FCTD
Assistive Technology Glossary

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 difficultly 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%20Accomodations%20and%20Modifications.pdf.

1 Type n' Speak Keyboard - Photo courtesy of Quantum Technology

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.

1 Deluxe Suction Nail Brush - Photo courtesy of AbleData
2 EasieEaters™ Curved Utensils - Photo courtesy of Accessible Environments, Inc.
3 KidTRAC - Photo courtesy of Don Johnston
4 Jouse 2 Alternative Mouse - Photo courtesy of Compusult Limited

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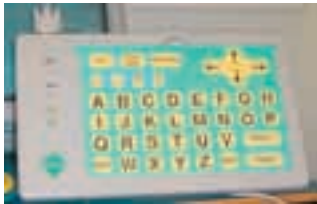
Example: Alejandro is a child with cognitive disabilities. The traditional QWERTY keyboard is confusing, so his mom replaces it with a keyboard that lists letters A-Z in big, bold letters and doesn't contain a lot of "extra" keys. This makes focusing on spelling and typing words a lot easier for him.

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.

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.

B

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

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.

1 Braille Embosser - Photo courtesy of Enabling Technologies
2 Illustrated example of Electronic Pointing Device

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.

F

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 acommodations (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.

I

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

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.

J
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

K
Keyboard Additions:

A variety of accessories have been designed to make keyboards more accesible. 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.

L
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.

M
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

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.

O

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 point-ing 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.

1

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.
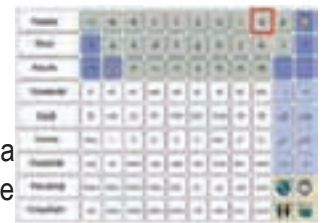
Example: Pierre is a high school student who was diagnosed with Stargardt disease (inherited juvenile macular degeneration) at age 10. He has been legally blind since age 12. Much of his schoolwork is available electronically, and he uses his screen reader to scan the text. Often, however, documents 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.

P

Pointing and Typing Aids:

2

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

1 Onscreen Keyboards (picture and alphabet) Photo courtesy of Zygo, USA
2 Pointing Aid - Photo courtesy of Madentec

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.

S

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[1] 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

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.

1

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.

2

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

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.