The use of the word “impaired” rather than the more widely used “disabled” in the title of this TechNote is intentional. “Impaired” has a broader meaning because it includes all of the 35 to 40 million Americans who cannot function normally without assistance of some type. The American Medical Association’s Guides to the Evaluation of Permanent Impairment defines “impairment” as “an alteration of an individual’s health status; a deviation from normal in a body part or organ system and its functioning.” In the same Guides the definition of “disability” is “an alteration of an individual’s capacity to meet personal, social, or occupational demands because of an impairment.” A salesman who suffers an injury to a digital nerve in the hand would be impaired, but not disabled; but a concert pianist who suffers the same injury would be disabled per these definitions.

While the foregoing are medical definitions, the word “disability” also has legal meaning because of the Americans With Disabilities Act (ADA) and the regulations of the Social Security Administration, Occupational Safety and Health Administration, and state labor agencies.

The ADA has the greatest impact on libraries because of the employment discrimination protections in Title I and the access to public places requirement in Title II. While the ADA’s definition of disabled as “a physical or mental impairment that substantially limits a major life activity” appears to be similar to that of the American Medical Association, it differs in practice because many determinations are made on a case by case basis by administrative agencies and courts, not medical practitioners.

By federal law, the visually disabled includes not only the blind, persons whose visual acuity is 20/200 or poorer in the better eye with correcting lenses or whose widest diameter of visual field is no greater than 20 degrees; but also those who are impaired to the degree that they cannot read standard printed material as the result of visual or physical limitations. Qualifying persons are served by a nationwide regional network of libraries for the blind and the physically handicapped to the extent that their ability to read is affected. However, many of those who are visually impaired, but not blind, also use public libraries.
There is no specialized network of libraries for the physically and aurally impaired, but a number of states mandate access to public places for the physically impaired and offer services to the deaf (aurally disabled) through special agencies, the state department of education, or the state library.

Many public libraries seek to go beyond the requirements of federal and state regulations by facilitating access to their resources by patrons who are not disabled, but are physically impaired, have low vision, or do not hear well so that they cannot take full advantage of what is available to the unimpaired. There is a wide range of access tools that can be adopted to provide this access. This TechNote describes many of them.

Access Tools for the Physically Impaired

People who are physically impaired have limited capabilities in moving and/or performing manual tasks because they suffer from amputations, arthritis, muscular dystrophy, multiple sclerosis, or spinal cord injuries. These issues can lead to difficulty in using keyboards, touch screens, computer mice, and scroll wheels.

The simplest and least expensive tools are mice and keyboards with larger buttons. They are particularly useful for those who suffer from arthritis. These tools are widely available from office supply companies, computer stores, and online.

For the physically impaired who cannot use the access tools described in the previously paragraph, a device called IntelliKeys (www.intellitools.com) may be the answer. It is a keyboard and overlay combination that consists of alphabet, numbers, and enlarged arrows. Also useful is Softype by Orin (www.orin.com), a software utility that displays a full-featured keyboard on the screen. A device known as SmartNav 4 by Natural Point (www.naturalpoint.com) allows a user to move a mouse by moving his/her head slightly. A virtual keyboard on the screen makes it possible to enter text or navigate on the Internet. Madentec tracker (www.madentec.com) uses a tiny reflective dot on the forehead or glasses so that a computer camera/tracker lets the user manipulate the cursor through head movement.

Among the most effective access tools for those who are even more seriously impaired is speech recognition software that makes it possible to speak into a microphone to control a computer. The speaker cannot only control the computer, but can write text into a document such as Word. Words will appear on the computer screen in a word processing format, making it possible to edit the input. Among the most frequently purchased speech-to text products on the market are Dragon Systems (www.1st-dragon.com), ViaVoice by IBM (www.ibm.com/software/pervasive/embedded_viavoice), and Voice Express (www.voice-express.com).

The products described in this section are priced from less than one hundred to more than a thousand dollars each.

Access Tools for the Visually Impaired
Mounting the monitor on a movable arm so that the distance and angle of the display can be adjusted is the most basic tool. It is useful even for those who have near normal vision. Most office supply companies offer this equipment.

Screen-enlarging software allow persons with low vision to read text displayed in standard type by enlarging the size of the text in menus, toolbars, icons and documents and adjusting or eliminating color. The most widely used are ZoomText Xtra from Al Squared (www.aisquared.com) and MAGic for Windows from Freedom Scientific (www.FreedomScientific.com). Ideally, the monitor will be at least 20 inches so that more of the enlarged text, which can be as great as 36 magnifications, can be seen at one time.

Windows-Eyes by G. W. Micro (www.gwmicro.com) enables the visually impaired to access the information on a computer screen through voice output. JAWS screen reader, also from Freedom Scientific, is similar. Both also support Braille out. The SuperNova screen reader (formerly Hal) is similar to the foregoing, supporting both speech and Braille output, while SuperNova Access is a full-screen reader that offers magnification, speech, and Braille support in a single package. Both SuperNova products are from Dolphin (www.yourdolphin.com).

Open Book Text-reader from Freedom Scientific helps those with low or no vision to scan printed text and hear the words via synthetic speech. Kurzweil Educational Systems (www.kurzweiledu.com) offers the Kurzweil 3000, an integrated system that supports not only reading, but also writing and learning for the visually disabled and others who are academically challenged.

Except for the Kurzweil and Signtel products, the prices for which may run in the thousands of dollars; the foregoing products are priced between $800 and $1,200, but Open Book also requires the purchase of any one of several supported scanners.

**Access Tools for the Aurally Impaired**

It is important for persons who are deaf or hard of hearing to be able to communicate with their public library from anywhere. E-mail, including instant messaging, is the simplest option. For those who do not use e-mail, a TTY or TDD telephone is an option. The two are the same, but TTY, the older term, is still extensively used. A TTY or TDD telephone can make and receive calls without the user having to speak or hear. Instead, a user types a message and reads the response.

For someone without a speech impairment—generally someone who is lately-deafened—a Voice Carry Over (VCO) telephone should be considered. A VCO allows the hearing impaired person to read the caller’s words but speak his/her own. A library that wishes to communicate with TTY/VCO users needs to purchase a special telephone, which can be a dedicated phone or a multi-mode phone. The telephones are widely available on the Internet.

There is yet another option: Sorenson Communications (www.sorenson.com) offers public libraries free video relay service (SVRS) equipment that uses a video phone to
enable people who use sign language to communicate with those who cannot, and vice versa. The system is free of charge to libraries.

While most hearing impaired persons entering a library have a hearing aid, that may not be enough in a busy library environment. A library FM system is useful for sending messages to the hearing impaired, especially alerts to emergencies. It is a wireless, portable, battery-operated device that uses radio transmission to send auditory signals. The sender uses a microphone that is connected to a transmitter. The library patron wears a receiver clipped to clothing or connected to a hearing aid via an induction loop systems or audio input cables. The range is as great as 200 feet depending on the power of the antenna. Major sources are Comtek (www.comtek.com), WilliamsSound (www.williamssound.com), Phonak Hearing Systems (www.phonak.com), and Phonic Ear (www.phonicear.com).

Signtel Inc. (www.signtelinc.com) offers a sign language public address and emergency alert system that allows the hearing to be addressed by text and voice and the hearing impaired by sign language. The system can translate over 30,000 words and 1,400 idioms and phrases to sign language video.

The products described in this section are priced from a few hundred to several thousand dollars each.

**Other Sources of Information**

The Association of Specialized and Cooperative Library Agencies (www.ascla.ala.org) is a particularly useful source of information. It has developed a toolkit of 15 tip sheets that suggest appropriate behavior for staff working with persons who have specific impairments and identify materials and types of technologies that will help impaired individuals use the library more successfully.

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