

Access Through Technology

Marti Goddard shows how to use technology to help meet the needs of people with disabilities



Access and diversity. Librarians continually talk about the importance of ensuring that all users have access to any of the materials in our collections. We are dedicated to serving diverse populations and strive to build collections that represent a full spectrum of racial, ethnic, and cultural values. We fight to make sure that every item in our collections is on open shelves and that unfiltered Internet access is available to at least our adult users. Our next challenge: broaden our definitions of access and diversity to include the interests and needs of people with disabilities.

Census 2000 figures indicate that more than 19 percent of the U.S. population aged five and older are people with disabilities. The estimated 50 million individuals who comprise this group especially need access to computers in libraries. Citing data from the 1999 Survey on Income and Program Participation, a report published by the U.S. Department of Commerce states, "People who have a disability were only half as likely to live in homes with Internet access than those without any disability.

And while just under 25 percent of people without a disability have never used a personal computer, the situation is quite different for those who have a disability. Close to 60 percent of people who have at least one type of disability have never used a computer."

Computers in libraries are essential tools. Assistive technology is the key to using them for people with disabilities.

As the requirements of the Americans with Disabilities Act (ADA) of 1990 came into effect, libraries scrambled to

build ramps, widen doorways and aisles, and make restrooms wheelchair accessible. Increasing numbers of people with disabilities come to libraries with expectations beyond being able to walk or roll through our doors. Just like other users, they also want to be able to read, research, make notes, send email, participate in programs, and watch videos. To independently pursue their interests, some library users with disabilities need access to assistive or adaptive technology.

Magnifiers to software

Assistive or adaptive technology (AT) involves a device or a computer-based accommodation that helps an individual with special needs work around or compensate for a disability by supporting individual strengths.

In a library, AT may be as simple as a magnifying glass used by an older adult to read the newspaper. But it can also be as sophisticated as a computer workstation with software that makes it possible for a

student with learning disabilities to scan a book and hear it read aloud while following highlighted text on a monitor screen. AT may even be a piece of furniture, such as an adjustable-height table that can be used by people in all sizes of wheelchairs. The ADA requires every library to provide a variety of accommodations that make it possible for those with various disabilities to use all of its materials and services. AT can help meet that standard.

Ideally, a library's ADA coordinator or a staff member whose duties include accessibility services will work with a team of community members with special needs to develop an effective AT program (see "Create Your AT Program," p. 4). Working with users and potential users helps ensure that appropriate solutions are installed, that people will actually use them, and that they will spread the word about the library's efforts. In the beginning, adding AT to a library's array of services can be as simple as teaching



Chatting at Gallaudet

By Laura Jacobi

One serendipitous technological innovation for some people with disabilities is the development of live online chat reference service, also known as virtual reference. The same technology that lets anyone interact with a customer sales agent while still in pajamas allows people who are homebound, deaf, or who have speech disabilities to talk to a librarian from a remote site.

Librarians not only conduct reference interviews online, they can also push pages—show patrons the web sites that will answer their questions—and escort them through searches. Because chat software enables interaction, librarians can watch patrons type searches and suggest alternative approaches. At the end of a reference transaction, both the patron and the librarian receive an emailed transcript of the conversation and the URL of each web site used.

For the computer-savvy deaf students at Gallaudet University, Washington, DC—the world's only liberal arts university for students who are deaf and hard of hearing—virtual reference service can be especially useful. We provide virtual reference as part of the eight-member Washington Research Library Consortium. Our students already prefer paging and instant messaging to TTYs, so they feel at home with our chat service. The service also broadens our students' horizons by letting them interact easily with nonsigning librarians from other consortium libraries.

Chat: easy and anonymous

Gallaudet librarians, long accustomed to conducting reference interviews via TTY, find chat much easier. We no longer feel the need to craft formal and often tedious explanations of how to conduct searches. Instead, with a click of canned text and bookmarked web sites, we can show our patrons what we're talking about. Although the electronic time lag can create problems as messages cross back and forth, we don't have to wait patiently for the caller on the other end of the TTY

to type "GA" ("go ahead") before we jump in to correct a misunderstanding. We can send information in short, informal bursts.

Chat reference offers another advantage. Some patrons greatly prefer the anonymity of computer-mediated activity to face-to-face interaction. Many librarians have finished a chat reference question only to discover that the person they've been helping is sitting at a nearby OPAC. Some people are intimidated by the thought of asking a librarian for help. People who have difficulty speaking or understanding speech may find it vastly easier to communicate online.

Some limitations

Like all computer applications, chat software is susceptible to technical problems and crashes. Chat is definitely not faster than face-to-face communication; it's not unusual for transactions to take more than 20 minutes.

All the nonverbal cues of posture, gesture, facial expression, eye contact, and tone of voice are missing. When both librarian and patron can use a voice phone and the web simultaneously, they will often talk and search together to speed up the process.

However, chat reference service opens doors for all of us—including the homebound, the shy, and those who cannot rely on speech for communication. What started out as a convenient service for business customers has become a great assistive technology. ■

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WEST COAST WONDERS: San Francisco PL offers a variety of assistive technologies, ranging from (l.-r.) assistive listening devices; Braille and speak devices, which let users listen to voice output and transcribe it with Braille characters; closed-circuit televisions to enlarge and enhance printed text; and talking dictionaries

staff to show users how to turn on selected Microsoft Accessibility tools that provide minimal accommodations for users with low vision, hearing loss, and mild motor disabilities.

Hardware options

Simple hardware solutions add flexibility to a public workstation. Place a workstation on a push-button adjustable-height table with an adjustable keyboard tray. Designate it for priority use by people with disabilities. Adapt it with a large flat-screen monitor mounted on an adjustable monitor arm, add a keyboard that has large type black on white keys, and connect two pointing devices such as a conventional mouse and a trackball through a Y-mouse adapter

that automatically switches to the device manipulated by the user. With these changes, your workstation will meet the needs of wheelchair users, some people

with low vision, and people who have computer-related repetitive strain injuries or carpal tunnel syndrome as well as some other dexterity disabilities.

Add screen enlargement software with voice output, attach headphones, and people with more severe vision impairments as well as those with reading disabilities can also use the workstation. Make it possible to swap out alternate keyboards as requested by users and even more people with different kinds of motor and dexterity disabilities can use the machine.

Depending upon local needs, a library may add workstations that are configured for specific user groups. Where there is high demand for hands-free computer use, consider a workstation with speech-recognition software that allows users to control the computer or enter text via their voices. The addition of a touch screen monitor and an electronic tracking device would make the workstation accessible for others who are unable to use standard keyboards.

A community with lots of blind people who read Braille may add a computer with Braille translation software, a

refreshable Braille display, and a Braille embosser. Users who have reading and writing disabilities benefit from access to a workstation that includes a scanner and voice output, word prediction software, and a thought organization program.

IT, environmental challenges

Because computer-based AT is designed primarily to be installed on a PC configured for a single user in an office or at home, AT poses some unique challenges to both users and staff in a library's multiple-user environment.

For example, conventional library network security often limits the ability of users to change settings for display and sound. IT staff can design solutions that make it possible for people with disabilities to make changes they need without compromising security. They just need to choose software that limits access only to essential control panels and resets the machine to its original settings each time a user logs off.

Noise and distraction provide additional challenges. Braille embossers are noisy, so they need to be installed where other readers will not be disturbed. Computers with voice output can be used in any location if headphones are provided. However, a workstation that is intended for users with learning disabilities should be installed in a quiet location with a minimum of visual and auditory distractions.

Computers that include speech-recognition programs also should be installed in quiet places where the user's voice will be easily recognized without ambient noise that affects the computer's ability to understand it.

Voice-recognition software brings another challenge: it requires each user to build a voice file that enables the computer to recognize his or her voice. If a number of voice files are saved in a hard drive, users may inadvertently corrupt one another's files. A possible solution: install a zip drive and require each user to save his or her voice file on a zip disk.



Create Your AT Program

The most effective assistive technology programs are developed by teams of people who decide together what AT (assistive or adaptive technology) solutions are needed to provide access to their library's resources and programs of service.

Team members should include a variety of library staff and individuals from the local disability community. Teams should include the library's ADA coordinator or a staff member responsible for developing services for users with disabilities; current and potential library users; and public service staff members who will be assisting AT users.

Library IT staff who will install and maintain the equipment are also crucial. Staff members from local disability services agencies and educators from the local school district or campus disabled student services can provide information about the AT consumers use in their programs.

When you plan your AT program, keep the following issues in mind.

Consider why the library is making AT available

Is it solely to make library resources available, or is it also to enable people

with disabilities to do other types of work? Perhaps the library wants to provide training opportunities for users with disabilities, to serve as a demonstration site, or create Braille materials upon request for other agencies.

Decide who can use the AT

Will use be restricted only to users who need specific AT solutions? Other users could include people whose disabilities make them work more slowly so they need more time than is regularly available at other computers. There are also users whose mental illness makes it impossible for them to use a computer effectively in a more mainstream location.

Determine how the library will ensure that people who need to use AT will have priority use of the machines

Some libraries create a mechanism for people with disabilities to identify

their needs and be registered to use the AT. Other libraries offer the machines on a first come, first served basis. You may want to make it possible for users to reserve a machine before coming into the library.

Plan how you will train staff

Will they simply know where the AT is located, or know how to launch and troubleshoot programs? Perhaps some staff need extensive training so they can in turn train both new AT users and new staff members. If the library does not provide onsite training, it is essential to develop resources so users can be referred for extended training.

Strategize with your network of AT users and colleagues on how to market your program

At a minimum, include information about AT on the library's web site and any print materials that describe your services for people with special needs. Consider creating brochures for target audiences that can be distributed through local schools and colleges, rehabilitation departments, and employment offices, as well as recreational programs for people with disabilities and senior residences. Distribute more general materials through doctors' or optometrists' offices.

Beyond the PC

Not all AT works with a personal computer. Simpler standalone solutions provide user-friendly alternatives for some tasks. Librarians often report that CCTVs (closed-circuit televisions) are heavily used by both readers with low vision and those with reading disabilities to deal with print materials

“Depending upon local needs, a library may add workstations that are configured for specific user groups”

more comfortably and effectively. Simple reading machines that allow readers to scan print and listen to it read aloud, as well as talking dictionaries, are useful for the same populations of users.

Standalone solutions also enable some people to use library services more independently or participate in public programs. Examples of these solutions include Talking Signs®, which orient library users with vision impairments to basic service points, and text telephones (TTYs), which enable callers with hear-

ing or speech disabilities to talk directly with reference staff over the phone. People who are deaf or hard of hearing also may benefit by having available assistive listening devices or real-time captioning services that help them participate in public programs.

Accessible web sites and online resources that can be used effectively by

people with disabilities further enable access for a diverse community of users. In fact, universal design principles that make it possible for people with disabilities to use electronic resources easily make those resources more accessible to a wide variety of devices, such as handhelds.

Universal design principles and guidelines are defined by the W3C (World Wide Web Consortium). For information on how chat reference services are being employed by students who are

deaf or hard of hearing, see “Chatting at Gallaudet,” p. 3.

Archimedes and the future

Participants in the Stanford-California State Library Institute on 21st Century Librarianship saw the future of AT when they were introduced to the Archimedes Project in the summer of 2000. Based in the Center for the Study of Language and Information at Stanford University, the Archimedes Project is an independent research organization made up of “a group of individuals from multiple disciplines and broad world experience who are committed to making information technology universally available to all people, regardless of their abilities, needs, preferences, and culture.”

Project director Neil Scott ignited imaginations with the vision of a Total Access System (TAS). While the computer-based assistive technologies described earlier require that libraries adapt their computers, under the TAS model, each individual with a disability would have a personal accessor to use on any electronic device, whether a computer in his or her library or an ATM.

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Speakers in a session at the 2004 Public Library Association conference in Seattle called "Untangled, Unwired, Unbound: Going Wireless in the Public Library" touched upon the ways universal design lets an increasing number of users bring their own devices and simply tap into wireless library networks. Knowing that libraries as well as data-

base producers are using universal design precepts to develop their web sites and e-products gives hope that the Archimedes Project vision can become reality. ■

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Adaptive Technology Links

Ability Hub: Assistive Technology Solutions

www.abilityhub.com

AT for people who find operating a computer difficult, maybe even impossible. An easy-to-read and -follow site you can access by disability type, product type, or FAQs.

ABLEDATA (National Institute on Disability and Rehabilitation Research, U.S. Department of Education)

www.abledata.com

The premier source for information on AT.

The Access Board

www.access-board.gov

A federal agency committed to accessible design. Has ADA accessibility guidelines and standards for ramps, bathrooms, etc., including measurements and drawings.

ADA Home Page (U.S. Department of Justice)

www.ada.gov

Includes legal documents, explanatory and technical assistance materials, and links to web sites of other federal agencies whose responsibilities include enforcing regulations that support the Americans with Disabilities Act.

The Alliance for Technology Access

www.ataccess.org

Includes basic information on assistive technology, an annotated list of vendors, and information about designing accessible web sites.

American Library Association, HP Library Technology Access Initiative

www.hp.com/hpinfo/about/accessibility/partnerships/ala/index.html

A cooperative project that developed accessible computer workstations for libraries and deployed them to four public and two academic libraries. Includes a useful orientation guide.

American Library Association, Library Services for People with Disabilities Policy

www.ala.org/ala/ascla/asclaissues/libraryservices.htm

In 2001, the American Library Association Council unanimously approved a "Library Services for People with Disabilities Policy." The policy speaks to all aspects of library accessibility, including "Assistive Technology: Well-planned technological solutions and access points, based on the concepts of universal design, are essential for effective use of information and other library services by all people. Libraries should work with people with disabilities, agencies, organizations, and vendors to integrate assistive technology into their facilities and services to meet the needs of people with a broad range of disabilities, including learning, mobility, sensory, and developmental disabilities. Library staff should be aware of how available technologies address disabilities and know how to assist all users with library technology."

Archimedes Project

archimedes.stanford.edu

Association of Tech Act Projects

www.ataporg.org

Its mission is to collaborate with persons with disabilities and others at the national level to increase the availability and use of assistive technology devices and services for all individuals with disabilities in the United States and territories. Includes a list of agencies to contact by state.

Computer/Electronic Accommodations Program (U.S. Department of Defense)

www.tricare.osd.mil/cap/acc_proc/acc_learn_assist.cfm

Describes assistive technology that is frequently used to ensure that Department of Defense employees with disabilities have equal access to information and electronic and telecommunication work environments.

Falling Through the Net:

Toward Digital Inclusion

A Report on Americans' Access to Technology Tools. U.S. Department of Commerce, Economics and Statistics Administration, National Telecommunications and Information Administration (NTIA). October 2000
www.ntia.doc.gov/ntiahome/ftn00/contents00.html

The fourth title in the NTIA "Falling Through the Net" series, this was the first edition to address the needs of people with disabilities.

Microsoft Accessibility

www.microsoft.com/enable

Covers built-in tools for disabilities and other accessible technology devices and software; includes step-by-step user guides.

Talking Signs®

www.talkingsigns.com

Talking Signs® technology is an infrared wireless communications system that provides remote directional human voice messages that make confident, independent travel possible for vision-impaired and print-handicapped individuals. Infrared transmitters are installed at main service points in a building, such as service desks, elevators, and restrooms. People with vision impairments use handheld receivers to hear brief recorded messages broadcast by the signs; sound gets louder and clearer as they approach a service point.

World Wide Web Consortium (W3C)

www.w3.org

Additional explanatory documents and training materials about web design can be found at the DO-IT (Disabilities, Opportunities, Internetworking and Technology) site at the University of Washington (www.washington.edu/doit) and the Trace Center at the College of Engineering, University of Wisconsin at Madison (www.trace.wisc.edu/world/web).

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