their workspace high enough to allow the wheel chair to wheel underneath the table? Working with the school’s OT or PT can help to address these issues.

For a student with a visual impairment, many of the same questions may be asked. The student may use a cane to help them negotiate around the many potential obstacles in the classroom. Key tools like reference materials, desks or the pencil sharpener may need to stay in the same location. Creating materials, signs, and labels in a larger font or in contrasting colors make them easier to see and read. They also may need to be in accessible formats such as audio or Braille. Students may need to be seated within the classroom where glare from windows and lighting are not an issue while working on a computer or retrieving information from a white board. Materials on the floor that may not be “seen” and could trip the student. Working with the vision specialist can help address specific issues.
Narrowing the Focus – Seating and Positioning

As a team, identify by circling or other means those few tasks the student needs to do that seating and positioning will have the most impact.

After the team has generated a list of tasks that the student needs to do, you may want to refine the list to limit the tasks that the team (including the student) will focus on. Too many tasks can overwhelm the team. Introduction of too many factors and tools may reduce your ability to determine effectiveness. Maintain your original list of tasks and review it later. Some tasks may already be effectively addressed with the new tools/strategies that you are using. The tasks that remain can become your new focus at a later date.

Solution Generation: Tools and Strategies – Seating and Positioning

As a team, brainstorm and write on chart paper any assistive technologies &/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for seating and positioning. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology.

Solution Selection: Tools and Strategies – Seating and Positioning

Use a Feature Match process to discuss and select those ideas, tools, and strategies that were generated during the solution brainstorming. Select those that best match the student, the environment and the tasks that need to be accomplished. Limit your selections to a reasonable number and prioritize them according to those that can be accomplished immediately, in a reasonable time period and those that will be considered at a later time or require additional or significant staff training.

Implementation Plan – Seating and Positioning

After tools have been selected and prioritized, identify any trials or services that are needed including procurement of trial materials, team member(s) responsibilities, start date and length of trial, training needed and any other student/staff specific issues. Be certain to identify objectives and criteria of performance to determine the effectiveness of the trials.
Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility

**Desk or table top modifications to help stabilize** - Changing the angle of the writing surface can provide stability to help compensate for low tone, abnormal reflexes or poor grip patterns. The wrist, when bent back into greater extension, can use tendon positions (called tenodesis) to assist or strengthen the grip while holding a writing tool. Use a slant board or by turn a three-ring binder sideways to achieve this affect.

**Chairs with arms** - Old wooden student chairs may have arms on the side that can be used to help students get lateral support, as well as using the boundaries of the chair to remind them to remain upright or to move themselves back into an upright position.

**Additional stabilizers** - Cushions, bolsters, rolled towel, blocks can also be used as needed to assist in positioning.

**Movement enhancers**

*Seat cushions* Seat cushions such as the *Disc cushion or disco junior*, while adding a nonslip surface, can also allow movement in the chair. The level of air in the cushion gives different degrees of movement that can help the child to stay alert.

*Chair leg modifications* Another way to provide movement while seated in the chair is to put a tennis ball on opposite chair legs. This makes the chair uneven and allows rocking in a safe manner as opposed to tipping up on two legs.

**Alternative chairs**

*T-stool* - A T-stool is a one-legged stool, often made from 2x4 lumber, in the shape of the letter “T”. Although it may seem counterproductive to try and balance while working at a desk, some students focus and attend better when their body is engaged.

*Beanbag chair* - For students with fatigue issues you may want to find alternate work environments within the school day that allow the body to rest and yet still participate in classroom activities. A beanbag or bolster chair may be used for listening or silent reading activities.

*Ball chairs* - For students that have difficulty attending, sitting on a therapy ball or bouncy cushion can increase attention level for some deskwork activities.

*Other Chairs* - In therapy and special education catalogs there are numerous types of chairs that may assist students in sitting. Consult with your special education teacher, OT or PT to review these catalogs to see what is available. There are a multitude of devices. It is no longer necessary to try and make something for the student if it can be purchased.

*Adapted/alternate chair, sidelyer, stander* - Many companies also specialize in positioning equipment to meet the challenges of students with significant motor issues. Your OT or PT can be consulted to find appropriate types of devices for these students to encourage positional changes throughout the day.

**Custom fitted wheelchair or insert**

The industry that manufactures wheelchairs and seating systems has expanded significantly. There are premade systems as well as systems that are molded to fit the students’ unique needs. Your OT or PT can help you find and fit positioning systems for students. Also wheelchair vendors will have additional expertise in these areas.

Types of support available include: head, trunk, hips, knees, and feet. Additionally, lap trays or other components may be added to the chair to increase positioning.
Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility

A Continuum of Considerations for Assistive Technology

Seating and Positioning

Standard seat/workstation at correct height and depth
→
Modifications to standard seat or desk
→
Alternative chairs
→
Adapted/alternate chair, sidelyer, stander
→
Custom fitted wheelchair or insert

**Standard seat at correct height and depth**
Many chairs and desks are adjustable. This can be the first way to try and fit them to the student. Often there are unused chairs and desks that can have the seat or desk height lowered permanently by cutting off the legs. Lateral support or foot support can be added to the chair if you or your maintenance person is handy with tools, equipment and parts that may be available at the school.

In the computer lab, adjustable seating and tables can decrease position issues and make computer activities a lot more comfortable for everyone. Ergonomic support such as wrist pads, smaller keyboards for young hands and angled footrests also add support. Monitors should be positioned at eye level or slightly below so students do not have to extend their heads back in an uncomfortable position to see the screen.

**Modifications to standard seat or desk**

**Stabilizers**

**Nonslip surfaces** - Dycem® or other type of non-slip surface can be applied to the seat of the chair to prevent sliding.

**Theraband** - Theraband stretched between the legs of the chair gives the student an additional way to stabilize their feet besides wrapping their feet around the legs of the chair.

**Seat cushions** - Seat cushions such as the Disc cushion or disco junior offer another way to prevent slipping. Some are inflatable to different levels, or the surface can be smooth or bumpy, depending on what suits the specific student.

**Foot support** – Put support under a student’s feet to raise them and prevent the feet from dangling. Cardboard or wooden boxes can be used. Attaching them to the chair will insure that they are in the correct position when the child is sitting in the chair.
Environmental Considerations – Seating and Positioning

As a team, discuss and write on chart paper any environmental considerations that might impact the student’s seating and positioning, such as auditory or visual distracters, placement in the classroom, number of different environments or any other environmental impacts. Some questions you may want to ask include:

- What positions are required in different environments?
- What positioning/seating do most children use in the different environments?
- Which environments could have multiple types of seating available?
- Are some environments more amenable to different positioning devices than others?

Sensory Considerations
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student’s learning, identify the sensory levels in each environment in which the student will be.

Assistive Technology: past and present
What assistive technology (AT) has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist such as computer conflicts, lack of training, lack of interest, or other reasons. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student’s skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference. If the student is currently using assistive technology note the AT used, location, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Be certain to list low and high tech AT supports.

Tasks – Seating and Positioning
As a team, discuss and write on chart paper the tasks that the student needs to do.
One of the most important questions when assessing a student’s need for assistive technology is: What are the tasks the student needs to do? In this instance what types of seating and positioning does the student need to have in order to perform the daily tasks? These are some questions to consider:

- What are the seating and positioning requirements for the various tasks throughout the student’s day?
- Are there times that the student could use different types of seating and positioning?
- What are the most important tasks that the student must do each day?
- How does the seating and positioning of the student interfere with or support the tasks the student is required to do each day?
Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility

Student’s Abilities and Difficulties – Seating and Positioning

As a team, discuss what the student’s abilities and difficulties are related to seating and positioning. Please complete and review Section 1 of the WATI Student Information Guide: Seating, Positioning and Mobility (Chapter 1, page 22).

Seating and positioning issues may be very evident or subtle. Some questions to help elicit information about the concerns in the area of seating and positioning are listed below.

- When does the student exhibit good/poor positioning?
- Does the student lean in a certain direction?
- Does the student hold their head, arms or other parts of their body in a certain way?
- Does the student have positioning issues all day or just at certain times?
- Where does the student have good/poor positioning?
- Does the student express issues or concerns about their position?
- Does the current seating and positioning promote or interfere with any activities?
- Does the student have safety issues with regards to seating and positioning?
- Are there barriers to seating and positioning within various locations around the school?

Sensory Considerations

Some students are adversely affected by environmental stimulation which other students can filter out or ignore. Some common factors which can impact a student’s learning and focus include hypersensitivity or hyposensitivity to stimuli such as

- Visual clutter
- Fluorescent lighting versus full spectrum lighting
- Classroom and background noise
- Tactile stimulation
- Awareness of physical space
- Other individual specific sensitivities

Although these factors are not directly related to seating and positioning, they impact the student’s ability to focus on instruction and learning so should always be considered. Some questions to ask may include:

- Does the child respond differently to surfaces that have different types of tactile input?
- Are there issues with skin sensitivity due to tolerance of fabrics, splinting material, etc.?

Other Considerations

Each individual student has specific skills and areas of concern. Be certain to address those as you capture the particular traits of the student in this part of the SETT process.
## WATI Assistive Technology Decision Making Guide

### Area of Concern: Seating, Positioning and Mobility

#### PROBLEM IDENTIFICATION

<table>
<thead>
<tr>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
</table>
| What are the student’s abilities and difficulties related to seating, positioning and mobility?  
- Does the student have strengths in any areas that would facilitate their seating and mobility?  
- Does the student have issues in  
  - Physical-Muscles- strength or weakness; Coordination or other physical issues?  
  - Stability- trunk, extremities; standing, seated or other position?  
  - Endurance-fatigues easily?  
- What is the student currently using for:  
  - Seating? Positioning? Mobility? Transfers? | What environmental considerations impact seating and positioning?  
- Where is the student expected to move about?  
- Do different locations require the same or different types of seating or mobility?  
- Does the child have an environmental preference?  
- Does the child require physical assistance in some areas, but not others? (restroom, classroom, bus, etc.) | What task(s) do you want the student to do once they are seated?  
- Use hands?  
- Use device or learning tool? Stay on task?  
- What task(s) do you want the student to do once they are moving?  
- Get to and from class?  
- Move around in the classroom?  
- Participate in daily activities?  
- What does the child need to be provided with to be as independent as possible in regards to: seating, positioning, mobility?  
- Does the child need assistance with transfers, changing positions, accessing mobility or other devices? |

### Sensory Considerations
- Hypersensitivity or hyposensitivity to stimuli such as visual clutter, different lighting; classroom and background noise; tactile stimulation-surfaces; awareness of physical space / personal space; other individual specific sensitivities

### Narrowing the Focus
- i.e. Specific task identified for solution generation

<table>
<thead>
<tr>
<th>Solution Generation Tools &amp; Strategies</th>
<th>Solution Selection Tools &amp; Strategies</th>
<th>Implementation Plan</th>
</tr>
</thead>
</table>
| Brainstorming Only  
No Decision | Discuss & Select Idea from Solution Generation | AT Trials/Services Needed:  
Date/Length/Person Responsible |

### Implementation Plan

<table>
<thead>
<tr>
<th>Follow-Up Plan</th>
</tr>
</thead>
</table>
| Who & When--  
Set specific date now. |

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
hold adapted equipment such as angle boards or provide room for additional storage may also be helpful.

Larger equipment or assistive technology devices such as an augmentative communication device or laptop computer can be positioned on a wheelchair or table by:

- Securing it to the lap tray or other work surface with Velcro™ or other temporary gripping material until the optimum location is determined and then permanently fastening it to a lap tray or table.
- Purchasing a mounting system specifically designed to mount the device on a wheelchair; mounting systems can be adjustable or permanently positioned depending on the needs of the student.

Remember that a device should be positioned within an individual’s optimum physical and visual range. Placing a device on a slant board may facilitate positioning.

**Using the SETT process and Decision Making Guide**

It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory of Sensory Considerations included with Student and Environment. Additional categories include:

- Narrowing the Focus to help identify a specific task in order to select appropriate assistive technologies
- Implementation Plan to assign trials, dates, responsibilities and data collection
- Follow-Up Plan to set a date for the team to reconvene and review the student’s progress

Again, this is intended as a guide; during the actual assessment process, each topic should be written in large print where everyone can see (i.e., on a flip chart or board). Information should then be transferred to paper for distribution, filing, and future reference. For more information about using the SETT process, please refer to Chapter 1 of this manual.

The questions posed in the guide are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology tools and strategies for their students.
Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility

elbows and upper extremities and the head and neck area, this chart systematically organizes the body and how to best support it (Pedersen, Lange 2001).

Once the body has been positioned within the wheelchair, then other aspects of the wheelchair may be considered to facilitate optimal functioning of the student. There are systems that offer tilt in space and/or recline (Lange 2000c, 2000d). Changing the seating angle is also an area that may need to be addressed (Lange 2001a). Cushion choice may also affect the total positioning package (Lange 2007b). More detailed information can be found on these topics in the Focus On articles by Michelle Lange in OT Practice.

To gain a more in depth understanding of some of the wheelchair features, RESNA (2005, 2007, 2008) offers several position papers to help the reader gain additional information on features of seating with in wheelchairs. In addition to case studies, the position papers address the features of wheelchairs including elevating seat devices, wheelchair standing devices, tilt, recline and elevating leg rests. Standing and seat elevating features assist the student with activities of daily living (ADLs). The standing feature also assists the student with issues of range of motion/contractures, bone mineral density, vital organ capacity, circulation, tone, pressure sores, and skeletal deformities. There are also benefits to being in a standing position that include access to community environments, and vocational and recreational activities. Tilt and recline components of a wheelchair seating system may be necessary to address issues of postural alignment, function, physiology, transfers and biomechanical issues, contractures or orthopedic deformities, edema, tone, pressure relief, comfort or dynamic movement. For some students these features may be manual, but for other students providing power tilt, recline and elevating leg rests may give them control over these features.

Seat Location in Environment
For a student with physical issues it is important to consider a seating assignment with clear pathways to key areas they need to access such as exits, teachers desk, or shelves with frequently used classroom materials.

For students with attention or visual processing issues consider seating that offers clear sight lines to boards, wall references or other teaching areas. Keep clutter on the board and walls to a minimum. Items hanging from the ceiling can be difficult for a student to filter out. Use color or boarders to highlight key visual areas. Be aware of visual field cuts (lack of vision in part of the visual field) and position the student to minimize their effect. Talk with your OT or vision specialist for more specific information or ideas.

Accessing Materials
It is important to position students so they can easily obtain materials. Desk organizers or clip on holders for pencils can keep writing and fine motor tools ready and easily accessible. Easy in-and-out storage folders can be strapped to the desk or chair to keep homework and notes located in one area. Nearby surfaces or an additional desk that can
Chapter 2 – Assistive Technology for Positioning, Seating, and Mobility

- Feet resting on the floor - ankles dorsiflexed to 90 degrees
- Knees flexed 90 degrees
- Hips flexed 90 degrees
- Hips well back in chair
- Both arms resting comfortably on desk without causing shoulders to shrug

This provides anatomical and symmetrical positioning but may not be the best position for active engagement. Kangas and Lange, experts in the area of seating and positioning especially with regards to wheelchairs, promote alternatives to this position (Kangas 2000, Lange 2001b). They promote active learning positions that vary from the 90, 90, 90 position. The active learning positioning is described as bending the knee slightly from 90 degrees with the feet placed asymmetrically on the floor, bending the trunk slightly forward at the hips and holding the elbows slightly more than 90 degrees. This position is similar to the one we assume before rising out of a chair without actually getting up and offers a more dynamic support structure for the upper body, arms, and hands while engaged in activities at a desk.

The maintenance of the 90, 90, 90 position may still be beneficial for children when the task is safe transportation. On the bus or in situations in which the surface is uneven, systems that hold children in the 90, 90, 90 position with straps, bars, vests, etc. will protect them in the case of an accident, sudden stop or bump on an uneven surface. For more information on safe transportation, read Safe Transportation for Students Who Use Wheelchairs on the School Bus (Shutrump, S., Manary, M., Buning, M. 2008). However, it is becoming more acceptable to discontinue the strapping when the child is not being transported and is engaged in activity. Then the student can have some movement within the seating system.

Karen Kangas (2003) states, “Seating for anyone, cannot be a singular posture, and any singular posture without any inherent mobility within that system, cannot assist an individual in becoming independent in any task”. One seating solution is not adequate because students cross environments within and outside the primary classroom. Multiple seating and positioning options must be identified, each providing a dynamic situation that allows the student to progress toward independence.

Variables for Positioning within the Seat

There are many aspects to consider when determining the optimal seating and positioning for a student (Berner, T. (2007) Lange (2000c) 2000h, 2001b, 2007a). An OT approach to seating and positioning can be found in the Gregorio-Torres (2006) article Wheelchair and Seating Evaluation. Gregorio-Torres addresses the factors of seating including: medical; physical; ADL/IADL; environmental; and mobility. The importance of posture evaluation and body measurement is explained with regards to determining optimal seating. There are devices for positioning the pelvis, trunk, head, and extremities. The positioning chart at http://www.atilange.com takes each area and identifies the part of the body, problem, possible cause, suggestions for intervention and goals of the intervention. Starting at the pelvis and moving through trunk, hips, knees, ankles and feet, shoulders,
use of the arms and attending. A chair in which the seat depth is too long will cause the child to slump forward and be unable to use the back of the chair to support themselves.

Chair and table height adjustments are not just for students with motor impairments. All activity workstations should be reviewed for the students expected to work at them. Computer labs are a good example, especially at the elementary level. These students range in age and size making it hard to set chair and desk heights that fit that range (Strup, 2003). Adjustable seating and tables can decrease position issues and make computer activities a lot more comfortable for everyone. Monitors should be positioned at eye level or slightly below. When a monitor is too high students may have to extend their heads back to an uncomfortable position so the eye can look up to the screen. Additional information can be found in the article *Getting it Right: Computer workstation ergonomics for children* (Strup, 2003).

**Increasing movement/alternate positions within typical seating**
Students who move about the classroom may benefit from adjustments in their current seating to incorporate continued movement to keep them engaged. Students who fall out of their chair may need modifications to allow them to get movement in their chair and incorporate frequent changes of positions. They may also benefit from scheduling breaks to get in and out of their seat. Adding alternative seating (floor, beanbag chair, etc.) can break up long work sessions. Allowing the student to seek alternative way to support themselves such as laying on their desk, wrapping their legs around the legs of the chair, or propping themselves on other surfaces such as the desk may actually increase their learning. Additionally, holding their head on their hand, sitting on their feet and putting weight on their arms may also give them additional support beyond what is traditionally provided. Some classrooms allow students to work while lying prone (on their stomachs) on the floor. This gives maximum support for the trunk and arms and may make it easier to focus on the academic task they are trying to do.

**Work or writing surface**
In a typical work station the writing surface is horizontal. However, an angled writing surface may help students by providing a more optimal position in which to write. It encourages the student to position the hand with the wrist extended making it easier to grasp a writing utensil. It may also help with copying tasks. The eyes move from a vertical to the horizontal writing surface during copying tasks. For some, the visual information gets lost in the transition, greatly slowing the information transfer. By angling the writing surface the eyes stayed on the same plane and the copying may be done faster and with greater accuracy.

**Students with significant disabilities**
Students with significant disabilities often have one or more positioning/seating devices. They may use a walker, wheelchair, stander or other positioning device. There are several factors to consider: position within their seat; seat location; and accessing materials.

**Positioning within the seat**
Traditionally, seating guidelines have focused on the following:
Seating and Positioning: Background

This section will focus on the basic body positions that are necessary in the school setting. The first part will address students with mild disabilities and the second part will address the students with significant motor impairment. This introduction is not mean to be all inclusive but to give the reader a basic understanding of some of the positioning issues seen in the school setting.

Students with mild disabilities

Students with mild disabilities have seating and positioning issues that are often overlooked as the focus of their program is on academics. However, these children may benefit from addressing their seating and positioning so that they can focus on learning. Some of the behaviors that indicate this may be an issue are: falling out of their chair; frequent changes of position; getting in and out of their seat beyond what is allowed; slumping over their desk; wrapping their legs around the legs of the chair; or propping themselves on other surfaces such as the desk or holding their head on their hand. These are indicators that there may be issues with core strength, muscle tone, fatigue, vision or other problems.

Desk/Workstation

One of the first issues to address is the desk or workstation. A workstation consists of many components and you must consider all to achieve an optimal workstation. The student’s seating in relation to the workstation and the task is the first key component. Traditionally, seating guidelines have focused on the following:

- Feet resting on the floor - ankles dorsiflexed to 90 degrees
- Knees flexed 90 degrees
- Hips flexed 90 degrees
- Hips well back in chair
- Both arms resting comfortably on desk without causing shoulders to shrug

If the child is able to fit in the chair within these parameters, then the chair is an appropriate fit. This does not mean, however that this is the expected position for the student to be in during learning. Some seating and positioning experts (Bundonis 2003, Kangas 2000, Lange 2000) have found that active learning positions vary from this by bending the knee slightly from 90 degrees with the feet on the floor (feet may be asymmetrical), bending the trunk slightly forward at the hips and holding the elbows slightly more than 90 degrees. This position is similar to the one we assume before rising out of a chair without actually getting up. It offers a more dynamic support structure for the upper body, arms, and hands while engaged in activities at a desk.

A second component is the relationship of the chair to the work surface where the task is to be performed. Desk and chair heights are an area that can be easily overlooked. Adjust the chair and table height as needed to obtain proper positioning. A chair that is too high will cause the feet and legs to dangle from the seat of the chair or the child to slide forward with back rounded. A chair that is too low will also cause the child to sit in a position that will interfere with optimal
Assistive Technology for Positioning, Seating, and Mobility

Karen J. Stindt MS OTR ATP, Penny R. Reed, Ph.D., and Marcia Obukowicz, OTR

Positioning, seating and mobility play a critical role in a student's ability to function in the academic setting. The first section of this chapter provides information on positioning and seating. The second part of this chapter addresses mobility. If a student requires special positioning, seating and mobility, an occupational or physical therapist on the team may be the best person to take the lead in determining the appropriate options.

Each of the sections of this chapter contains background information, current information and questions to guide you through the SETT process and the decision making guide, as well as a continuum for positioning and seating, and another continuum for mobility. Following that are references and information on resources for the specific items discussed in this chapter, including resources for further information on the topics discussed.

Assistive Technology for Seating and Positioning

Introduction

Students are required to assume many different physical positions during the school day. Most students have no problems managing the multiple positions that are required; from standing and walking to get where they need to go to sitting in various places throughout the day (desk, floor, lunch room, library, playground, etc.). However, when a child has physical challenges ranging from slight to severe, this automatic task can have a significant impact on their daily functioning. Focusing their attention on trying to maintain their body position takes attention away from academics and learning. Children with mild motor involvement may have problems that manifest in excessive movement in and around their seat and desk. Children with significant motor issues may have difficulty managing all aspects of their body including, head control, trunk control (required for a stable base to work from), and positioning of their extremities.

The seating and positioning part of this chapter is organized in accordance with the Decision Making Guide following the SETT format (Student, Environment, Tasks and Tool). The Student section will assist you in determining skills and abilities required by the student to address seating and positioning issues. The Environment section poses questions to consider concerning the impact of the students environment, the teachers expectations, and how the environment might impact on the choice of assistive technology. The section on Tasks discusses what is required of the student that the student is unable to perform at a level consistent with their academic needs and the goal of the task in order to appropriately choose an assistive technology solution. Following Tasks is a section on Tools beginning with the continuum of assistive technology to be considered organized from low to high technology. This is followed by a more extensive listing of tools and strategies under the continuum subtitles. The chapter concludes with a discussion of a feature match process. Chapter appendices include sample IEP objectives, references, resources, and product charts.
### Products Mentioned in Chapter 1

<table>
<thead>
<tr>
<th>Product</th>
<th>Vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAC Feature Match</td>
<td>Doug Dodgen &amp; Associates</td>
</tr>
<tr>
<td>EvaluWare</td>
<td>Assistive Technology Inc.</td>
</tr>
<tr>
<td>Write:Out Loud™</td>
<td>Don Johnston Incorporated</td>
</tr>
</tbody>
</table>
WATI Assistive Technology Trial Use Summary

Student’s Name: ____________________________________________________________

Age: _____ Date Completed: _________

Person(s) Completing Summary: ____________________________________________

Task Being Addressed During Trial __________________________________________

Criteria for Success ____________________________________________

<table>
<thead>
<tr>
<th>AT Tried</th>
<th>Dates Used</th>
<th>Criteria Met?</th>
<th>Comments (e.g. advantages, disadvantages, preferences, performance)</th>
</tr>
</thead>
</table>

Recommendations for IEP: ____________________________________________

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________
### MANAGEMENT/SUPPORT

<table>
<thead>
<tr>
<th>Location(s)</th>
<th>Support to be provided (e.g. set up, trouble shoot, recharge, program, etc.)</th>
<th>Person Responsible</th>
</tr>
</thead>
</table>

### Student Use

<table>
<thead>
<tr>
<th>Date</th>
<th>Time Used</th>
<th>Location</th>
<th>Task(s)</th>
<th>Outcome(s)</th>
</tr>
</thead>
</table>

---

*Assessing Students’ Needs for Assistive Technology (2009)*
## WATI Assistive Technology Trial Use Guide

**AT to be tried:**

<table>
<thead>
<tr>
<th>Student’s Name: ___________________________________</th>
<th>DOB: _____</th>
<th>Age: ___</th>
<th>Meeting Date: _____</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>School/Agency: ___________________________________</th>
<th>Grade/Placement: ________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Contact Person(s): ___________________________________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>School/Agency Phone: ______________________</th>
<th>Address: ________________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Persons Completing Guide: ________________________________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Parent(s) Name: ___________________________________</th>
<th>Phone: __________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Parent(s) Address: ___________________________________</th>
</tr>
</thead>
</table>

**Goal for AT use:**

**ACQUISITION**

<table>
<thead>
<tr>
<th>Source(s)</th>
<th>Person Responsible</th>
<th>Date(s) Available</th>
<th>Date Received</th>
<th>Date Returned</th>
</tr>
</thead>
</table>

| Person primarily responsible to learn to operate this AT: ____________________ |

**Training**

<table>
<thead>
<tr>
<th>Person(s) to be trained</th>
<th>Training Required</th>
<th>Date Begun</th>
<th>Date Completed</th>
</tr>
</thead>
</table>
Implementing Trials with Assistive Technology

In order to determine which assistive technology will work effectively for a student, that student must have an opportunity to try the assistive technology. In some cases, a brief trial during a short visit with one of the team members reveals an effective solution. More typically, a longer trial of several days, weeks, or in some cases, months is necessary. Whether the trial is short or long, documenting the student’s performance while they try the assistive technology is critical.

Included are two planning tools that can help the team as they prepare for a more extensive trial with one or more assistive technology devices. The Assistive Technology Trial Use Guide is a form that guides the team through a sequence of important questions that must be addressed prior to implementing trial use of assistive technology and after the trial.
Closing the Gap Resource Directory and Online Searchable Database

Once the common vendors are known, the next useful tool is the Closing the Gap Resource Directory. The Resource Directory is published each spring as the February/March issue of the Closing the Gap newsletter. It is an excellent tool for school teams. The first step in using the Directory is to go to the Producers Section, which is near the back of the directory. In the Producers Section, team members can look at each of the vendors obtained from the Product Description Section of Resource Directory.

In our example, Don Johnston Incorporated was one of the common vendors listed for talking word processors. Looking up Don Johnston Incorporated reveals a long list of products. Scanning that list reveals Write:OutLoud®, which sounds like it might be a talking word processing. Turning to the Software section of the Resource Directory provides a description of this talking word processing software, including price, type of computer it runs on, system requirements, and other valuable information.

Closing the Gap also has a searchable database on its website http://www.closingthegap.com/solutions/products/advanced_search.lasso. Annual subscriptions are required to use the online version but there is a free 14-day trial. The same type of information is included there; once the name of a product or the type of product is known, more information can be obtained from the website.

QIAT Listserv

Quality Indicators of Assistive Technology (QIAT) is a voluntary organization of AT professionals from around the world who share both ideas and questions. This group is a wonderful resource when looking at the needs of students with AT needs. They provide a collegial support network of some of the finest minds and pioneers in the field of assistive technology. Post questions to this listserv, or share ideas and resources. The site is hosted on the University of Kentucky website. Dr. Joy Zabala is the creator and moderator of the site. http://natri.uky.edu/assoc_projects/qiat/

AAC TechConnect

AAC TechConnect has created Device Assistant, a resource designed to provide information on nearly 100 AAC devices currently on the market from major manufacturers. (Information is provided in cooperation with all of the manufacturers.) You can use a feature-match tool to search for a device, and also do side-by-side comparisons. A subscription fee is required, but there is a 14-day free trial. The site was created by Debby McBride, MS, CCC-SLP.

http://www.aactechconnect.com/da.cfm
**Chapter 1 - Assistive Technology Assessment**

**ORGANIZATION (continued)**

- Information Management
  - Tabs
  - Sticky notes, index cards
  - Highlighters
  - Key words
  - Study guide
  - Task analysis
  - Digital highlighters and sticky notes
  - Handheld scanners/electronic extraction
  - Electronic organization
  - Study grid generators/grading rubric
  - Online search tools
  - Online web trackers
  - Online sorting file tools
  - Digital graphic organizers
  - Online manipulatives, interactive, tutorials, animations

- Time Management
  - Checklists
  - Paper planners/calendars
  - Schedules (visual)
  - Portable, adapted timekeepers
  - Electronic reminders
  - Digital planners (PDA) cell phones
  - Web-based planning tools

- Material Management
  - Low-tech organizers
  - Container system
  - Coding system
  - Electronic filing and storage
  - Portable electronic storage
  - Computer-based tools

**RECREATION AND LEISURE**

- Typical toys/puzzles/balls/utensils/instruments adapted; adjustable equipment; flexible rules; add visual/auditory clarity
- Specially designed utensils/equipment
- Electronically/mechanically adapted utensils and equipment
- Electronic aids – remote controls, timers, CD players, speech generating devices
- Computer-facilitated and computer-based activities
- Online and virtual recreational experiences

**VISION (continued)**

- Reading
  - Glasses
  - Color Filter
  - Slantboard
  - Large print
  - Optical Magnifier
  - Electronic Magnifier
  - CCTV
  - Monocular
  - CCTV with distance camera
  - Audio text
  - Computer-based reading software
  - Electronic Braille notetaker

- Mathematics
  - Large print measuring tools
  - Large key calculator
  - Tactile measuring devices
  - Abacus
  - Talking calculator
  - Models or 2D and 3D geometric shapes
  - Tiger embossed, PIAF Tactile representation

- Pictorial Information
  - Enlarged format
  - CCTV
  - Models or objects
  - Tactile graphics
  - Tactile-audio graphics

- Note taking
  - Slate and stylus
  - Tape or digital recording device
  - Computer-based recording software
  - Electronic Braille note taker

- Hearing Technology
  - FM
  - Infrared
  - Induction Loop
  - 1:1 Communicators
  - Personal amplification

- Alerting
  - Visual or vibrating alerting devices

- Communication
  - Telecommunication supports
  - Closed captioning
  - Person to person
  - Classroom/group activities
  - Voice to text/sign
  - Real-time captioning

**Writing**

- High contrast pen
- Portable word processing device
- Typing with audio support
- Braillewriter
- Typing with Braille support
- Electronic Braille note taker
- Voice recognition

**Mobility**

- Cane
- Monocular
- Braille/talking compass
- Electronic travel device
- GPS device

**Assessing Students’ Needs for Assistive Technology (2009)**
### WATI Assistive Technology Assessment Checklist

#### SEATING, POSITIONING AND MOBILITY

**Seating and Positioning**
- Standard seat/workstation at correct height and depth
- Modifications to standard seat or desk
- Alternative chairs
- Adapted/alternate chair, sidelyer, stander
- Custom fitted wheelchair or insert

**Mobility**
- Walking devices - crutches/walker
- Grab bars and rails
- Manual wheelchair
- Powered scooter, toy car or cart
- Powered wheelchair w/joystick or other control
- Adapted vehicle for driving

#### COMMUNICATION

- Concrete Representation
- Simple speech generating device
- Speech generating device with levels
- Speech generating device with icon sequencing
- Speech generating device with dynamic display
- Text based device with speech synthesis

#### COMPUTER ACCESS

- Positioning of student
- Standard Keyboard/Mouse with accessibility/access features built into the operating system
- Standard Keyboard/Mouse with Adaptations
- Rate Enhancement
- Alternate Keyboard/Mouse
- Onscreen keyboard
- Voice recognition software
- Eye Gaze
- Morse Code
- Switch Access
- Other: ________________________

#### MOTOR ASPECTS OF WRITING

- Environmental and seating adaptations
- Variety of pens/pencils
- Adapted pen/pencil
- Writing templates
- Prewritten words/phrases
- Label maker
- Portable word processor
- Computer with accessibility features
- Computer with word processing software
- Alternative keyboards
- Computer with scanner
- Computer with word prediction
- Computer with voice recognition software

#### COMPOSITION OF WRITTEN MATERIAL

- Picture Supports to write from/about
- Pictures with words
- Words Cards/Word Banks/Word Wall
- Pocket Dictionary/Thesaurus
- Written templates and Guides
- Portable, talking spellcheckers/dictionary/thesaurus
- Word processing software
- Word prediction software
- Digital templates
- Abbreviation expansion
- Word processing with digital supports
- Talking word processing
- Multimedia software with alternative expression of ideas
- Tools for citations and formats
- Voice recognition software

#### READING

- Standard Txt
- Book adapted for access
- Low-tech modifications to text
- Handheld device to read individual words
- Use of pictures/symbols with text
- Electronic text
- Modified electronic text
- Text reader
- Scanner with OCR and text reader
- Text reader with study skill support

#### MATHEMATICS

- Math manipulatives
- Low-tech physical access
- Abacus/mathline
- Adapted math paper
- Adapted math tools
- Math "smart chart", math scripts
- Math tool bars
- On-screen calculator
- Alternative keyboards/portable math processors
- Virtual manipulatives
- Math software and web simulations
- Voice recognition math software

#### ORGANIZATION

**Self-Management**
- Sensory regulation tools
- Movement and deep pressure tools
- Fidgets
- Auditory
- Visuals

*(Organization continued in next page)*
Using the AT Checklist

In some cases team members are not fully aware of all the assistive technology that might be available to assist with the task that is of concern. In that case there are several tools and resources that can be used to assist them. One of those tools is the AT Checklist. The AT Checklist is a concise listing of assistive technology arranged by the task for which it would be utilized. Categories are: Seating, Positioning and Mobility; Communication; Computer Access; Motor Aspects of Writing, Composition of Written Material; Reading; Mathematics; Organization; Recreation & Leisure; Activities of Daily Living; Vision; Hearing; and Multiple Challenges.

Within each of these categories suggested assistive technology is arranged in a hierarchy from the simplest, low-tech alternatives to more complex or high-tech items. They are arranged this way because the developers shared a belief that we want to select the simplest alternative that successfully assists the student. Many years ago we had a number of experiences where service providers immediately jumped to the most complex solution without first trying other alternatives. The hierarchical arrangement of the items in the AT Checklist is in response to this type of thinking. For example, just because a student has difficulty with writing, does not mean that the first thing we try would be voice recognition. While voice recognition is exciting and very appealing, there are other, simpler tools that should be tried first to see if they work.

You will note that each section also includes a space to write in new assistive technology. Since many new products are introduced each year, it is important to be able to add new items. The final section of the AT Checklist is a place to write comments that the team has as they utilize the Checklist. These may include something that has been tried or a plan to try a sequence of items. It is always important to capture in writing the discussions that take place as team members works together to arrive at an assistive technology decision.
### Problem Identification—(Sample)

<table>
<thead>
<tr>
<th>Area of Concern</th>
<th>Student’s Abilities/Difficulties</th>
<th>Environmental Considerations</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Writing/use of hands&lt;br&gt;• Communication&lt;br&gt;• Reading/academics&lt;br&gt;• Mobility&lt;br&gt;• Vision&lt;br&gt;• Hearing&lt;br&gt;• Behavior&lt;br&gt;• Other</td>
<td>• Classroom&lt;br&gt;• Playground&lt;br&gt;• Lunch room&lt;br&gt;• Home, etc. In each:&lt;br&gt;• Technology equipment available&lt;br&gt;• Room arrangement, lighting&lt;br&gt;• Sound&lt;br&gt;• Activities, etc</td>
<td>• Produce legible written material&lt;br&gt;• Produce audible speech&lt;br&gt;• Read text&lt;br&gt;• Complete math problems&lt;br&gt;• Participate in recreation/leisure&lt;br&gt;• Move independently in the school environment</td>
</tr>
</tbody>
</table>

#### Sensory Considerations

Vision/Hearing/Tactile (hyper/hypo)

#### Narrowing the Focus

i.e. Specific task identified for solution generation

<table>
<thead>
<tr>
<th>Solution Generation Tools &amp; Strategies</th>
<th>Solution Selection Tools &amp; Strategies</th>
<th>Implementation Plan</th>
</tr>
</thead>
</table>
| Brainstorming Only<br>No Decision<br>Review Checklist | Discuss & Select Idea from Solution Generation | AT Trials/Services Needed:  
Date  
Length  
Person Responsible |

#### Follow-Up Plan

Who & When  
Set specific date now.

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.
For Follow up:

**Follow up on a planned schedule.** At a set interval after implementation, follow-up or monitoring must take place. This is another area where school teams frequently fail. The school year can slip quickly by while one team member waits on another to do something; or bad weather, illnesses, and absenteeism take their toll. If monitoring does not take place according to the original plan, a variety of problems can crop up and be overlooked as each team member focuses on their own assignment, but does not have the opportunity to get the “big picture” that comes from a team discussion.

Using the AT Decision Making Guide will guide the team through the steps of the process. Following these simple, but effective steps can be extremely useful to teams in the schools as they strive to make appropriate and effective assistive technology decisions for the students they serve.
## SETT SCAFFOLD for TOOLS SELECTION-PART II B

**Establishing Availability and Training Needs for Promising Tools**

<table>
<thead>
<tr>
<th>SHORT LIST OF TOOLS</th>
<th>TOOL AVAILABILITY</th>
<th>SERVICES (training, planning, coordination, etc) REQUIRED FOR EFFECTIVE USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>JUSTIFY CHOICES WITH SETT DATA AND DESCRIPTOR MATCH</td>
<td>S</td>
<td>P</td>
</tr>
</tbody>
</table>

**KEY:**
- **S** = Systemically available tools - Currently available to ALL students served by this system
- **P** = Programmatically available through special education services or other services for which identified student is qualified
- **A** = Additional tools that need to be acquired for this student.

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*Assessing Students’ Needs for Assistive Technology (2009)*
### SETT SCAFFOLD for TOOLS SELECTION - Part II A

Develop Descriptors of an Assistive Technology Tool System that Addresses Needs and Identify Possible Tools

**STUDENT:** ____________________  **AREA OF ESTABLISHED NEED (See SETT: Part I):** ____________________

<table>
<thead>
<tr>
<th>Descriptors</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**STEP 1:** Based on S-E-T data, enter descriptors or functions needed by the student across the shaded top row - 1 descriptor per column

**STEP 2:** Enter promising tools in the shaded left column - 1 tool per row

**STEP 3:** For each tool, note matches with descriptors and functions to help guide discussion of devices and services

*USE ADDITIONAL SHEETS IF NECESSARY*

© Joy Zabala (Revised 2005) PERMISSION TO USE GRANTED IF CREDITS ARE MAINTAINED SETT forms and additional resources are available for download at [http://www.joyzabala.com](http://www.joyzabala.com). Please provide feedback on effectiveness and suggestions for modifications/revisions by email to joy@joyzabala.com
Use a numerical system to match the tasks the team wants supported by the technology to the technology that has most of those features. SETT IIB is the place to document the selected tools and how they can be obtained, as well as the training required to utilize them. It must be remembered that for a tool to be integrated, it must first be learned and integrated into the student’s curriculum.

For example, use 1 = not effective to 5 = very effective. The team can decide on how many numbers to use and must define what they represent. At the end of the trial period, all rows are added to determine which tool was most effective.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Observable Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Increase in complex sentences, less spelling errors, longer written assignments, more novel thoughts expressed.</td>
</tr>
</tbody>
</table>
If the solutions generated by the team do not include assistive technology, or include only a very few items, the team may need to utilize additional resources. Additional resources can provide an overview of the types of assistive technology solutions that would be appropriate for the student and task for which they are problem solving. Resources may include a person, as mentioned earlier or print, digital, or online resources. In the next section Using the AT Checklist and other Resources; several resources that might be helpful are discussed.

During Solution Selection:

During Solution Selection, encourage combining, sequencing and prioritizing. As alternatives are discussed and evaluated, it may become apparent that some items are the same thing in different words or that others make an excellent sequence of steps. New suggestions may be added at any time. This is the place for the team to really discuss the value and relationship of the many suggestions. As individual suggestions are discussed, it is often helpful to group them into “Things we can do tomorrow,” “Things we can do in a month,” and “Things we may want to consider later.” The Action Plan is then created to include a timeline and persons responsible for each of the solutions or steps that were selected.

Obtain consensus from all participants before adjourning meeting. When several people work together to reach a decision, there will be many different ideas presented. In ideal situations, the Solution Selection will result in a unanimous agreement about what specific suggestions should be selected for the action plan. However, life is far from ideal. When unanimous agreement is not reached, it is critical that the team arrive at consensus about the action plan that will be implemented. In order to assure consensus, the facilitator must poll individual team members, asking them if they will support this plan even though they may have personally preferred another solution. When the facilitator fails to poll members for consensus, they may believe they have unanimous agreement, but actually have majority rule (a few team members dominating the discussion, while others strongly disagree, but do not speak up), minority rule (one team member dominating the discussion, while others disagree and do not speak up), or authority rule (no one questioning what the administrator suggested, even though they disagree). When one of these occurs, the chances of successful implementation are decreased.

During Implementation:

When implementation takes place, follow the plan completely. For that to happen, everyone on the team needs to be aware of the plan and his/her role in it (Prentice & Spencer, 1985). Unfortunately this does not always happen if teams do not utilize the strategy of writing down important information during each step of the process. Without that “group memory” important details and key responsibilities are easily forgotten or overlooked while meeting the myriad demands of work in school districts. Implementation is the step of the decision making process that tells us whether the solutions we selected are good ones.

One planning tool we have found useful is Joy Zabala’s The SETT Framework Part II A and Part II B. This is a guide that allows a team to compare the potential effectiveness of selected tools using the same criteria.
of the meeting for a telephone call, they can quickly “catch up” on what was said when they are able to refocus on the discussion. At the same time, if a group member contributes a solution before the team has finished contributing all the information necessary to identify the problem, the recorder can quickly note the “suggested solution” under Solution Generation, and redirect the entire group back to completing Problem Identification.

Create a shared group memory. Recording what is being said where it is visible to all adds visual memory to auditory memory and doubles the likelihood that everyone will remember in the same way the information that was discussed. This helps create a shared group memory, one that is very similar across all members of the group. It greatly increases the likelihood of follow through from team members.

Share roles and responsibilities. Team members may be hesitant to take a leadership role in conducting team meetings. Rotating roles from one meeting to the next is an effective way to share this responsibility. At each meeting one team member can serve as facilitator, while another is recorder, and still another acts as timekeeper to keep the group moving through the discussion. It is important that the team move at a pace that will allow the most time at the most important discussion points and keep the team from getting side tracked or bogged down (Fox & Williams, 1991). In addition, this rotation of roles helps insure that each team member recognizes and respects the contribution each of these participants makes to effective decision-making.

During Problem Identification:

Address not only the characteristics of the student, but also of the environments in which the student functions, and the tasks that need to be done. Many times when technology is abandoned, it is because only the physical, psychological, and social characteristics of the student are addressed, with little or no attention paid to the settings in which the device will be used or the specific tasks that the student really needs to address (Cook & Hussey, 1995). The SETT framework (Zabala, 1994) helps team members to focus on the student (their personal characteristics and interests), the environment (including physical characteristics of the setting as well as instructional activities and arrangements), and the task (which are the specific activities that the target student needs to be able to do in each environment). This focus is helpful in clearly identifying and defining the problem so that the team has a clear focus to guide them as they generate appropriate alternatives and solutions.

During Solution Generation:

When generating solutions, use brainstorming rules to create a climate of trust. An important factor in generating a variety of useful alternatives during Solution Generation is to create a climate of trust by following brainstorming rules. This means that all suggestions are written on the board or chart, no comments are allowed and no judgments are passed. The goal is to generate as many ideas as possible. As the flow of ideas slows, it is a good idea to persevere a little longer. Often the second wave of ideas is the most innovative. If everyone is feeling sluggish and suggestions are few, energy may be increased by putting a two-minute time limit in place to get things started. This short time limit combined with writing everything where it can be seen increases the creativity and allows the group to explore as many options as possible. Additional time can be added if the group agrees, but the short time period helps bring that creative, right side of the brain into action.
Using the AT Decision-Making Guide

When the members of the team who have been assigned to gather information have completed their tasks, the team is ready to come together for the next step. The information gathering may have included reviewing the files, contacting previous service providers, completing a specific test that someone felt would provide important information, or observing. In decision making this information will be used to guide the direction and content of the decision.

Decision-making takes place at a meeting. The tool to be used is the AT Decision-Making Guide. This guide is a single page that leads the team through a five-step decision making process. Using an effective decision-making process requires team members to acquire and use a variety of skills that are separate from the technical skills they may have needed during the data gathering stage. These include communication skills and group process skills. The communication skills include, but are not limited to active listening, negotiation, providing non-threatening feedback, and accepting criticism without becoming defensive. The last skill area is group process. It includes following a schedule, reaching consensus, and a variety of tasks that become important when working as part of a team, one of the most important being the effective use of a formal group decision making process.

The key elements or steps of an effective decision making process include:

1. **Problem Identification:** The identification and definition of a specific problem
2. **Solution Generation:** The suggestion of possible solutions
3. **Solution Selection:** The evaluation of suggestions and choosing of a solution to create an action plan
4. **Implementation:** The carrying out of the plan
5. **Follow up:** Meeting again to evaluate the solution

It may sound strange to suggest that various members of the team might be on different steps of the process. However, it is not unusual for team meetings to be conducted in an informal manner with information presented verbally and with little attention paid to focusing on the specific steps of the decision-making process. When this occurs, individual styles of thinking and communicating can lead to one team member seeking very specific and minute details of the problem. At the same time another team member may be thinking of great solutions and still another is wondering how soon the meeting will be over or what to serve for dinner that night. There are several very simple, but effective strategies for improving and formalizing the decision-making process being used by a team when making assistive technology decisions. The AT Planning Guide provides a structure for doing so.

**Throughout the Decision Making Process:**

**Present information in written as well as spoken format where everyone on the team can see it.**

This requires that the key facts be written on a board, flip chart, overhead projector or butcher paper in large print that is visible to all participants. Some team members may feel that this takes unnecessary effort to write every idea up on a board, but it is an extremely effective way to keep each person focused on which step the team is addressing. As information is shared, it is written on the board or chart visible to all. If one of the team members is distracted by something they have forgotten to do, or is called out
### Environmental Observation Summary

**Activity/Task(s) observed:**

**Ways that typical students participated:**

**Ways the target student participated:**

**Barriers to target student’s participation:**

Adapted from:


Pearson, L. (no date). *Apraxia guide: Classroom observation checklist*. Available online: [http://hometown.aol.com/lynetteprs/myhomepage/profile.html](http://hometown.aol.com/lynetteprs/myhomepage/profile.html)
### WATI Classroom Observation Guide

**Classroom(s)** ________________________________________________________________

**Teacher** ___________________________________________________________________

**Student** ___________________________________________________________________

**Date** ____________ **Time** _______________ **Observer** __________________________

(J. Gierach, 2009, Wisconsin Assistive Technology Initiative)

| Task: Ex. Writing a report, working on SMART Board, aligning mat problems, researching topic in media center. |
|---|---|---|---|---|---|---|
| **Directions:** | **General students response:** | **Target Student Response:** | **Barrier to task completion:** | **Potential Adaptations:** | **Questions:** |
| Were they given: | How does the rest of the class respond to the directions, how do they complete their work | Do you notice any difference in how the target student handles the directions? How do they begin, maintain, and end the task? Was the time for the activity sufficient? | What do you notice about the environment that might affect the target student’s work? Ex. Manner that the directions were delivered, time to complete the task, different learning style. | What pops into your head as a solution that you might bring to the brain storm session during the ASNAT meeting? | What information do you need? What questions do you have for the teacher/student/parent? |
| Visually | | | | | |
| Auditorally | | | | | |

**Time:** For task completion

---

**Task:**

**Directions:**

**Time:**

---

**Task:**

**Directions:**

**Time:**

---

**Task:**

**Directions:**

**Time:**

---

**Task:**

**Directions:**

**Time:**
### Access to Assistive Technology

Record the presence or absence of EACH TYPE of assistive technology by placing a check in the corresponding box. Record the AT found in the classroom as a whole, not just the AT used by the target student.

<table>
<thead>
<tr>
<th>Types</th>
<th>Present-Not Used</th>
<th>Present-Used</th>
<th>Not Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication cards/boards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digitally recorded communication devices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic communication devices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT for activities of daily living</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjustable seating (not a wheelchair)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positioning equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amplification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual signaling devices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brailler/brailed materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnifiers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notetaking devices/keyboards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech output devices/computers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handwriting aids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternate/adapted keyboards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternate/adapted mouse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer switch interface</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch window</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking word processor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word prediction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text or screen reader</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portable word processor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer aids - Hoists/lifts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility aids (not wheelchairs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapted environment (e.g., doors, fixtures, furniture)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic equipment for instruction (calculator, e-books)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapted instructional materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional software</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer stations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapted art/craft materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapted sports/recreation equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapted toys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheelchair – Manual or Power</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify):</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Sensory Stimulation: continued

<table>
<thead>
<tr>
<th></th>
<th>Excessive</th>
<th>Balanced</th>
<th>Reduced</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clutter/busy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art/decorations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Persons Present During Observation:** For each person on the list, put a check in the appropriate column indicating their level of participation.

<table>
<thead>
<tr>
<th>Persons</th>
<th>Participating</th>
<th>Observing</th>
<th>Not Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Educator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Educator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer Tutors (How many? _____)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional Assistant #1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional Assistant #2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional Assistant #3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Attendant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech-Language Pathologist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Therapist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Psychologist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT Specialist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify):</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
Environmental Observation Guide

Student’s name: ________________________________
School: ________________________________________
Observer: ______________________________________
Date of Observation: _____________________________
Type of class: __________________________________

Directions: Complete this Environmental Assessment Checklist before beginning

Describe the environment: Record short responses in the space provided.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special or general education classroom?</td>
<td></td>
</tr>
<tr>
<td>Specialty classroom (Specify: e.g., P.E., computer lab)</td>
<td></td>
</tr>
<tr>
<td>Therapy room? (Specify)</td>
<td></td>
</tr>
<tr>
<td>Number of teachers in class?</td>
<td></td>
</tr>
<tr>
<td>Number of aides in class?</td>
<td></td>
</tr>
<tr>
<td>Number of volunteers in class?</td>
<td></td>
</tr>
<tr>
<td>Number of students in the class?</td>
<td></td>
</tr>
<tr>
<td>How many days per week is the program?</td>
<td></td>
</tr>
<tr>
<td>How many hours/day?</td>
<td></td>
</tr>
<tr>
<td>Is the atmosphere busy or quiet?</td>
<td></td>
</tr>
<tr>
<td>Are there large open areas or small divided sections?</td>
<td></td>
</tr>
<tr>
<td>How are the desks arranged?</td>
<td></td>
</tr>
<tr>
<td>Is the furniture sized for students?</td>
<td></td>
</tr>
<tr>
<td>Are materials accessible, appropriate, varied, interesting?</td>
<td></td>
</tr>
<tr>
<td>Is special equipment available (i.e., chairs with arm supports)?</td>
<td></td>
</tr>
<tr>
<td>Where is the classroom located in relationship to the cafeteria, therapy, outdoor play areas, etc.?</td>
<td></td>
</tr>
<tr>
<td>Are bathrooms located in or outside the classroom?</td>
<td></td>
</tr>
</tbody>
</table>

Sensory Stimulation: Judge the level of sensory stimulation and record it with a check in the corresponding box. Enter comments or notes that clarify your responses if needed.

<table>
<thead>
<tr>
<th>Source</th>
<th>Excessive</th>
<th>Balanced</th>
<th>Reduced</th>
<th>N/A</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hallway</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other classrooms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional media</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher aides/volunteers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Second preference – If it is not specified in the IEP, talk to a teacher to schedule a time and place when the student uses AT the most during the day.

Third preference – If the student uses the AT across the entire day, observe in the setting where he spends the most amount of his instructional day.

Meet with the teacher(s), therapists, and assistants to determine:
- What will happen in the class that day; Is it a typical day?
- What the student using assistive technology will be doing that day.
- Inform them what you will be doing during the observation.

**During the observation:**

Record observations:
- Complete the environmental assessment checklist.
- Record direct student observation field notes.
- Record impressions and comments.
- Record time markers in the observation notes to determine length of activities.
- Participate in the class only if invited to do so.

**After the observation:**

Thank the teacher for allowing you to observe.

If time allows in the teacher’s schedule:
- Probe for additional information directly related to your observations for clarity.
- Share a brief summary of what you saw.

Provide the teacher with a copy of the observation summary when completed.

Conduct the teacher interview at a mutually agreed upon time.

The observer’s role is to capture what is occurring, not to make decisions or even formal recommendations; that comes later in the decision-making part of the assessment process. During the observation(s), the observers are simply gathering information.
Chapter 1 - Assistive Technology Assessment

Gathering Information about Environments and Tasks

Effective, appropriate decisions about assistive technology can only be made when teams are well informed about the unique characteristics of the environments in which the student spends time and the tasks that are being done in those environments (Zabala, 1994). The Wisconsin Assistive Technology Initiative strongly encourages observing the student in several environments with a specific focus on describing the environment and the activities/tasks in which the target student and other students are engaged. The Environmental Observation Guide is a tool for that purpose.

Consider all customary environments, including the classroom and other school environments, such as the lunchroom, playground, assemblies, etc., the home, and any relevant community sites such as shopping malls, restaurants, church, scouts or other groups. Information to be gathered can be guided by specific questions such as these:

- What equipment and materials, including technology supports, are available in each environment?
- Who are the primary people interacting with the student?
- How is instruction or direction delivered?
- What modifications are typically made in various environments?
- What is the student’s position and location in room?
- Where are the things the student needs to see, such as chalkboard, overhead, etc.?
- What is the lighting and sound like in the setting?
- How are transitions accomplished? Are there concerns?

Teams may modify or add to these questions, they are provided only as a starting place.

There are many different types of Environmental or Classroom Observation Guides. This manual includes two versions. Remember that you can adapt either of or both these to fit your needs.

Using the Environmental Observation Guide

The Environmental Observation Guide instructions was developed by the National Assistive Technology Research Institute (2001), modified and used with permission.

The Environmental Observation Guide forms draw the observer’s attention to what is going on in the activity and setting. Teams may modify or add to these questions. They are provided only as a starting place.

Prior to the observation:

Clarify the purpose of the observation:
- Record successful assistive technology use in educational environments
- Observe a student using assistive technology in educational environments
- Record characteristics of the educational environments

Select a time and place:
- Review the student’s IEP for specifics about the student’s AT use.
- First preference – Schedule the observation for the place and time indicated in the IEP as to when AT is supposed to be used during the day.
Are there any behaviors (both positive and negative) that significantly impact the student’s performance?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Are there significant factors about the student’s strengths, learning style, coping strategies or interests that the team should consider?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Are there any other significant factors about the student that the team should consider?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Does student fatigue easily or experience a change in performance at different times of the day?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Chapter 1 - Assistive Technology Assessment

6. Student Communicates with Others Using (Check all that apply)
   - Speech
   - Signs and speech together
   - Signed English
   - Other
   - American Sign Language
   - Gestures
   - Picture cues
   - Written messages
   - Body language
   - Contact (Pidgin) sign language

Level of expressive communication:
   - Single words
   - Combination of words
   - Proficient

7. Is There a Discrepancy Between Receptive and Expressive Abilities?
   - Yes
   - No
   If yes, describe further.

8. Services Currently Used (Check all that apply)
   - Audiology
   - Note taker
   - Educational interpreter using:
     - ASL
     - Transliterating
     - PSE
     - Oral

9. Equipment Currently Used (Check all that apply)
   - Hearing aids
   - Cochlear implant
   - Telecaption decoder
   - Vibrotactile devices
   - Classroom amplification system
   - TTY/TDD
   - FM system
   - Other

10. Present Concerns for Communication, Writing, and/or Educational Materials
    - Cannot hear teacher/other students
    - Cannot respond to emergency alarm
    - Cannot participate in class discussions
    - Cannot benefit from educational videos/programs
    - Displays rec./exp. language delays
    - Cannot use telephone to communicate

11. Current communication functioning (Check all that apply)
    - Desires to communicate
    - Initiates interaction
    - Responds to communication requests
    - Reads lips
    - Appears frustrated with current communication functioning
    - Requests clarification from communication partners (“Would you please repeat that?”)
    - Repairs communication breakdown (Keeps trying, changes message)

12. Current Reading Level

Summary of Hearing Abilities and Concerns

Assessing Students’ Needs for Assistive Technology (2009)
WATI Student Information Guide
SECTION 11
Hearing

A hearing specialist should be consulted to complete this section.

1. Audiological Information
Date of last audiological exam ______________________

Hearing loss identified

- Right Ear: □ Mild □ Moderate □ Severe □ Profound
- Left Ear: □ Mild □ Moderate □ Severe □ Profound

Onset of hearing loss __________________________ Etiology _________________________

2. Unaided Auditory Abilities (Check all that apply.)
- Attends to sounds
- High pitch
- Low pitch
- Voices
- Background noises
- Discriminates environmental vs. non-environmental sounds
- Turns toward sound
- Hears some speech sounds
- Understands synthesized speech

3. Student’s Eye Contact and Attention to Communication (Check best descriptor.)
- Poor
- Inconsistent
- Limited
- Good
- Excellent

4. Communication Used by Others
   Indicate the form of communication generally used by others in each of the following environments. (Check all that apply.)

<table>
<thead>
<tr>
<th>School</th>
<th>Home</th>
<th>Community</th>
</tr>
</thead>
</table>
   - Body language |
   - Tangible symbols |
   - Gestures |
   - Speech |
   - Cued speech |
   - Picture cues |
   - Written messages |
   - Signs and speech together |
   - Signed English |
   - Contact (Pidgin) sign language |
   - American Sign Language (ASL) |

5. Level of Receptive Proficiency in Each Environment

<table>
<thead>
<tr>
<th>School</th>
<th>Home</th>
<th>Community</th>
</tr>
</thead>
</table>
   - Understands single words |
   - Understands short phrases |
   - Understands majority of communications |
Level of proficiency (Check the one that most closely describes the student.)

☐ Requires frequent physical prompts
☐ Requires frequent verbal cues
☐ Needs only intermittent cues
☐ Uses device to complete tasks independently
☐ Trouble-shoots problems related to device

4. Writing/Handwritten Materials (check all that apply)

☐ Writes using space correctly
☐ Writes on line
☐ Writes appropriate size
☐ Reads own handwriting
☐ Reads someone else’s writing
☐ Reads hand printing
☐ Reads cursive
☐ Skipping letters when copying
☐ Requires bold or raised-line paper
☐ Requires softer lead pencils
☐ Requires colored pencils, pens, or paper
☐ Requires felt tip pen

Summary of Student’s Abilities and Concerns Related to Vision

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
WATI Student Information Guide

SECTION 10
Vision

*A vision specialist should be consulted to complete this section.*

1. **Date of Last Vision Report**

   Report indicates (please address any field loss, vision condition, etc.)

2. **Visual Abilities** (Check all that apply.)
   - [ ] Read standard textbook print
   - [ ] Read text if enlarged to (indicate size in inches)
   - [ ] Requires specialized lighting such as
   - [ ] Requires materials tilted at a certain angle (indicate angle)
   - [ ] Can read using optical aids; list:
   - [ ] Currently uses the following screen enlargement device
   - [ ] Currently uses the following screen enlargement software
   - [ ] Recognizes letters enlarged to _____ pt. type on computer screen
   - [ ] Recognizes letters enlarged to _____ pt. type for ______ minutes without eye fatigue.
   - [ ] Prefers   [ ] Black letters on white   [ ] White on black   [ ] (color) on
   - [ ] Tilts head when reading
   - [ ] Uses only one eye:   [ ] Right eye   [ ] Left eye
   - [ ] Uses screen reader:
   - [ ] Requires recorded material, text to speech, or Braille materials

3. **Alternative Output**
   Currently uses (Check all that apply.)
   - [ ] Slate and stylus
   - [ ] Talking calculator
   - [ ] Braille calculator
   - [ ] Braille notetaker
   - [ ] Electric Brailier
   - [ ] Refreshable Braille display
   - [ ] Tactile images
   - [ ] Screen reader
   - [ ] Braille translation software:
WATI Student Information Guide
SECTION 9
Recreation and Leisure

1. Difficulties Student Experiences Participating in Recreation and Leisure (Check all that apply.)
   - Understanding cause and effect
   - Following complex directions
   - Understanding turn taking
   - Communicating with others
   - Handing/manipulating objects
   - Hearing others
   - Throwing/catching objects
   - Seeing equipment or materials
   - Understanding rules
   - Operating TV, VCR, etc.
   - Waiting for his/her turn
   - Operating computer
   - Following simple directions
   - Other ______________________________

2. Activities Student Especially Enjoys

3. Adaptations Tried to Enhance Participation in Recreation and Leisure

   How did they help? ______________________________

4. Assistive Technology Tried (Check all that apply.)
   - Toys adapted with Velcro®, magnets, handles etc.
   - Toys adapted for single switch operation
   - Adaptive sporting equipment, such as lighted or beeping ball
   - Universal cuff or strap to hold crayons, markers, etc.
   - Modified utensils, e.g. rubber stamps, rollers, brushes
   - Ergo Rest or other arm support
   - Electronic aids to control/operate TV, VCR, CD player, etc.
   - Software to complete art activities
   - Games on the computer
   - Other computer software
   - Other ______________________________

Summary of Student’s Abilities and Concerns in the Area of Recreation and Leisure
### WATI Student Information Guide
#### SECTION 8
#### Organization

1. **Difficulties Student has with Organization (Check all that apply.)**

<table>
<thead>
<tr>
<th>Self management</th>
<th>Materials Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Unable to self regulate behavior and attention</td>
<td>□ Messy work and storage areas</td>
</tr>
<tr>
<td>□ Easily distracted</td>
<td>□ Lost papers and projects</td>
</tr>
<tr>
<td></td>
<td>□ Can’t find work tools such as book, scissors or markers quickly</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time management</th>
<th>Information Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Arrives late</td>
<td>□ Breaking a large project into smaller steps</td>
</tr>
<tr>
<td>□ Misses deadlines</td>
<td>□ Organizing notes or review items</td>
</tr>
<tr>
<td>□ Poor transitions between activities</td>
<td>□ Completing multi-step tasks</td>
</tr>
<tr>
<td>□ Struggles to settle down after transitions or when it is work time</td>
<td></td>
</tr>
</tbody>
</table>

2. **Assistive Technology tried (Check all that apply.)**

<table>
<thead>
<tr>
<th>Self:</th>
<th>Materials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Fidgets</td>
<td>□ Folders/ Containers/ Bins/ Boxes</td>
</tr>
<tr>
<td>□ Sitting on a therapy ball, bounce or sitz cushions</td>
<td>□ Checklists</td>
</tr>
<tr>
<td>□ Pressure or weighted vest</td>
<td>□ Coding</td>
</tr>
<tr>
<td>□ Concentration CD’s or Mp3’s</td>
<td>□ Filing</td>
</tr>
</tbody>
</table>

**Information:**

| □ Folders | □ Portable electronic Storage |
| □ Tabs/Post Its | □ Computer based electronic storage |
| □ Highlighters | |
| □ Study guides | |
| □ Hand Held Recorders | |
| □ Digital Organizers | |
| □ Search tools/engines | |
| □ Bookmarking tools | |
| □ Graphic organizers | |
| □ Manipulatives/ Instructional Tutorials | |
| □ Animations | |

**Time:**

| □ Clock analog vs. digital | □ Talking readout |
| □ Adapted clocks and watches | □ Large numbers |
| □ Visual cue | □ Timed reminder message |

**Schedules**

| □ Picture | □ Worded |
| □ Calendar-based | |
| □ Digital scheduler | |

3. **Summary of Student’s Abilities and Concerns Related to Organization**

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
Chapter 1 - Assistive Technology Assessment

2. Assistive Technology Tried (Check all that apply.)

- Adapted manipulatives
- Adapted number, shape or fraction stamp
- Adapted time pieces
- Adapted measuring devices
- Mathline
- Adapted paper
- Enlarged paper
- Graph paper
- Onscreen keyboards or calculators
- Virtual Manipulatives
- Voice recognition for math notation
- Alternate calculator
- Large print
- Talking
- Graphing
- Smart chart
- Math graphic organizer
- Math specific writing, drawing software
- Digital Math toolbars for writing equations
- Math software to help visualize, script visual math concepts

3. Strategies Used
Please describe any strategies that been used to help.

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Summary of Student’s Abilities and Concerns Related to Math
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
Chapter 1 - Assistive Technology Assessment

WATI Student Information Guide
SECTION 7
Mathematics

1. Difficulties Student Has with Mathematics (check all that apply).

Reading Math
Math related language and vocabulary
☐ Interpreting visual representation
☐ Switching from one representational format to another, as in complex numbers, fractions, charts and graphs
☐ Understanding math concepts like:
  ☐ Money
  ☐ Time
  ☐ Units of Measurement
☐ Math Facts
☐ Understanding percents/decimals

Organizing
☐ Drawing meaning from numbers, shapes and other representational formats
☐ Drawing meaning from charts, grids and graphs
☐ Applying correct operational step such as addition, subtraction, multiplication or division
☐ Drawing meaning and applying action steps from/to a story problem
☐ Organizing work on a page
☐ Understanding place value
☐ Organizing and applying multiple steps
☐ Converting mixed numbers
☐ Applying functions and formulas

Writing and Presentation
☐ Writing legible numbers
☐ Drawing math figures
☐ Aligning steps of a problem
☐ Filling in numbers and data in small places graphing
☐ Completing simple addition and subtraction
☐ Completing multiplication and division
☐ Completing complex addition and subtraction
☐ Representing math concepts in alternate formats such as graphs, charts or geometric shapes
☐ Noting points on graphs
☐ Writing simple math equations
☐ Writing complex math equations
☐ Editing work

(Continued on next page)
Chapter 1 - Assistive Technology Assessment

☐ Modified Curriculum
☐ Recreational text

Student has difficulty comprehending the following.
☐ Worksheets ☐ Content Textbooks ☐ Trade Books ☐ Tests
☐ Websites or other digital text
☐ Modified Curriculum
☐ Recreational text

8. Computer Availability and Use

The student has access to the following computer(s):
☐ PC ☐ Macintosh

9. The Student Uses a Computer:
☐ Rarely ☐ Frequently ☐ Daily for one or more subjects or periods ☐ Every day, most of the day

For the following purposes:

__________________________

Summary of Student’s Abilities and Concerns Related to Reading

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________
Chapter 1 - Assistive Technology Assessment

3. Reading Assistance Used
Please describe the non-technology based strategies and accommodations that have been used with this student.

4. Assistive Technology Used
The following have been tried. (Check all that apply. Add comments for clarification)
- Highlighter, marker, template, or other self-help aid in visual tracking
- Colored overlay to change contrast between text and background
- Tape recorder, taped text, or talking books to “read along” with text
- Digital Audio files (Mp3, iPod, etc.)
- Talking dictionary or talking spell checker to pronounce single words
- Hand held pen scanner to read difficult words or phrases
- Electronic text from
  - internet
  - publisher
  - scanned text
  - other ________________
- Computer with text to speech software to
  - Speak single words
  - Speak sentences
  - Speak paragraphs
  - Read entire document
- Handheld device to read electronic books
- Electronic books from Bookshare or other digital source

Explain what seemed to work or not work with any of the above assistive technology that has been tried.

5. Approximate Age or Grade Level of Reading Skills

6. Cognitive Ability in General
- Significantly below average
- Average
- Below average
- Above average

7. Difficulty (Check all that apply. Add comments for clarification.)
Student has difficulty physically accessing the following.
- Single sheets of paper
- Books

Student has difficulty understanding written language based on
- English Language Learner
- Limited background experiences

Student has sensory difficulties with
- Visual clutter
- Fluorescent lighting
- Background noise
- Personal Space
- Other ________________

Student has difficulty decoding the following.
- Worksheets
- Content Textbooks
- Trade Books
- Tests
- Websites or other digital text
WATI Student Information Guide
SECTION 6
Reading

1. The Student Demonstrates the Following Literacy Skills.
(Check all that apply. Add comments to clarify)

☐ Engages in joint attention with adult caregiver to activities (e.g. songs, stories, games and/or toys)
☐ Shows an interest in books and stories with adult
☐ Shows and interest in looking at books independently
☐ Associates pictures with spoken words when being read to
☐ Realizes text conveys meaning when being read to
☐ Recognizes connection between spoken words and specific text when being read to
☐ Pretend writes and “reads” what he or she has written, even if scribbles
☐ Recognizes and reads environmental print
☐ When asked to spell a word, gets first consonant correct, but not the rest of the word
☐ Demonstrates sound manipulation skills including:
  ☐ Initial and final sounds in words
  ☐ Initial letter names/sounds
☐ Recognizes, names and prints the alphabet (if motor skills are limited, may use alternative means rather than printing to demonstrate knowledge of the alphabet)
☐ When asked to spell a word, gets first and last sounds correct
☐ Applies phonics rules when attempting to decode printed words
☐ Sound blends words
☐ Reads and understands words in context
☐ Uses inventive spelling most of the time
☐ Uses conventional spelling most of the time
☐ Reads and understands sentences
☐ Composes sentences using nouns and verbs
☐ Reads fluently with expression
☐ Reads and understands paragraphs
☐ Composes meaningful paragraphs using correct syntax and punctuation

2. Student’s Performance Is Improved by (Check all that apply.)

☐ Smaller amount of text on page
☐ Word wall to refer to
☐ Graphics to communicate ideas
☐ Bold type for main ideas
☐ Additional time
☐ Spoken text to accompany print
☐ Increased spacing between words/lines
☐ Symbol or Rebus supports to text
☐ Enlarged print
☐ Pre-teaching concepts
☐ Text rewritten at lower reading level
☐ Reduced length of assignment
☐ Being placed where there are few distractions
☐ Color overlay or colored text/background
(List color_______________)
☐ Other ____________________________
### WATI Student Information Guide

#### SECTION 5

**Composition of Written Material**

1. **Typical of Student’s Present Writing** (Check all that apply.)
   - Short words
   - Sentences
   - Multi-paragraph reports
   - Short phrases
   - Paragraphs of 2-5 sentences
   - Other _________________
   - Complex phrases
   - Longer paragraphs

2. **Difficulties Currently Experienced by Student** (Check all that apply.)
   - Answering questions
   - Generating ideas
   - Getting started on a sentence or story
   - Working w/peers to generate ideas and information
   - Adding information to a topic
   - Planning content
   - Sequencing information
   - Using a variety of vocabulary
   - Integrating information from two or more sources
   - Summarizing information
   - Relating information to specific topics
   - Other ________________________________
   - Determining when to begin a new paragraph

3. **Strategies for Composing Written Materials Student Currently Utilizes** (Check all that apply.)
   - Story starters
   - Webbing/concept mapping
   - Preset choices or plot twists
   - Outlines
   - Templates to provide the format or structure (both paper and electronic)
   - Other ________________________________

4. **Aids/Assistive Technology for Composing Written Materials Utilized by Student**
   - Word cards
   - Word book
   - Word wall/word lists
   - Prewritten words on cards or labels
   - Dictionary
   - Electronic dictionary/spell checker
   - Whole words using software or hardware (e.g., IntelliKeys)
   - Symbol-based software for writing (e.g., Writing with Symbols 2000 or Pix Writer)
   - Word processing with spell checker/grammar checker
   - Talking word processing
   - Abbreviation/expansion
   - Word processing with writing support
   - Voice recognition software
   - Multimedia software
   - Other ________________________________

**Summary of Student’s Abilities and Concerns Related to Computer/Device Access**

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*Assessing Students’ Needs for Assistive Technology (2009)*
Chapter 1 - Assistive Technology Assessment

4. Assistive Technology Currently Used (Check all that apply.)
- Adapted pencils-pencil grips
- Adapted papers
- Writing templates
- Adapted/portable keyboards
- Computers with accessibility features
- Adaptive Software: text to speech; word prediction; voice recognition
- Scanned worksheets
- Other

5. Computer Availability
The student has access to the following computer(s):
- PC
- Macintosh
- Other
- Desktop
- Laptop
Location:

Summary of Student’s Abilities and Concerns Related to Writing

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________
Chapter 1 - Assistive Technology Assessment

WATI Student Information Guide

SECTION 4
Motor Aspects of Writing

1. Current Writing Ability (Check all that apply.)
- □ Writes independently and legibly
- □ Writes cursive
- □ Writes on 1" lines
- □ Writes on narrow lines
- □ Uses space correctly
- □ Sizes writing to fit spaces
- □ Prints a few words
- □ Prints name
- □ Scribbles with a few recognizable letters
- □ Pretend writes
- □ Uses adapted pencil or pencil grips
- □ Holds pencil, but does not write
- □ Copies from book (near point)
- □ Copies from board (far point)
- □ Copies simple shapes
- □ Writing is limited due to fatigue
- □ Writing is slow and arduous

2. Current Keyboarding Ability (Check all that apply.)
- □ 10 finger typing (functional speed)
- □ Multi finger typing (functional or slow)
- □ One finger typing (functional or slow)
- □ Does not currently type
- □ Activates desired key on command
- □ Accidentally hits unwanted keys
- □ Requires arm or wrist support to type
- □ Uses alternate keyboard (list) ________________________
- □ Uses access software (list) ________________________
- □ Uses touch window
- □ Uses head or mouth stick
- □ Uses switch to access computer
- □ Uses Morse code to access computer
- □ Other ________________________________

3. Computer Use (Check all that apply.)
- □ Uses a computer for word processing
- □ Uses a computer for Internet searches
- □ Uses a computer for spell check
- □ Uses computer for leisure (games, music, IM) ________________________
- □ Uses computer at school
- □ Uses computer at home
- □ Has never used a computer
- □ Has potential to use computer but has not used a computer because __________________________________________________________________________
- □ Uses computer rarely (less than 1x/weekly)
- □ Uses computer daily
- □ Student uses computer for one or more subjects (list subjects) ________________________
4. Motor Control

Does the student have voluntary, controlled movement of the following? (check all that apply)

- Right hand
- Left hand
- Head
- Right arm
- Left arm
- Eyes
- Right leg
- Left leg
- Mouth
- Right foot
- Left foot
- Voice (Speech)
- Finger(s)
- Other

5. Positioning

How is the student positioned for computer access?

- Regular classroom chair
- Regular classroom chair with adaptations
- Specialty chair
- Wheelchair
- Other

6. Sensory

Does the student have any issues with hearing? □ Yes □ No
Does the student have any issues with vision? □ Yes □ No
Describe how sensory issues abilities affect computer use.

7. Literacy

Is the student working at grade level in the following areas?

- Reading □ Yes □ No
- Composition □ Yes □ No
- Spelling □ Yes □ No
- Math □ Yes □ No
- Computer Skills □ Yes □ No

8. Summary of Students Abilities and Concerns Related to Computer Access

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
WATI Student Information Guide
SECTION 3
Computer Access

1. Current Computer Access
How does the student currently access the computer?

☐ Doesn’t access the computer  ☐ Adapeted keyboard/mouse
☐ Touch type with two hands  ☐ Specialized Software
☐ Hunt/peck with one hand  ☐ Head
☐ Touch type with one hand  ☐ Speech recognition
☐ Hunt/peck with one hand  ☐ Switch scanning
☐ Touchscreen  ☐ Other

List current AT

What difficulty is the student having with current method?

____________________________________________________________________________________
____________________________________________________________________________________

2. Previous Assistive Technology
List any AT tried in the past for computer access and describe how it worked.

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

3. Physical Abilities
Does student have limitations to range of motion? ☐ Yes  ☐ No
Does student have abnormal reflexes or abnormal muscle tone? ☐ Yes  ☐ No
Does student have difficulty with accuracy? ☐ Yes  ☐ No
Does student fatigue easily? ☐ Yes  ☐ No

Describe how physical abilities affect computer use.

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
Chapter 1 - Assistive Technology Assessment

What are the communication expectations for the student in different environments?

School (regular and special ed., with peers, formal and informal- such as lunch room settings)

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Home _____________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Community (stores, restaurants, church, library, etc.) ________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Summary of Student’s Abilities and Concerns Related to Communication including past AT used to support student’s communication______________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________
Chapter 1 - Assistive Technology Assessment

8. Visual Abilities Related to Communication (Check all that apply.)

☐ Maintains fixation on stationary object
☐ Visually recognizes people
☐ Visually recognizes common objects
☐ Visually recognizes photographs
☐ Visually recognizes symbols or pictures
☐ Needs additional space around symbol
☐ Requires high contrast symbols or borders

☐ Looks to right and left without moving head
☐ Scans matrix of symbols in a grid
☐ Scans line of symbols left to right
☐ Visually shifts horizontally
☐ Visually shifts vertically
☐ Looks at communication partner
☐ Benefits from “zoom” feature

Is a specific type (brand) of symbols or pictures preferred? _______________________________________

What size symbols or pictures are preferred? _______________________________________

What line thickness of symbols is preferred? _______ inches

Does student seem to do better with black on white, white on black, or a specific color combination for figure/ground discrimination? _______________________________________

Explain anything else you think is significant about the communication system the student currently uses or his/her needs (Use an additional page if necessary) _______________________________________

_____________________________________________________________________________

_____________________________________________________________________________

_____________________________________________________________________________

9. Sensory Considerations:

Does the student have sensitivity to:

☐ Velcro
☐ Synthesized (computer generated) voices
☐ Volume
☐ Switch feedback (clicking noise)
☐ Tactile sensations
☐ Other

Explain student’s reaction to any of the checked items _______________________________________

_____________________________________________________________________________
Chapter 1 - Assistive Technology Assessment

Does the student (check best descriptor)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Always</th>
<th>Frequently</th>
<th>Occasionally</th>
<th>Seldom</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn toward speaker</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Get other’s attention</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Interact with peers</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Show awareness of listener’s attention</td>
<td>☐</td>
<td>☐</td>
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</tr>
<tr>
<td>Initiate interactions</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ask questions</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Respond to communication interaction</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Request clarification from communication partner</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Repair communication breakdowns</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Require verbal prompts</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Require physical prompts</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Maintain communication exchange</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Terminate communication</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Describe techniques student uses for repair (e.g. keeps trying, changes message, points to first letter etc.).

6. Student’s Needs Related to Devices/Systems (Check all that apply.)

☐ Walks ☐ Uses wheelchair ☐ Carries device under 2 pounds
☐ Drops or throws things frequently ☐ Needs digitized (human) speech
☐ Needs device w/large number of words and phrases
☐ Requires scanning
☐ Requires auditory preview
☐ One reliable switch site ☐ More than one reliable switch site
☐ Other __________________________

7. Pre-Reading and Reading Skills Related to Communication (Check all that apply.)

☐ Yes ☐ No Object/picture recognition
☐ Yes ☐ No Symbol recognition (tactile, Mayer-Johnson, Rebus, etc.) Number of symbols _______
☐ Yes ☐ No Auditory discrimination of sounds
☐ Yes ☐ No Auditory discrimination of words, phrases
☐ Yes ☐ No Selects initial letter of word
☐ Yes ☐ No Follows simple directions
☐ Yes ☐ No Sight word recognition Number of words _______
☐ Yes ☐ No Recognizes environmental print
☐ Yes ☐ No Puts two symbols or words together to express an idea

List any other reading or pre-reading skills that support communication ______________________

Assessing Students’ Needs for Assistive Technology (2009)
Chapter 1 - Assistive Technology Assessment

2. **Those Who Understand Student’s Communication Attempts** (Check best descriptor.)

<table>
<thead>
<tr>
<th></th>
<th>Most of the time</th>
<th>Part of the time</th>
<th>Rarely</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strangers</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Teachers/therapists</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Peers</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Siblings</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Parent/Guardian</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

3. **Current Level of Receptive Language**

Age approximation _______

If formal tests used, name and scores

If formal testing is not used, please give an approximate age or developmental level of functioning. Explain your rationale for this estimate.

4. **Current Level of Expressive Language**

Age approximation: _______

If formal tests used, name and scores

If formal testing is not used, please give an approximate age or developmental level of functioning. Explain your rationale for this estimate.

5. **Communication Interaction Skills**

Desires to communicate ☐ Yes ☐ No

To indicate yes and no the student

☐ Shakes head ☐ Signs ☐ Vocalizes ☐ Gestures ☐ Eye gazes

☐ Points to board ☐ Uses word approximations ☐ Does not respond consistently

Can a person unfamiliar with the student understand the response? ☐ Yes ☐ No

*(Continued on next page)*
WATI Student Information Guide
SECTION 2
Communication

1. Student’s Present Means of Communication
   (Check all that are used. Circle the primary method the student uses.)

   - ☐ Changes in breathing patterns
   - ☐ Body position changes
   - ☐ Eye-gaze/eye movement
   - ☐ Facial expressions
   - ☐ Gestures
   - ☐ Pointing
   - ☐ Sign language approximations
   - ☐ Sign language (Type____________________ # signs_______
     # combinations _______ # signs in a combination _______
   - ☐ Vocalizations, list examples________________________________________
   - ☐ Vowels, vowel combinations, list examples___________________________
   - ☐ Single words, list examples & approx. #_______________________________
   - ☐ 2-word utterances
   - ☐ 3-word utterances
   - ☐ Semi intelligible speech, estimate % intelligible:______________________
   - ☐ Communication board
   - ☐ Tangibles
   - ☐ Photos
   - ☐ Symbols
   - ☐ Visual Scenes
   - ☐ Combination symbols/words
   - ☐ Words
   - ☐ 2 symbol combinations- list examples ________________________________
   - ☐ 3 or more symbol combinations – list examples _________________________
   - ☐ Communication book/binder – number of pages in book/binder__________

   Does student navigate to desired page/message independently?  ☐ yes  ☐ no

   - ☐ Schedule board(s) – list examples____________________________________
   - ☐ Speech Generating device(s) - please list________________________________
   - ☐ Multiple overlays or levels – list examples______________________________
   - ☐ Partner Assisted Scanning – please describe strategies and communication system __________

   ☐ Intelligible speech
   - ☐ Writing
   - ☐ Other______________________________________________________________

   Comments about student’s present means of communicating__________________________

   Purposes of Communication

   Does the student communicate:

   - ☐ Wants/Needs – list examples___________________________________________
   - ☐ Social interactions – list examples_________________________________________
   - ☐ Social etiquette - list examples___________________________________________
   - ☐ Denials/rejections – list examples________________________________________
   - ☐ Shared information, including joint attention – list examples___________________
WATI Student Information Guide
SECTION 1
Seating, Positioning and Mobility

1. **Current Seating and Positioning of Student** (Check all that apply.)
   - Sits in regular chair w/ feet on floor
   - Sits in regular chair w/ pelvic belt or foot rest
   - Sits in adapted chair—list brand or describe: ____________________________________________________
   - Sits in seat with adaptive cushion that allows needed movement
   - Sits comfortably in wheelchair _____ part of day _______ most of the day _____ all of the day
   - Wheelchair in process of being adapted to fit
   - Spends part of day out of chair due to prescribed positions
   - Spends part of day out of chair due to discomfort – specific or general area of discomfort _________________
   - Has many positions throughout the day, based on activity
   - Has few opportunities for other positions
   - Uses regular desk
   - Uses desk with height adjusted
   - Uses tray on wheelchair for desktop
   - Uses adapted table

2. **Description of Seating** (Check all that apply.)
   - Seating provides trunk stability
   - Seating allows feet to be flat on floor or foot rest
   - Seating facilitates readiness to perform task
   - There are questions or concerns about the student’s seating
   - Student dislikes some positions, often indicates discomfort in the following positions__________________

   How is the discomfort communicated? ______________________________________________________________

   Student has difficulty using table or desk—specific example: ____________________________________________

   There are concerns or questions about current seating.

   Student has difficulty achieving and maintaining head control, best position for head control is__________

   How are their hips positioned? ________________________________________________________________

   Can maintain head control for ______ minutes in ________________ position.

**Summary of Student’s Abilities and Concerns Related to Seating and Positioning**
### Chapter 1 - Assistive Technology Assessment

**Assistive Technology Currently Used** (Check all that apply.)

<table>
<thead>
<tr>
<th>Technology</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ None</td>
<td></td>
</tr>
<tr>
<td>□ Manual Communication Board</td>
<td>□ Low Tech Writing Aids</td>
</tr>
<tr>
<td>□ Low Tech Vision Aids</td>
<td>□ Augmentative Communication System</td>
</tr>
<tr>
<td>□ Environmental Control Unit/EADL</td>
<td>□ Amplification System</td>
</tr>
<tr>
<td>□ Manual or Power Wheelchair</td>
<td>□ Computer – Type (platform)</td>
</tr>
<tr>
<td>□ Voice Recognition</td>
<td>□ Word Prediction</td>
</tr>
<tr>
<td>□ Adaptive Input - Describe</td>
<td></td>
</tr>
<tr>
<td>□ Adaptive Output - Describe</td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
</tr>
</tbody>
</table>

**Assistive Technology Tried**

Please describe any other assistive technology previously tried, length of trial, and outcome (how did it work or why didn’t it work.)

<table>
<thead>
<tr>
<th>Technology</th>
<th>Number and Dates of Trial(s)</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistive Technology</td>
<td></td>
<td></td>
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<tr>
<td>Assistive Technology</td>
<td></td>
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<tr>
<td>Assistive Technology</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**REFERRAL QUESTION**

What task(s) does the student need to do that is currently difficult or impossible, and for which assistive technology may be an option?  

Based on the referral question, select the sections of the Student Information Guide to be completed. (Check all that apply.)

<table>
<thead>
<tr>
<th>Section</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Section 1 Seating, Positioning and Mobility</td>
<td>□ Section 7 Mathematics</td>
</tr>
<tr>
<td>□ Section 2 Communication</td>
<td>□ Section 8 Organization</td>
</tr>
<tr>
<td>□ Section 3 Computer Access</td>
<td>□ Section 9 Recreation and Leisure</td>
</tr>
<tr>
<td>□ Section 4 Motor Aspects of Writing</td>
<td>□ Section 10 Vision</td>
</tr>
<tr>
<td>□ Section 5 Composition of Written Material</td>
<td>□ Section 11 Hearing</td>
</tr>
<tr>
<td>□ Section 6 Reading</td>
<td>□ Section 12 General</td>
</tr>
</tbody>
</table>
Referral/Question Identification Guide

Student’s Name ___________________________ Date of Birth ___________________ Age __
School _______________________________ Grade ______
School Contact Person _______________________ Phone __________
Persons Completing Guide ________________________________
Date __________________________
Parent(s) Name _______________________________ Phone __________
Address ____________________________________________
Student’s Primary Language _______________ Family’s Primary Language _______________

Disability (Check all that apply.)
☑ Speech/Language ☐ Significant Developmental Delay ☐ Specific Learning Disability
☐ Cognitive Disability ☐ Other Health Impairment ☐ Hearing Impairment
☐ Traumatic Brain Injury ☐ Autism ☐ Vision Impairment
☐ Emotional/Behavioral Disability ☐ Orthopedic Impairment – Type ______

Current Age Group
☐ Birth to Three ☐ Early Childhood ☐ Elementary
☐ Middle School ☐ Secondary

Classroom Setting
☐ Regular Education Classroom ☐ Resource Room ☐ Self-contained
☐ Home ☐ Other __________________________

Current Service Providers
☐ Occupational Therapy ☐ Physical Therapy ☐ Speech Language
☐ Other(s) __________________________

Medical Considerations (Check all that apply.)
☐ History of seizures ☐ Fatigues easily
☐ Has degenerative medical condition ☐ Has frequent pain
☐ Has multiple health problems ☐ Has frequent upper respiratory infections
☐ Has frequent ear infections ☐ Has digestive problems
☐ Has allergies to __________________________
☐ Currently taking medication for __________________________
☐ Other – Describe briefly __________________________

Other Issues of Concern

Assessing Students’ Needs for Assistive Technology (2009)
Each of the 12 content sections of the Student Information Guide contain questions relevant to determining the type of assistive technology and the features that might be necessary for a student to utilize assistive technology in the completion of the task. On pages 28 and 29 there are a series of questions about the student’s abilities related to computer access. These two pages are not necessary to complete if the student has normal fine motor ability, but are critical if the student has a physical disability that includes fine motor difficulties that would impact their ability to keyboard. In the Section 4 – Motor Aspects of Writing, the first questions address the student’s current writing ability. Because much of the assistive technology used to address writing difficulties involves keyboarding, the next question is about the student’s current keyboarding ability. The next question is about any assistive technology currently used. Number five on page 31 is concerned with computer use and computer availability. At the bottom of page 31 there is a place to summarize the student’s abilities and the concerns related to writing.

Once the desired sections of the Student Information Guide are completed, the team moves on to page 44. The questions on this page are general and apply to every student. They include questions about behaviors that might impact the student’s use of assistive technology any other significant factors that should be noted such as learning style, coping strategies, or interest that the team should remember and consider as they move on with the assessment process.
Gathering Information about the Student

The process for assistive technology assessment developed by the Wisconsin Assistive Technology Initiative incorporates the SETT framework (Zabala, 1994) to help organize the often complex task of assistive technology decision-making. SETT stands for Student, Environment, Tasks, Tools. By grouping the information into these categories, the task of selecting assistive technology becomes much more logical.

Without the SETT Framework, trying to gather and sort out all of the information necessary for assistive technology decision-making can be an overwhelming task. With it, the simplicity of gathering and grouping information allows the team to effectively use that information for competent decision-making.

Using the Student Information Guide

As you read through the Student Information Guide, the first thing you note is the questions about what assistive technology is currently being used and what has been used in the past. These are important questions. Unfortunately in our busy lives, it is possible for one service provider to be using assistive technology without others being aware of it. For example the Language Arts teacher may have discovered that Samantha writes much better with voice output on the computer. This may occur because all of the computers in her classroom are capable of providing text to speech. Students can choose to use it or not. She observes over the course of several months that Samantha regularly chooses to work using text to speech and that it has improved both the spelling and grammar in her written assignments. The other teachers and therapists may not be aware of this. Both the documenting and the sharing of that kind of information is essential.

The next section requires a file review to determine what assistive technology, if any, has been tried in the past and what the outcome of that use was. Turnover in staff can cause us to lose track of assistive technology use. Perhaps the most extreme example of this is the case of a team who spent several weeks trying to determine what augmentative communication device might work for a non-speaking student. The staff were all new and neglected to thoroughly review the file until early October, when they were startled to learn that a $8000 dynamic display, voice output communication aid had been purchased for the student two years earlier. It was in a box, at the back of the classroom closet, safely stored away. Had someone not reviewed the file, they would have spent money on another device, when they already had a very powerful one available. The parent had told them on several occasions that there “used to be something that talked for him,” but they had not tracked down the critical information.

Now at the bottom of page 21, the team selects the sections that they feel they will need to complete. It is recommended that a team new to assistive technology assessment concentrate on only one area of concern at a time. So if the student has a learning disability and they are most concerned about writing. They would proceed to the section on Writing and answer the questions in that section. If they are concerned about more than one task, they may decide to complete more than one section of the Student Information Guide. It is up to the team to determine how many and which sections of the Guide will be helpful to them.
Step 4: Prioritize the List of Tasks for Solution Generation
Identify critical task(s) for which the team will generate potential solutions. This may require a redefining or reframing of the original referral question, but is necessary so that you hone in on the most critical task.

Step 5: Solution Generation
Brainstorm all possible solutions.

Note: The specificity of the solutions will vary depending on the knowledge and experience of the team members; some teams may generate names of specific devices with features that will meet the student’s needs, other teams may simply talk about features that are important, e.g., “needs voice output,” “needs to be portable,” “needs few (or many) messages,” “needs input method other than hands,” etc. Teams may want to use specific resources to assist with solution generation. These resources include, but are not limited to: the AT Checklist, the ASNAT Manual, Closing the Gap Resource Directory, and/or an AT Consultant.

Step 6: Solution Selection
Discuss the solutions listed, thinking about which are most effective for the student. It may help to group solutions that can be implemented 1) immediately, 2) in the next few months, and 3) in the future. At this point list the names of specific devices, hardware, software, etc. If the team does not know the names of devices, etc., use resources noted in Step 5 or schedule a consultation with a knowledgeable resource person (that is the part of the decision-making that should require the most time; plan on 20-30 minutes here).

Step 7: Implementation Plan
Develop implementation plan (including trials with equipment) – being sure to assign specific names and dates, and determine meeting date to review progress (follow-up Plan).

Reminder: Steps 3-7 occur in a meeting with all topics written where all participants can see them. Use a flip chart, board or overhead during the meeting, because visual memory is an important supplement to auditory memory. Following the meeting, ensure that someone transfers the information to paper for the student’s file for future reference.

Trial Use:

Step 8: Implement Planned Trials
Step 9: Follow Up on Planned Date
Review trial use. Make any needed decisions about permanent use. Plan for permanent use.
Gathering Information:

Step 1: Team Members Gather Information
Review existing information regarding student’s abilities, difficulties, environment, and tasks. If there is missing information, you will need to gather the information by completing formal tests, completing informal tests, and/or observing the student in various settings. The WATI Student Information Guide and Environmental Observation Guide are used to assist with gathering information. Remember, the team gathering this information should include parents, and if appropriate, the student.

Step 2: Schedule Meeting
Schedule a meeting with the team. Team includes: parents, student (if appropriate), service providers (e.g., spec. ed. teacher, general ed. teacher, SLP, OT, PT, administrator), and any others directly involved or with required knowledge and expertise.

Decision Making:

Step 3: Team completes Problem Identification Portion of AT Decision Making Guide at the meeting.
(Choose someone to write all topics where everyone participating can see them.)

The team should quickly move through:
Listing the student’s abilities/difficulties related to tasks (5-10 minutes).
Listing key aspects of the environment in which the student functions and the student’s location and positioning within the environment (5-10 minutes).
Identifying the tasks the student needs to be able to do is important because the team cannot generate AT solutions until the tasks are identified (5-10 minutes).

(Note: The emphasis in problem identification is identifying tasks the student needs to be able to do, the relationship of the student’s abilities/difficulties and characteristics of the environment of the student’s performance of the tasks.)
Assessing A Student’s Need for Assistive Technology: Where to Start?

When the question of a student’s need for AT leads to an assessment, the first action is to identify a team of people to address that question. If the school district already has an identified team, then a request for their assistance is made. If no one is designated to function as an AT Assessment team, or only one person has been designated, then a team of people with sufficient knowledge to make an appropriate and useful decision must be assembled.

While the number of the team members and their specific expertise will vary with the magnitude and complexity of the question to be answered, there are some specific considerations in selecting the members of the team. It is important that someone on the team understands curriculum. This is often a special education teacher or the regular classroom teacher. If the question involves speech or language, then someone with expertise in language development is needed. This is most typically a Speech/Language Pathologist, but might also be a teacher of the hearing impaired, if that would be appropriate based upon the student’s unique needs. Often there are questions about positioning or motor ability. In this case a Physical or Occupational Therapist is needed. And, of course, one or more of these individuals must have knowledge about specific assistive technology that might be appropriate to address the student’s needs. There may be any number of other individuals, as needed. For instance if the student has a vision impairment, there would need to be a Vision Specialist involved. If the student has Autism, someone with a background in Autism will be needed. The Wisconsin Assistive Technology Initiative has also developed a manual for addressing the needs of students with AT needs who are on the Autism Spectrum. You may wish to refer to this guide located on the [www.wati.org](http://www.wati.org) or [http://dpi.wi.gov/sped/at-wati-resources.html](http://dpi.wi.gov/sped/at-wati-resources.html) site. While there may be a core group of people in a school district who routinely address questions about assistive technology, the specific team working together to determine an assistive technology solution will be made up of individuals who collectively can address all of the student’s unique needs.

Finally, one or both of the parents, and when appropriate, the student must be active participants in the information gathering and decision-making. If the student can contribute and understand information, then they should participate in meetings along with their parent or parents. Typically a group of three to six or seven individuals will meet to begin the information gathering and decision making stages of the AT Assessment Process. The AT Assessment Directions/Procedure Guide is a basic outline of the steps that need to take place.
Chapter 1 - Assistive Technology Assessment

The question may be broad such as, “Sally struggles with trying to do all of the required reading and writing in sixth grade. She understands the concepts, but decoding the printed word and trying to spell what she wants to write are so difficult that she is feeling overwhelmed and frustrated. Is there any assistive technology that could help with this?” Or it can be very specific, “Bob is not able to understand the graphics in the social studies book due to his vision.”

In Sally’s case there may be a whole range of hardware (from low-tech to computer-based) and software that will need to be tried for specific reading and writing tasks in her various classes. In Bob’s case only one or two things may need to be tried before a workable solution will be found. In either situation, the team of service providers who work with that student need to have a systematic approach to begin to answer the question.

We have found that people who are new to assistive technology or teams new to the role of “assessing” a student’s need for assistive technology often flounder. They struggle to figure out where to start, what questions to ask, what commercial tests, if any, they might need to use, etc. The Wisconsin Assistive Technology Initiative developed a set of forms to help the team through these difficulties and to help them focus on the specific issues that need to be addressed. The forms that we use include:

♦ The WATI Student Information Guide
♦ The WATI Environmental Observation Guide
♦ The WATI Assistive Technology Decision Making Guide
♦ The WATI Assistive Technology Checklist
Who Provides an Assistive Technology Assessment?

When there is a specific request for an assistive technology assessment or the IEP Team determines that one is needed, an assessment of the student’s need for assistive technology must be completed. While school districts may vary in their specific procedures, it is essential that a team of people be involved in any AT assessment.

There are **five basic components** that **must** be represented on every team making decisions about assistive technology. They are:

- A person knowledgeable about the student. That may be the **student** and/or **parents** or other family members.
- A person knowledgeable in the area of **curriculum**, usually a Special Education Teacher.
- A person knowledgeable in the area of **language**, usually a Speech/Language Pathologist.
- A person knowledgeable in the area of **motor**, often an Occupational or Physical Therapist.
- A person who can commit the district’s resources, not only for purchase of devices, but to authorize staff training and guarantee implementation in various educational settings, usually an **administrator**.

There can be any number of additional team members from such backgrounds as:

- Audiologist
- Counselor
- Instructional Assistant
- Physician
- Social Worker
- Teacher of Visually Impaired

- Technology Coordinator
- Early Intervention Specialist
- Nurse
- Rehabilitation Engineer
- Teacher of Hearing Impaired
- Vocational Counselor

This is not an exhaustive list. Each student’s team should be unique, customized to reflect the student’s unique needs. **Anyone who has the potential to contribute to the decision-making or implementation can be invited to participate on the team.**

**Procedures Required**

Each school district must have in place a procedure for providing assistive technology assessment. This procedure should include the identification of team members to provide the needed expertise to make an informed decision about assistive technology to meet the student’s identified needs.

On the following pages information will be provided about the three-step process of Information Gathering, Decision Making, and Trial Use that comprise the AT Assessment process developed by the Wisconsin Assistive Technology Initiative.

The need for an assistive technology (AT) assessment may occur at any time during the provision of services to students with disabilities. It may come up during the official “consideration” during the IEP meeting, or at any time while a student is receiving special education and related services. Generally the need for an AT assessment is brought up by either the parents or the service providers. (We’ll use this term to mean any of the therapists, teachers, assistants, or other individuals paid to provide services in the school). It may be a formal request for an “Assistive Technology Evaluation” or more of a specific question and something more is needed.
ASSISTIVE TECHNOLOGY ASSESSMENT

Since the 1990 reauthorization of IDEA with its definition of assistive technology services, which included “the evaluation of needs including a functional evaluation, in the student’s customary environment;” there has been a nationwide trend to identify and train staff within each school district to be more knowledgeable about assistive technology. This trend incorporates the following components:

- A change in the view of assistive technology assessment: from a one shot, separate event to an ongoing, continual part of educational planning.
- A change in who conducts the assistive technology assessment: from an expert based at a center to the local team in the natural setting.
- Change in the scheduling of an assistive technology assessment: from an isolated, one time event to an ongoing, continual process, which includes trials with potential assistive technology.
- As a result, there are changes in support and follow-through: from limited support and poor follow-through to meaningful follow-through involving all team members.

These changes are significant because the research on abandonment of assistive technology indicates that student’s feelings about the assistive technology and the support of family, peers, and teachers are critical factors that determine successful use versus abandonment. Other factors that affect abandonment include having the training necessary to use the devices, being able to use it with little or no pain, fatigue, discomfort, or stress, and having it compatible with other tools and technologies used by the student (American Medical Association, 1996).

This change has created a tremendous need for staff development training for service providers in local school districts across the nation. The changes in the 1997 reauthorization of IDEA which require every IEP team to “consider” the need for assistive technology, has created an even greater need for training, so that all IEP teams will have the needed expertise.

What is the difference between “Consideration” and “Assessment”? The most obvious differences between Consideration and Assessment are those of depth and duration. Consideration is a short discussion that takes place during the IEP meeting using known information and results in the decision to continue something already being used or to try or not to try assistive technology. Assessment goes into much more detail, looking closely at the students abilities and difficulties and the demands of the environments and tasks. Assessment also includes the acquisition of new information.

We believe that assessment has three parts:

- Information Gathering
- Decision Making
- Trial Use

Information gathering may require specific tests to determine a student’s functional level on a given task, observation in customary environments to document performance as well as environmental demands, and careful review of what has already been tried. The decision-making requires the use of a clearly defined decision making process understood by everyone. If assistive technology appears to be a viable tool, trials to determine exactly what will work are needed.
### Chapter 1 - Assistive Technology Assessment

<table>
<thead>
<tr>
<th>Task</th>
<th>A. If currently completes task with special strategies and / or accommodations, describe.</th>
<th>B. If currently completes task with assistive technology tools, describe.</th>
<th>C. Describe new or additional assistive technology to be tried.</th>
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<td>☐ Recreation and Leisure</td>
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<td>☐ Activities of Daily Living (ADLs)</td>
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<td>☐ Hearing</td>
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5. Are there assistive technology services (more specific evaluation of need for assistive technology, adapting or modifying the assistive technology, technical assistance on its operation or use, or training of student, staff, or family) that this student needs? If yes, describe what will be provided, the initiation and duration.

__________________________________________________________________________
__________________________________________________________________________

Persons Present: __________________________________________________________ Date: _______________

Assessing Students’ Needs for Assistive Technology (2009)
**WATI Assistive Technology Consideration Guide**

Student’s Name ___________________________  School ___________________________

1. What task is it that we want this student to do, that they are unable to do at a level that reflects their skills/abilities (writing, reading, communicating, seeing, hearing)? Document by checking each relevant task below. Please leave blank any tasks that are not relevant to the student’s IEP.

2. Is the student currently able to complete tasks with special strategies or accommodations? If yes, describe in Column A for each checked task.

3. Is there available assistive technology (either devices, tools, hardware, or software) that could be used to address this task? (If none are known, review WATI’s AT Checklist.) If any assistive technology tools are currently being used (or were tried in the past), describe in Column B.

4. Would the use of assistive technology help the student perform this skill more easily or efficiently, in the least restrictive environment, or perform successfully with less personal assistance? If yes, complete Column C.

<table>
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<tr>
<th>Task</th>
<th>A. If currently completes task with special strategies and / or accommodations, describe.</th>
<th>B. If currently completes task with assistive technology tools, describe.</th>
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<td>☐ Motor Aspects of Writing</td>
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<td>☐ Organization</td>
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If it is decided to try assistive technology that has not previously been used by the student, column C provides the place to describe what will be tried. It is important here to plan one or more formal trials. Only a well-designed trial will actually determine what assistive technology will work for a specific student. Only after successful trial use, should the permanent use of assistive technology be written into the IEP.

As noted earlier, one of the outcomes of “consideration” may be the determination that some kind of assessment or evaluation of the student’s need for assistive technology is needed.

The Assistive Technology Consideration Guide can be used to document each of these situations for future reference.
4. Finally, the last possibility is that the IEP Team will find that they simply do not know enough to make a decision. In this case, they will need to gather more information. That could be a simple process of calling someone for help, or going to get some print, digital storage device, or online resources to help them better “consider” what AT might be useful. It could also be an indication that they need to schedule (or refer for) an evaluation or assessment of the student’s need for assistive technology.

Many state education agencies have developed a worksheet or form to help IEP Teams insure that they address all of the Special Factors during the IEP meeting. This Special Factors worksheet or form requires the IEP Team to respond to a series of questions, including this one about assistive technology:

Does the student need assistive technology services or devices?  ☐ Yes  ☐ No
If yes, specify particular device(s) that were considered.

Because some IEP teams need more guidance than that single question provides, the Wisconsin Assistive Technology Initiative (WATI) has also developed a tool to further guide the IEP Team at this point. It is called the AT Consideration Guide. The AT Consideration Guide leads the IEP Team through a series of questions designed to help them determine whether the student does or does not “need” assistive technology devices or services. Those questions are:

1. **What task is it that we want this student to do, that s/he is unable to do at a level that reflects his/her skills/abilities (writing, reading, communicating, seeing, hearing)?** On the AT Consideration Guide, check each relevant task. Tasks that are not relevant to the student’s IEP are left blank.

2. **Is the student currently able to complete tasks with special strategies or accommodations?** If the answer is yes, strategies and accommodations are described in column A for each checked task.

3. **Is there currently assistive technology (devices, tools, hardware, or software) used to address this task?** (If none are known, review WATI’s AT Checklist.) If any assistive technology tools are currently being used (or were tried in the past, including recent assessment), they are described in column B.

4. **Would the use of assistive technology help the student perform this skill more easily or efficiently, in the least restrictive environment, or perform successfully with less personal assistance?** If yes, column C is completed.

Column C can also be used to explain briefly why something is not going to be tried, even though it is being considered. For instance, the student may recently have begun receiving new direct intervention and the IEP team wants to wait and see what the outcome is or the student has made recent improvements and they feel nothing different is needed. Documenting what was discussed and why it is not being implemented is often important here for review in the future, if someone does not remember clearly what was “considered.”
Using the AT Consideration Guide

- Consideration is a brief process, one that can take place within every IEP meeting without unduly extending it.
- It is more than someone saying, “Oh, that doesn’t apply to my students.”
- At least one person on the IEP Team must have some knowledge about assistive technology, because you cannot “consider” something about which you know nothing.
- In order to think about whether assistive technology would be helpful or not, the IEP team would have to have already developed the bulk of the IEP in order for them to know what it is they expect the student to be able to do twelve months from now.
- The annual goals that the student is expected to accomplish will be the focus of the discussion about what assistive technology, if any, might assist or allow the student to accomplish them.

Some of the problems that a student might experience which would lead the IEP team to consider assistive technology as a solution include, but are not limited to:

- Print size is too small.
- A student is unable to hear all that is being said.
- Difficulty aligning math equations.
- The student often needs text read to him in order to complete an assignment.
- Handwriting is so illegible that the meaning is impossible to decipher.
- The effort of writing is so slow or so exhausting that it is counterproductive.
- The student has difficulty finding key points on web pages.
- Current modifications are not working.
- The effort of decoding reading assignments is so difficult that the student loses track of the meaning.
- Student cannot organize assignments in a way that brings them to completion.
- The student is “stuck”.

When considering a student’s need for assistive technology, there are only four general types of conclusions that can be reached:

1. The first is that current interventions (whatever they may be) are working and nothing new is needed, including assistive technology. This might be true if the student’s progress in the curriculum seems to commensurate with his abilities.
2. The second possibility is that assistive technology is already being used either permanently or as part of a trial to determine applicability, so that we know that it does work. In that case the IEP Team should write the specific assistive technology into the IEP if it is being used permanently, and document what AT is being explored or trialed, to insure that it continues to be available for the student.
3. The third possibility is that the IEP Team may conclude that new assistive technology should be tried. In that case, the IEP Team will need to describe in the IEP the type of assistive technology to be tried, including the features they think may help, such as “having the computer speak the text as the student writes”. The IEP Team may not know at this point a specific brand or model, and should not attempt to include a product by name, since they do not know if it will perform as expected. Describing the features is the key step for the IEP Team in this situation.
Considering the Need for Assistive Technology

Every IEP Team is required to “consider” the student’s need for assistive technology. When the team “considers” assistive technology, that process should involve some discussion and examination of potential assistive technology. It should not be ignored or skipped over. It should not be someone saying, “Assistive technology? No, he doesn’t need that.” without real discussion. Consideration is defined in the American Heritage Dictionary as “to think carefully about, to form an opinion about, or to look at thoughtfully.” We believe that Congress did not choose that word by accident, but clearly intended that there would be some thought about whether a student might need assistive technology.

This “thoughtful look” should certainly include at least a brief discussion of which assistive technology might be useful and whether it is needed. In order to do that, someone on the IEP team will need to be sufficiently knowledgeable about assistive technology to help lead the discussion. That person may bring along specific resource information about assistive technology to help all team members focus on what assistive technology exists for the tasks that are challenging to the student. That information might be books, catalogs, printouts from a website, or actual hardware or software. Whether resources are brought along or not, there should be a brief discussion of assistive technology during which at least one person displays some knowledge about relevant assistive technology.

Because this discussion should be brief, it should last at least a minute or two, but no more than 15 to 20 minutes. Congress intended that we could do this within the confines of an IEP meeting, so it should not add appreciably to the length of that meeting. If understanding and agreement cannot be reached in twenty minutes, then it is possible that there are questions that need to be addressed in another forum such as an assistive technology assessment.

In addition to talking about the assistive technology itself, there should be a discussion about assistive technology services. School districts are required to provide both the devices and the services, and the “consideration” requirement also includes assistive technology services. Specific assistive technology services may include: an evaluation of the student’s need for assistive technology; training of the student, members of the family or staff on how to use the assistive technology; technical assistance about its operation or use; modification or customization of the assistive technology; and other supports to the school personnel that might be necessary for the assistive technology to be appropriately used. What these other supports might be is not specified in the law. It could include anything that is needed—for example, training on how to add new vocabulary to an augmentative communication device or scan new materials into a software program that reads the text, or time for planning about how and when these things will happen and who is responsible.

The Consideration Guide may be a helpful tool for building consultation teams as they consider what instructional approaches and tools to target to support unidentified students who require interventions at the universal and selected levels.
Even in a small school district, it is possible to identify and train at least one individual in each building to have basic knowledge about assistive technology. That individual can then participate in a network within the district so that he or she is aware of others who have knowledge. It also allows that network of people to collaborate to insure that someone develops greater expertise in specific areas (e.g., augmentative communication, voice recognition, or adapted computer access) and that all know who those individuals are and how to contact them for assistance.

Because IDEA ’04 specifically requires each IEP Team to consider the student’s need for assistive technology, each IEP Team must have at least one member with sufficient knowledge to appropriately consider that need. In addition to knowing about the assistive technology devices, that individual must also know where to turn for greater expertise when difficult questions arise. This can only happen when there is a district wide effort to create knowledgeable people who are interconnected with each other.

**Action Steps**

School districts that have not yet done so, must:

1. Provide awareness level training to all employees who work with students with disabilities in any capacity with an expectation of implementation.
2. Provide training on the law to all administrators and monitor their compliance.
3. Designate individuals at the central office and building level to work together to gain more in-depth knowledge.
4. Create learning communities where general education, special education, curriculum, and instructional technology staff continually support efforts to include all students in instruction.
5. Provide resources to keep staff knowledgeable including access to readily available equipment and software. Provide print supports as well as online resources and access to training.
6. Designate specific responsibilities as needed so that everyone clearly understands their role.

It is not so important that a district follow a certain model, but rather that they undertake a systematic course of action, designed to meet the needs of their students with disabilities.
Assistive Technology Roles and Responsibilities

Although school districts have been required since 1990 to specifically provide assistive technology devices and services, we continue to find a range of situations across school districts from:

- No one responsible for AT.
- One person responsible for AT struggling to find time because he or she has little or no reduction in other responsibilities.
- One person responsible for AT with some reduction in other responsibilities.
- A small team (often an SLP, an OT, and a teacher) at the district level responsible for AT with some reduction in other responsibilities.
- A larger, more complete team (usually adds vision and hearing as well as PT and sometimes different types of special education teachers) at district level with some building representation established.
- Well trained AT teams in each building with back up from a district level AT Resource team.

Looking at that list as a continuum, it is easy to understand that educators would struggle to comply with the law in those situations described first. It is nearly impossible to be in compliance in school districts where little or no effort has been made to assign responsibility, honor that responsibility by providing time to carry out duties, and provide training to all who require it.

However, even in the districts where effort has been made to assign responsibility and provide training, there can still be difficulties. What we really must have in every school district is:

**A knowledgeable, supportive network of people working together to help every IEP Team choose and provide appropriate AT devices and services.**

What does that mean? It means:

1. Every school district employee who works with students with disabilities (including general education teachers) has at least awareness-level knowledge about what assistive technology is and what it does.
2. Every employee who works with students with disabilities and has contact with parents of those students, knows the law about assistive technology, knows district procedures for obtaining assistive technology and assistive technology evaluations, and how to initiate those procedures.
3. All administrators understand and comply with the laws related to assistive technology. They expect assistive technology options to be available in all classrooms.
4. Specific individuals at both the building and district level have been designated with specific responsibilities related to assistive technology and provided the necessary training, resources, and support to carry out those responsibilities.
The reauthorization of IDEA ’04 aligned with laws found in No Child Left Behind (NCLB). One such alignment was in the identification of the need to provide alternative text formats to students who had difficulty interacting with text found in standard core content text books. This law impacts assistive technology tool choice as well as the delivery of services. IEP teams must identify the text format that matches a student’s need. Additionally, they must select the compatible file format for the device the student will use and the service needed to support the student in accessing these correct files.

300.172(a)(1)
Adopt the National Instructional Materials Accessibility Standard (NIMAS), published as appendix C to part 300, for the purposes of providing instructional materials to blind persons or other persons with print disabilities, in a timely manner after publication of the NIMAS in the Federal Register on July 19, 2006 (71 FR 41084).

Consideration
IDEA ’97 added the requirement that each IEP Team consider the need for assistive technology as part of the Consideration of Special Factors.

300.346 (a)(2) Consideration of Special Factors.
The IEP Team shall....
(v) consider whether the child requires assistive technology devices and services.

Lack of Guidelines
Neither the law nor the regulations provided guidelines for school districts in the implementation of these requirements. This may be part of the reason that school districts still struggle to comply with the laws relating to assistive technology. One systematic approach to providing effective assistive technology services is Education Tech Points (Bowser & Reed, 1998). This approach uses key questions to help school district staff appropriately address assistive technology throughout the delivery of special education services. Education Tech Points provides questions about assistive technology to be addressed during: Initial Referral, Evaluation for Eligibility for Special Education, Extended Assessment, Plan Development, Implementation, and Periodic Review. This manual is available as a free download from the www.wati.org website.
Assistive Technology Laws Affecting School Districts

As stated in 300.308, each school district is required to insure that assistive technology devices and services are provided if needed by a student in order to receive a free appropriate public education (FAPE).

Definition of Assistive Technology

300.308 Assistive Technology
Each public agency shall ensure that assistive technology devices or assistive technology services or both, as those terms are defined in 300.5 - 300.6 are made available to a child with a disability if required as a part of the child’s
(a) Special education under 300.17;
(b) Related services under 300.16; or
(c) Supplementary aids and services under 300.550(b)(2).

Assistive technology devices and services

300.5 Assistive technology device.
Assistive technology device means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability. The term does not include a medical device that is surgically implanted, or the replacement of such device. (Authority: 20 U.S.C. 1401(1))

300.6 Assistive technology services
Any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device. Such term includes:
(A) the evaluation of needs including a functional evaluation, in the child’s customary environment;
(B) purchasing, leasing or otherwise providing for the acquisition of assistive technology devices;
(C) selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing of assistive technology devices;
(D) coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;
(E) training or technical assistance for a child with disabilities, or where appropriate that child’s family; and
(F) training or technical assistance for professionals (including individuals providing education and rehabilitation services), employers or others(s) who provide services to employ, or are otherwise, substantially involved in the major life functions of of that child. [Authority: 20 U.S.C. 1401(2)]
Overview of the Assessment and Planning Process

Penny Reed, Ph.D.,
Updated by Jill Gierach, MSE ATP

This chapter provides an overview of the assistive technology consideration, assessment and planning process that has been implemented throughout Wisconsin and in hundreds of school districts across the country. The term “assessment” is being used rather than “evaluation,” except when specifically quoting IDEA. IDEA states that one of the assistive technology services that a school district must provide is an “assistive technology evaluation”. However, throughout this manual, we will use the term “assessment” rather than “evaluation”, unless directly quoting the law. This is based on the following definition from the Federal Register (July 10, 1993).

**Evaluation:** A group of activities conducted to determine a student’s *eligibility* for special education.

**Assessment:** A group of activities conducted to determine a student’s *specific needs*. (Italics added for emphasis.)

We believe that assessment is a more accurate and descriptive term for what needs to occur. It has long been our philosophical belief that there is no “eligibility” criterion for assistive technology. IDEA ’97 supported that philosophy with its requirement that each IEP team “consider” the student’s need for assistive technology. This language remains in IDEA ’04.

The first page in this section contains the definition of Assistive Technology devices and Assistive Technology Services from IDEA.

Following that is an explanation of the forms and process developed by the Wisconsin Assistive Technology Initiative for both “Consideration” and “Assessment”. There are descriptions of the steps for information gathering, decision-making, and trial use. In addition, there are directions on how to use the specific forms for each step of the process.

All products mentioned in this chapter appear in a table at the end of the chapter along with the company that produces them. A list of products and companies is at the end of each chapter of this manual.

Each of the forms contained in this chapter are included in the appendix as reproducible forms. These may be copied for your use if you maintain the credits as they appear on each page.
What’s the same in this fifth edition:
The format for group decision-making and the emphasis on utilizing the decision making process for AT assessment based on Joy Zabala’s SETT frame work.

What’s new in this edition:
We have additional chapters. Often these were a result of breaking out multi-topic chapters. Example: AT for Reading, Studying and Math in the fourth edition is now three distinct chapters.

We added a chapter for students with multiple challenges, not because the process is different, but to assist teams to ask different questions and to provide other resources.

We made each chapter a stand-alone chapter. We would hope each reader would always begin with Chapter 1 of the manual. This gives you an overview of the process; from there go to the chapter that meets your immediate need.

Many of the chapters have a short power-point presentation that can be found at the [www.wati.org](http://www.wati.org) or [http://dpi.wi.gov/sped/at-wati-resources.html](http://dpi.wi.gov/sped/at-wati-resources.html).

You may find an icon next to a form. This indicates we feel that the form or technique may apply to universal environments and may help more than students who have specific disabilities.

We have expanded the continuums. In some chapters the AT continuum of tools may be represented by two or more continuums in that category. We feel this will better assist teams to sort through the continually growing field of options.

Each chapter ends with its own resource section.
Introduction

This fifth edition of the ASNAT manual continues to follow essentially the same format created by Dr. Penny Reed and the original team of WATI consultants 16 years ago. Many of the supports we created or adapted for AT assessment of students with disabilities can be used effectively when looking at the technology needs of other unidentified students who struggle with school demands.

At this writing there are several forces that are in play that will continue to affect students. They may also impact how we deliver assistive technologies. This is not a manual that will provide information specific to any of these topics. We stay focused on assistive technology tools and services. But we dream of the day that all students are supported with the tools and instruction that meets their unique learning style. For the application of technology to do its work to support students in understanding, using and demonstrating knowledge we need to understand these supports. They are:

- Universal Design for Learning (UDL) - A set of strategies that can be employed to overcome the barriers inherent in most existing curriculum. Curriculum that uses current brain research to understand learning and apply teaching and technology tools to support all learners.
- Response to Intervention (RtI) - Integrates assessment and intervention within a multi-level prevention system to maximize student achievement and to reduce behavior problems. It emphasizes that learning environment and teaching strategies must be based on research models and adjusted to fit the needs of children. Technology, including assistive technology, supports access to curriculum for many students.
- National Instructional Materials Accessibility Standard (NIMAS) – This is a technical standard used by publishers to produce source files (in XML) that may be used to develop multiple specialized formats (e-text, audio or brailed books) for students with print disabilities. Assistive technology runs the file formats.

We believe these supports are critical to the success of students. For information on:

**Universal Design for Learning (UDL)**
Read: [Providing New Access to the General Education Curriculum](http://www.cast.org/publications/UDLguidelines/version1.html#go) by Chuck Hitchcock • Anne Meyer • David Rose • Richard Jackson.

**Response to Intervention (RtI)** (The Federal regulations at 34 CFR §300.307-309).

**National Instructional Materials Accessibility Standard** information may be accessed at: [http://www.osepideasthatwork.org/UDL/index.asp](http://www.osepideasthatwork.org/UDL/index.asp)

*(Continued on next page)*
Acknowledgments

The Wisconsin Assistive Technology Initiative (WATI) has been around for the past 16 years. Throughout those years it has been through the support and tireless efforts of many WATI consultants that we have been able to create, pilot, implement, and revise the Assessing Students Needs for Assistive Technology (ASNAT) resource manual. This family of assistive technology consultants grows and grows. It includes people from around the state who selflessly donated time and talent to write, edit, or make suggestions for inclusions within this manual. Each person contributed to the overall product that is in your hands. A big thank you to the current WATI staff and Milwaukee Public School representatives which includes: Laura Comer, Judi Cumley, Patti Drescher, Cindy Nankee, Marcia Obukowicz, Diane Rozanski, Lillian Rider, Karen Stindt, Kim Swenson, Shelly Weingarten, and Mary Beth Werner. This is an amazing, talented group of professionals.

Additional input and review was provided by Jaroslaw Wiazowski, Stacy Heckendorf, Sue Loesl, Kay Glodowski, Stacy Grandt, Chris Hudson, Lori Lindsly, and Sheryl Thormann. We also thank Paula Walser for her work on previous versions. We appreciate everyone’s willingness to share their expertise.

There are so many others that we remember and to whom we owe a debt of gratitude; they have inspired us throughout the years. They include Gayle Bowser, Linda Burkhart, Joanne Cafiero, Diana Carl, Karen Kangas, Patti King-DeBaun, Denise DeCoste, Dave Edyburn, Karen Erickson, Kelly Fonner, Don Johnson, Jane Korsten, Scott Marfilius, Carolyn Musselwhite, Lisa Rotelli, Judith Sweeney, Richard Wanderman, Joy Zabala, and so many more. It is through your work that we move closer to the goal of universal access for all students.

The fact that this manual is in its fifth revision is testimony to the visionary leadership of Dr. Penny Reed. It was through her leadership that this project was brought to life. She will always be known as Dr. WATI.

WATI wishes to recognize the commitment that the Wisconsin Department of Public instruction has made to providing assistive technology tools and services to Wisconsin students through the funding of this project and their support over the past 16 years.

Finally, we wish to thank Peggy Strong for spending countless hours organizing and formatting all our work to present it to you in this present edition. It couldn’t have happened without her.

It has been our pleasure to provide this 5th edition to you,

Jill Gierach, Editor

June 2009

This manual was made possible by funding from IDEA grant number 9906-23. Its content may be reprinted in whole or in part, with credit given to the Wisconsin Assistive Technology Initiative (WATI) and the Wisconsin Department of Public Instruction (DPI) acknowledged. Reproduction of this manual in whole or in part for resale is not permitted.