Chapter 2

Making the Right Decisions about Assistive Technology in Your Library

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Abstract

Chapter 2 of Library Technology Reports *(vol. 48, no. 7) "Making Libraries Accessible: Adaptive Design and Assistive Technology" introduces key technologies and important considerations that libraries can use to incorporate assistive technologies into their spaces and services.*

About the Author

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Introduction

According to the Assistive Technology Act of 1998, *assistive technology* (also commonly called "adaptive technology") consists of "any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities."[1] This definition encompasses a broad range of tools and resources that libraries can provide to create an accessible environment for disabled patrons.

Understanding what technologies to provide based on your community and budget can be a challenge, so this chapter will focus on:

- how to choose and set up specific adaptive and assistive technology equipment and software for your library
- how to effectively market the services and equipment your library provides
- how to train library staff and patrons to use the available resources

The intention of this chapter is to serve as a primer for a discussion on assistive technologies and not as an all-inclusive list of available technologies. The author of chapter 1 in this report, Barbara T. Mates, has written an excellent book entitled *Assistive Technologies in the Library*, which goes into much greater depth than can be accomplished in this particular chapter.[2]

The importance of making strong, thoughtful adaptive technology decisions goes beyond providing access to library collections. A former student enrolled in a highly competitive graduate program stated that the adaptive technology room in her campus library was "the only place on campus where people, like me, with learning disabilities or physical disabilities can find the computer programs that are necessary to be successful in the academic world. It is no exaggeration that my success would be impossible without this room" (Adrienne Isgrigg, personal communication, December 8, 2009). As this student points out, her success was directly tied to the adaptive and assistive services the library was providing, a lesson that can be extended to disabled users in all types of libraries.

There are many options available to libraries with regard to how to choose, set up, and implement tools, technologies, and services for patrons with disabilities. Becoming familiar with the range and categories of assistive technologies available will help you make informed and purposeful decisions about what to provide at your organization.

Setup and Specific Tools for Patrons

The first section of this chapter contains a brief description of several types of assistive technology equipment, including software packages and recommendations for the design and layout of adaptive services. The types of tools described in this section are

- **screen reading technology,** which allows persons who have visual impairments or who are blind to navigate electronic resources
- **magnifying technology,** which enables patrons with visual impairments to enlarge text for easier viewing
- **literacy software and hardware,** which assists patrons with reading and writing tasks
- **speech recognition software,** which enables patrons to navigate and document text through verbal input
- **peripheral devices,** such as headsets, speakers, microphones, touchpads, large and small keyboards, and multiple mouse options, which all allow patrons easier physical access to computers as well as the tools necessary to interact with specific assistive technologies

Things to Consider

There are several considerations to keep in mind when choosing which software or hardware to purchase for a library. System requirements differ from product to product, and what works best for one community, library, or campus will not necessarily work well for another. In the case of magnifiers, for example, an important distinction to be made is whether patrons will be using this technology to assist in searching the Web or in reading a newspaper or other print material. The first inclination may be to purchase the software package with the most features, but it is important to consider the abilities, preferences, and comfort levels of those who will actually be using the technology.

Additionally, software licensing types must be taken into consideration. Some software licenses are available for an entire network of computers, while others must be purchased singularly for each computer, and still others are available on USB drives that can go from computer to computer. Determining local licensing specifics can assist in selecting the product that best fits the needs of the users in your community or institution.

Reiterating a point made earlier, the tools described below are examples but not an all-inclusive list, and many of the companies offer more than one type of assistive technology. An attempt has been made to sort the technologies into discrete categories, but these tools often span multiple headings depending on their feature availability.

Screen Readers

A recent report from the Pew Research Center notes that "fifty-four percent of adults living with a disability use the internet."[3] While the survey report does not name specific disabilities, screen readers make it possible for patrons who are blind or visually impaired to navigate electronic resources, examples being websites and PDF documents, by listening to the text on the screen as it is read to them. It also enables students with learning disabilities to have material read to them as they follow along. Several of the titles listed in the section Literacy Software, below, also contain screen reading functionality, but the emphasis on study skills, reading, and writing warranted a separate heading.

JAWS

JAWS is a screen reader that enables the user to navigate computer applications with the use of keystrokes. The software converts text into speech or into braille output, essentially eliminating the need for a monitor or a mouse, and works with the Microsoft Office Suite as well as Adobe Acrobat Reader, Internet Explorer, and Firefox.

ZoomText Magnifier/Reader

The ZoomText Magnifier/Reader is a package that performs double duty as a screen magnifier with multiple magnification levels (see figure 2.1) and as a screen reader. The screen reader will convert screen text into sound and also allows text to be converted to audio files that can be placed into iTunes or Windows Media Player for playback later on a mobile device. ZoomText can also be purchased on a USB, allowing a user with administrative rights to install the software directly from the USB to any computer.

Screen Readers

JAWS
www.freedomscientific.com/products/fs/jaws-productpage.asp

ZoomText Magnifier/Reader
www.aisquared.com/zoomtext/more/zoomtext_magnifier_reader

Magnifying Software and Hardware

Magnifying software and hardware assist patrons with visual impairments who need to have either the text on the computer monitor or the text of a physical object like a book or map enlarged.

SuperNova

SuperNova is a screen reader and a magnifier with multiple magnification levels, and it works with refreshable braille displays. It works with several Windows operating systems, can be installed on a network, and is available on USB.

ZoomText Magnifier

ZoomText Magnifier offers the magnification features without the screen reading features mentioned in the previous section and is also available on USB.

Bierley Electronic Magnifiers

Bierley makes a wide range of magnifying devices, including a USB mouse that, when dragged over printed material, displays the image on a computer monitor with multiple magnification levels. The ColorMouse version can display white text on black background, black text on white background, or a full color image.

MagniSight

Like Bierley, MagniSight offers hardware solutions to patrons with visual impairments who require text to be magnified. These products typically involve a viewing screen and a platform to place printed material on. A camera broadcasts the image of the material onto the screen, and the patron can move the printed material around or turn pages.

Magnifying Software and Hardware

SuperNova
www.yourdolphin.com/index.asp?home=452

ZoomText
www.aisquared.com/zoomtext/more/zoomtext_magnifier

Bierley Electronic Magnifiers
www.bierley.com

MagniSight
www.magnisight.com

Literacy Software

Software and hardware in the literacy category aim to assist patrons who have learning disabilities or who could benefit from additional help with study skills, reading, and writing. The functionality of these products varies, and when making selection decisions, it is beneficial to know what type of software and hardware are supported by the primary and secondary school system or the local college campus; making the transition from home or school to the library as seamless as possible is beneficial to disabled patrons. Green defines several different types of learning disabilities (e.g., tactual perception, language reception, and social or emotional behavior) and explores how libraries can assist patrons with these issues.[4]

Figure 2.1
ZoomText Magnifier/Reader detail. Image source: www.freedom-speech.co.uk/images/zoomtext_magnifier_screenshot.gif, used with permission by Freedom of Speech Ltd.

Read&Write GOLD

Read&Write GOLD has a large range of features that help students with learning disabilities, such as a built-in dictionary, word prediction, a translator to convert text into another language, and a highlighter function that allows a student to pull highlighted text into a separate document for use in an outline. There are also features such as speech input and a PDF reader that make this type of software beneficial for students who have difficulty typing or prefer to have materials read to them.

Kurzweil 1000 and 3000

Kurzweil 1000 and Kurzweil 3000 are packages that assist students who have difficulties with reading and writing. Students are helped with study skills by such features as having text read aloud, highlighting for outline creation, and dictionaries. One interesting feature is that a user can take a text file and convert it to an MP3 for playback on a mobile device or personal computer.

WYNN Wizard

WYNN Wizard works in much the same way as the previous two, allowing scanning of materials that can then be read back to the user; the text is highlighted while it is being read back.

Literacy Software

Read&Write GOLD
www.texthelp.com/North-America/our-products/readwrite

Kurzweil 1000 and 3000
www.kurzweiledu.com/products.html

WYNN Wizard
www.freedomscientific.com/LSG/products/wynn.asp

Speech Input

Speech input allows patrons who have difficulty typing to use their voices to create documents and sometimes to navigate webpages and applications.

Dragon NaturallySpeaking

Dragon NaturallySpeaking by Nuance creates text from speech and also allows the user to navigate different applications by voice command. Once the user sets up an account, the software gets stronger and more accurate as it is used.

Braille Embossers

Braille embossers from Enabling Technologies allow text that has been converted to braille to be printed out on paper.

Speech Input

Dragon NaturallySpeaking
www.nuance.com/dragon/index.htm

Braille
www.brailler.com

Peripherals

There are many external adaptive peripheral products available, including a variety of keyboard options, mouse alternatives, and improvements such as a larger monitor, speakers, and headphones with or without a microphone. For a look at several of the options available for purchase, see the chapter called "Surfing the Internet with a 'Different' Board" in *Assistive Technologies in the Library*,[5] or consult the ASCLA tip sheet related to physical disabilities for additional options.[6]

Table 2.1 summarizes peripheral and many other adaptive technologies based on their accessibility to users in each of the disability categories introduced by Barbara Mates in chapter 1 of this issue.

Assistive Technology Room or Designated Space or Workstation

Designing a space for adaptive technology in a library setting depends on both money and the ability to create new space or modify existing space. Several of the software solutions mentioned above are now available in a USB format, which requires less emphasis on having computers set aside for adaptive technology use. However, many adaptive and assistive tools require installation on specific machines, and, depending on site licenses, this may require the library to designate one or more assistive technology stations.

There are a few simple assistive technology modifications that can be accomplished without requiring a separate room or large amounts of money:

- The location of your adaptive technology should have a table with a height adjustment option so that patrons who need more or less clearance can be accommodated.
- If the workstations that incorporate adaptive technologies are at some distance from the nearest public service desk, a phone or other notification tool should be made available so the patron can alert a staff member if assistance is needed.
- Large monitors are a simple upgrade that can be a huge help, and having headphones available for the screen reading software eliminates sound disturbance for other patrons.

If the funding and resources are available, a small room is a luxury that allows for additional benefits. A separate room will not only provide privacy, but it allows lighting to be adjusted depending on the preferences of the patron. A wall with both a black dry-erase board and a white dry-erase board enables patrons the option of using either contrast option, depending on their visual needs. A private room would also benefit those using speech-to-text software and patrons creating braille documents, both of which create sound that might be distracting to other patrons.

Figure 2.2 shows the Shostack Adaptive Technology Room at Ohio University, which provides designated equipment featuring many of the tools discussed in this chapter. The Shostack room was created in 1999 with a

	For Persons with									
	Visual Impairments	Blindness	Learning Disabilities	Deafness	Hearing Impairments	No Disabilities	Physical / Mobility Disabilities	Autism	Cognitive Disabilities	Deaf-Blindness
Large monitor	*		*			*	*		*	
AbleLink Web access suite			*					*	*	
Text enlarging software	*		*							
Large print keytops	*		*			*			*	
Large print output	*		*			*			*	
Braille keytops		*								*
Raised dot home keys	*		*			*				*
Screen reader / synthesizer	*	*	*					*	*	
Braille software translator		*								*
Refreshable braille display		*								*
Braille embosser		*								*
Speech recognition	*	*	*				*		*	
Show sounds			*	*	*					
Captioning text			*	*	*					
Alternate keyboards							*	*	*	
Trackballs							*	*	*	
Screen display keyboards							*			
Text browser software	*	*						*	*	
Headphones	*	*	*		*	*		*	*	
OCR scanning	*	*	*					*	*	
Correctly designed websites	*	*	*	*	*	*	*	*	*	*
Touchscreen			*			*		*	*	
Storyboards								*		
Jelly Bean Switch								*	*	
Nontraditional mice	*						*	*	*	
ZAC Browser								*		
Video phone				*	*					
Skype video call				*	*					
Sorenson Video Relay				*	*					
IntelliKeys							*	*	*	
Adjustable work table	*	*	*	*	*	*	*	*	*	*

Table adapted from Barbara T. Mates, *Assistive Technologies in the Library* (Chicago: American Library Association, 2011) and used with permission.

Table 2.1
Adaptive and accessible technology options for users with disabilities.

gift from G. Lynn Shostack, a longtime library supporter and adaptive technology advocate. Centrally and accessibly located in the Alden Library Learning Commons, this room is in close proximity to staff support and provides the added incentive of user privacy.

Here is a detailed description of software, hardware, and assistance available to patrons in the Shostack room:

- Computer 1 (left side of room)
  - JAWS
  - Dragon NaturallySpeaking
  - ZoomText Magnifier/Reader
  - Kurzweil 3000
  - Read&Write GOLD
  - Bierley Electronic Magnifier software
- Braille Printer (center of room, attached to Computer 2)
- Computer 2 (right side of room)
  - JAWS
  - Duxbury Braille Translator
  - OpenBook
  - Read&Write GOLD
  - Kurzweil 3000

Each computer features an OCR-equipped scanner, and each workstation table is adjustable. On the right, there is a black dry-erase board for students to use who prefer seeing color or white writing on a black background. Speakers and headphones, as well as microphones, are attached to each computer, and a phone is available between the workstations to call the reference and information desk for assistance.

The technology configuration in this room is flexible based on need changes in the student population at Ohio University. For example, it is currently organized based on patron interest in Kurzweil 3000 and the desire to have more than one person able to use the room at a time. If there are more patrons requiring braille materials in the future but Kurzweil usage does not slow down, then braille programs can be moved to Computer 1 in order to provide as much access as possible. In addition to the Shostack space, Kurzweil 3000 is installed on all library computers as a matter of course.

Library assistive technology spaces can take many configurations depending on patron needs and available resources, from dedicated rooms such as OU's to an accessible workstation in a computer lab. *However,* providing an adaptive space does not exempt the library from reviewing the accessibility profile of other technology products and tools it might provide—such as print-on-demand machines and the mobile devices described in chapter 3—and making accessibility a priority in any and all purchasing decisions. No matter the tool or technology in question, essential goals should be creating and maintaining an accessible and forward-thinking array of resources and making sure library staff are informed about specific tools and able to support disabled patrons (see the section Staff Training below).

Figure 2.2
The Shostack Adaptive Technology Room at Ohio University (photo by Patrick Traylor, 2012).

Marketing

In order for adaptive technology resources to be used, patrons need to know you have made the commitment to assist them. Regardless of whether your library is serving a community, a school, or an entire campus, the strategy should be not only to market services in locations where patrons requiring the adaptive technologies will be, but also to market in a manner that these patrons can interact with and appreciate. Websites should be designed so that screen readers can easily navigate them (see chapter 4, by Debra Riley-Huff, in this issue for accessible Web design strategies), and print materials should be displayed in such a way that persons with visual impairments can read them more easily.

List Assistive Tech on Your Library Website

A page on the library website that lists the software and hardware available, the location of these tools, and hours of operation (see figure 2.3) is the first step in successful marketing.

Additional information on this page could include the available parking near the building, information about staff members who assist with the resources available, and any other information that may be helpful to a patron with a disability who intends to visit the library.

If available assistive technology is located on a floor that closes earlier or stays open later than other floors in the building, this information should also be posted. Delivery services and material retrieval are often tasks that require advance notice, so a link to a request form for these services can also streamline the process.

Promote Your Services

Brochures, posters, library news articles, e-mail and social media messages, video, podcasts, and other methods of promoting what the library has to offer are another excellent way to market assistive tools and services. Places to leave marketing materials in the physical building can include anywhere there may be people who have mobility issues or a physical disability, or who may require assistance in using the library collection for any reason.

Promotion strategies and media vary, and building community awareness is key. For example, public libraries can reach out to assisted living communities, veterans groups, hospitals, or rehabilitation centers.

Figure 2.3
Ohio University's Adaptive Equipment & Software page.

Academic libraries can create brochures and leave them on counters or displays in offices that deal with students, faculty, or staff with disabilities, such as writing centers, offices of institutional equity, teacher or special education programs, veteran services, and community outreach programs.

Use Other Promotional Strategies

Make sure that if there is a list of resources available to users with disabilities in your community or campus that the library is included on this list. Prospective users, residents, and students will know immediately that the library cares and is there if the need arises. Public libraries can ask for links to be placed on city or county webpages that discuss services or organizations that relate to community members with disabilities, while academic libraries can do the same for offices such as dean of students, residence life, disability services, and institutional equity.

Staff Training

Staff training is an important step in maintaining a successful assistive technology program at your library. Having at least one library staff member who has a working knowledge of the adaptive technology the library offers is essential, but all staff should have a rudimentary knowledge that includes where the technology is located, what the basic function of the technology is, and where to go for help if a patron asks questions the staff member is unable to answer.

There is a substantial difference between *offering* and *supporting* a software or hardware tool. It is unlikely that an entire library staff will become fluent in the workings of every statistical package or analysis software housed on the library server. The same holds true for adaptive technology. Every staff member should at least know where the list of software applications and hardware options is located on the website and should also know where to go for assistance when their personal knowledge falls short of the patron need.

Beyond that, specific individuals within a library can be designated as resident "experts" and pursue additional training to become fluent in local adaptive tech. For example, academic libraries often have librarians who are specialists and serve individual schools or departments—assistive technology can and should be treated as a liaison or specialist area.

Below are several examples of how libraries can build a knowledge base to help users with disabilities maneuver through the resources available.

Manufacturer Tutorials and Subscription Tutorial Services

Your library or institution can subscribe to a service that provides tutorials for some of the more popular adaptive technologies. An example of this type of service would be Atomic Learning. Manufacturers of many of the software and hardware products mentioned in this chapter also post tutorials and product marketing videos on their websites. Linking out to these resources from the library webpage that details assistive technology offerings would allow staff members to quickly access and view demonstrations of how the software works.

Atomic Learning
www.atomiclearning.com

Homegrown Tutorials or Screencasts

There are many free and fee-based screencast products available now, a gratis example being Screencast-O-Matic, that enable users to record what takes place on the screen while they move through a task. With these and all other instructional videos and screencasts you create for staff or patrons, it is essential to caption and/or transcribe your content to help make them more accessible to users with disabilities. YouTube has auto-captioning capabilities, while other captioning software options such as MovieCaptioner for Mac or Windows are available. Library staff can walk through tasks using the adaptive technology and then post these demonstrations to a library video page. Links to these videos can be placed on the adaptive technology page and be accessed when the need arises.

Screencast-O-Matic
www.screencast-o-matic.com

MovieCaptioner
www.synchrimedia.com

Another way of offering point-of-need instruction to staff members is to create stand-alone documents using screenshots or text to demonstrate software available to patrons. Neither of these options has to be overly technical. Simple walk-throughs on basic functionality would be a benefit, especially if the staff member who oversees the adaptive technology is unavailable.

Meetings and Brown-Bag Lunch Sessions

If the adaptive technology is mobile or available across the network of computers in the library, quick demonstrations on how these technologies work will keep the functionality fresh in the minds of those working service desks. As with any software or database, refresher courses are often needed to insure proper use and knowledge of the key components.

Conclusion: Know Your Community

The most important thing a library can do to make informed decisions about adaptive technology is understand the needs of the community it serves. Only after a library builds insight into disability types and technology preferences of its users can it select appropriate products and services that will adequately meet their needs. Developing relationships with the organizations and offices mentioned in the marketing section of this chapter will help libraries not only market services but gauge the technology preferences that translate to useful purchases.

In order for purchasing and planning decisions to be successful, library staff must also be adequately prepared to assist with these tools when patrons need help. There are a number of ways to train staff and patrons in assistive technology use and a variety of approaches to adaptive technology space design. Whatever your assistive technology budget or space array, staff sensitivity and knowledge of where to go when questions arise are perhaps most valuable, especially if these questions are few and far between. Knowledge of the patron base and a caring and supportive staff will allow individual libraries to make the right decisions about purchasing adaptive tools and offer a successful collection of services for patrons with a disability.

Recommended Resources

- ASCLA. Library Accessibility Tip Sheets. www.ala.org/ascla/asclaprotools/accessibilitytipsheets.
- Mates, Barbara T. *Assistive Technologies in the Library*. Chicago: American Library Association, 2011.
- W3C. "Web Accessibility Initiative." 2012. www.w3.org/WAI.

Notes

1. Assistive Technology Act of 1998, Pub. L. No. 105-394, 112 Stat. 3627 (1998), www.section508.gov/docs/AssistiveTechnologyActOf1998Full.pdf, Section 3, Definitions and Rule, (a) 3.
2. Barbara T. Mates, *Assistive Technologies in the Library* (Chicago: American Library Association, 2011).
3. Susannah Fox, *Americans Living with Disability and Their Technology Profile* (Washington, DC: Pew Internet and American Life Project, January 21, 2011), 3, http://pewinternet.org/~/media//Files/Reports/2011/PIP_Disability.pdf.
4. Ravonne A. Green, "Empowering Library Patrons with Learning Disabilities," *Journal of Access Services* 6, no. 1–2 (2009): 59–71, doi: 10.1080/15367960802247817.
5. Mates, "Surfing the Internet with a 'Different' Board," chapter 7 of *Assistive Technologies in the Library,* 81–104.
6. Association of Specialized and Cooperative Library Agencies, "People with Mobility Impairments: What You Need to Know," Library Accessibility Tip Sheet 4, revised 2010, www.ala.org/ascla/sites/ala.org.ascla/files/content/asclaprotools/accessibilitytipsheets/tipsheets/4-Mobility_Impairmen.pdf.