Assistive Technology in the Classroom For Deaf and Hard of Hearing

Students who are deaf and hard of hearing using hearing aids or cochlear implants may experience a need for assistive technology (AT). Cochlear implants or hearing aids do NOT create normal hearing for the user. They work best in quiet environments and/or with assistive technology. When considering the use of assistive technology for deaf and hard of hearing students there are two general categories to investigate - "**augmenting** devices/systems" and "**transforming** devices/systems". Augmenting devices/systems amplify sound, increase signal to noise ratio, etc and transforming devices/systems convert speech into text.

AUGMENTING DEVICES/SYSTEMS

Personal FM systems can send a teacher's voice from a wireless microphone worn by the teacher through FM radio waves directly to a small receiver worn by the student with hearing loss. Personal FM systems can be used by students who use hearing aids or a cochlear implant and by those who do not. Personal FM systems:

- ✓ Can be connected directly to a hearing aid or cochlear implant, or there are a variety of options for use without other devices including: using a headset or earbuds; or small desktop speaker.

- ✓ Are often helpful for students with cochlear implants to enhance the signal-to-noise ratio. There are different types of FM receivers. You need to work with the child's audiologist, FM manufacturers, and cochlear implant center to find out which FM systems and coupling options will work best with the child's cochlear implant processor.

- ✓ Are portable and usually easy to take from one classroom to another or use outside the classroom.

Soundfield systems send the teacher's voice from a microphone to one or more speakers positioned close to the child or mounted to a wall. This allows more than one student to use the system simultaneously. A sufficient signal-to-noise ratio for a child with hearing loss may not be provided by some systems in noisy rooms or in rooms where sound reverberates. Another type of soundfield system is an induction loop (IL) system. In this system a loop of wires encircles the entire listening area. The IL system signals can be accessed by hearing aids or cochlear implants with T coils.

Other Assistive Listening Devices include infra-red (IR) systems through which sound is transmitted using infrared light waves. A strict line of sight is usually required between the light emitter and the listener with the receiver since natural light may interfere with the transmission. Testing a variety of different systems is suggested if you are not sure which Assistive Listening Device will work best.

Audio-visual FM Systems facilitate speech-reading for students who are oral-deaf or hard of hearing. An example would be the AudiSee which includes a microphone transmitter and a headset-camera worn by the teacher. The student has a small monitor-receiver on the desk allowing the student to hear the teacher's voice and see the teacher's face.

Amplified Telephones provide a wide variety of adapted telephones as well as alerting devices that can help persons with varying degrees of hearing loss. See **A Few Resources** below for more information.

TRANSFORMING DEVICES/SYSTEMS

Translation Services are available which allow the words of a speaker to be transcribed, by a trained individual using a keyboard, into text displayed on a monitor, screen, or laptop computer, used by the students who are hard of hearing or deaf. Examples of translation services include, but are not limited to: Communication Access Realtime Translation (CART) which provides word-for-word instant translation of spoken words into text; C-Print and TypeWell programs which provide condensed meaning-for-meaning instant translation of spoken words into text.

Accessible Instructional Materials (AIM) may be a consideration as hearing loss can impact competency in reading. For some students, text-to-speech, word prediction, or another type of assistive technology should be considered.   See http://www.at.mo.gov/etc.html for borrowing devices/software for trials or http://at.mo.gov/aim/aim.html for related IDEA requirements, accessing AIM, NIMAS, etc.   Also see TAP for Internet for obtaining some types of adaptive computer equipment/software for home use: http://www.at.mo.gov/tap_internet.html

Captioning Services for video/audio productions provide captioned audio and video productions for students who are deaf/hard of hearing to support equal access to content. Schools are required, if indicated on the student's Individual Education Plan, to provide captioned audio and video productions. Captions display spoken dialogue as printed words on a television or computer screen. The Described Caption Media program at http://www.dcmp.org provides captioned videos to schools, and families of children with hearing loss and are free to those registered as a Level 2 member. Here is the site to register: http://www.dcmp.org/Register.aspx. A source for information about captioning is located at http://main.wgbh.org/wgbh/pages/mag/services/captioning/faq.

Face to Face Communication Systems can provide assistance when short, one-on-one conversations are needed. An educator and deaf or hard-of-hearing student can type messages back and forth on devices consisting of two keyboards and displays. Examples of devices are the Ubi-Duo and Interpretype.

Text and other Adaptive Telephones (TTY) can provide access for individuals who cannot use amplified phones. Additional options now available include PDAs, Blackberries, Sidekicks and videophones. For more information, see the "to learn more about adapted telephones or obtain one" section below.

A FEW RESOURCES

✓ **To try out an FM or soundfield system** – devices can be borrowed for up to six weeks from Missouri Assistive Technology's (MoAT's) ETC program to try out with students before making purchasing decisions. See the ETC catalogue at http://www.at.mo.gov/etc.html. Also see MoAT at http://at.mo.gov/aim/aim.html for IDEA requirements, accessing AIM, NIMAS.

✓ **To lease an ALD for the school year**, Missouri School for the Deaf has an Auditory Trainer Rental Program that leases personal FM systems annually to school districts. District personnel are trained on the use of the systems. See the MSD site at http://www.msd.k12.mo.us/resources/audiology.html.

✓ **To learn more about ALDs** go to: www.asha.org/public/hearing/treatment/assist_tech.htm.

✓ **To find vendor information**, another ASHA website feature is an on-line buyer's guide that includes company websites, email links, and other contact information. The search feature can be used with words, phrases, or company names. The website is: **http://buyersguide.asha.org/**.

✓ **To learn more about adapted telephones or obtain one** for home use, individuals who are deaf or hard of hearing can get amplified phones, voice carry-over phones, TTYs and other adapted

equipment through Missouri Assistive Technology's TAP for Telephone Program. For more information, go to http://www.at.mo.gov/tap_telephone.html or call 800-647-8557 (V) and 800-647-8558 (TTY).