

A number of models exist for converting media to accessible formats. One of the most compelling is the consortial approach in use at the University of Georgia's Alternative Media Access Center (www.amac.uga.edu). AMAC services and costs vary depending on membership status. In addition to a wide variety of services designed to meet the needs of users with print-related disabilities, their goals include helping institutional members to:

Protect themselves against copyright infringement laws.

Comply with the Americans with Disabilities Act standards and provide students with print-related disabilities equal and timely access to materials.

Increase the knowledge of institutional information technology departments, faculty, and staff on accessible digital media and accessible information technology through the incorporation of universal design for learning environments.

Their version of CAM is called NEON and serves as both as a clearinghouse and a searchable repository of alternative media.

RECOMMENDATIONS

The Task Group believes that the Kennedy Library, in partnership with campus colleagues, could transcend basic compliance with federal disabilities legislation and move beyond it to open the library's collection to all users regardless of ability, using new technologies and staff awareness to promote intellectual and social inclusion for library users of all abilities.

Following are specific recommendations to work with people with disabilities, campus units, and vendors to identify policies, procedures, and assistive technology that will make the library's holdings accessible on demand to campus users. Some have no direct cost; others will be possible only through phased implementation. The task group recommends the following actions:

1. Human Resources

A. Incorporate accessibility initiatives and responsibilities to one or more permanent members of the library faculty and/or staff.

Potential technology responsibilities include:

- Identifying appropriate resources and vendors for on-demand conversion of print and/or electronic library resources
- Facilitating conversion of library resources on demand for library users, through staff assignments and campus partnerships
- Consulting with DRC and ITS on appropriate use of technology to improve collection accessibility
- Making recommendations to the LIT Director on hardware and software purchases

Potential campus and public service responsibilities include:

- Serving as library liaison to key campus units, such as DRC, to promote productive working relationships
- Serving as public contact person for users with disabilities
- Working directly with DRC and Reserves to identify new ways of collaborating on conversion
- Referring persons with disabilities to appropriate college librarians and/or library staff
- Coordinating individual tours of library collections and services for users with disabilities
- Increasing library staff and faculty awareness about persons with disabilities and the role of library faculty and staff in making collections and services accessible

- Making recommendations for changes to policies and services to promote universal design and the accessibility of collections

B. Broaden library faculty and staff perspectives and commitment to working with users of all abilities, through Web-based training and other activities.

The task group felt that technology alone was not sufficient to insure that library collections would be delivered effectively to users in a way that is respectful and meets their needs. Training for library faculty and staff, either Web-based or through a partnership with DRC and CTL, is indicated. Library staff should be aware of how available technologies address disabilities and know how to assist all users with library technology.

On the necessity for such training, librarian Gretchen Wade writes:

All of the technology in the world is useless if no one is willing to help the user learn how to use it. The single most important aspect of creating an accessible environment is staff attitude. While librarians are in the business of helping people, they are also susceptible to prejudice and misconceptions about the visually impaired. Many people are simply uncomfortable around any person with a disability, perhaps feeling that they will somehow offend the person. Library staff need to learn that a person with a disability is a person, not simply a disability.

*Luckily, there is a wealth of information available for administrators who want to help develop the sensitivities of their staff. Books such as Kieth Wright and Judith Davie's *Serving the Disabled* and Tom McNulty's *Accessible Libraries on Campus* offer many suggestions. Librarians who are uncomfortable with the disabled may find basic etiquette suggestions to be most helpful. Wright and Davie, in particular, include a common-sense guide on how to treat a user with a disability. They emphasize treating the person with all the respect that you would treat any patron, while still making the accommodations that their disability requires. It is a fine line between being helpful and being patronizing, but any librarian who is committed to service should have no trouble walking it. Another tricky situation is caused when a user with a disability does not want to use the accommodations that a library has created. In this case, a librarian has to make her or his best effort to help, but then leave the user alone, if that is what the user wants. An interesting provision in the ADA is the right of the person with a disability to say no. This means that it is the user's choice, and his or her choice only, as to what materials and equipment to use. I think that this is an important point to emphasize in any training program:*

*disabled or not, the user is an adult who shall be allowed to make his or her own decisions.*³

C. Strengthen partnerships and working relationships between DRC, ITS, CTL and the library by identifying common goals to increase accessibility and to facilitate resource sharing.

The working group realized that collaboration between these campus stakeholders is essential to share expertise and insights that advance accessibility of collections and services. Stakeholders from these groups, together with a newly assigned library liaison(s) can refine workflows and procedures for on-demand conversion of print and other resources for users on campus. In all cases, the library should include persons with disabilities as participants in this collaboration.

D. Participate in ITS's Web Accessibility Coordinator (WAC) program.

As part of its implementation of the ATI on this campus, ITS is working with WACs from each college and the library to improve accessibility support. WACs will attend the California Web Accessibility Conference in mid-January 2009.

2. Policies

A. Review existing library borrowing and access policies to identify possible accommodations.

The Library Services for People with Disabilities policy statement drafted by ASCLA recommends review and revision of access policies to extend loan periods, waive late fines, and extend reserve periods for users with disabilities.

B. Revise the General Collecting Policy to specifically address accessibility issues.

At present, the library's General Collecting Policy does not address varying needs of users or the accessibility standards used to manage collections.

Revisions to the policy should address:

- Materials that support the diversity of users, including people of all abilities
- Types and levels of resources appropriate to the needs of people with disabilities

³ Gretchen L. Wade, "Serving the Visually Impaired User," *Libraries and the Academy* 3.2 (2003) 307-313.

<http://muse.jhu.edu/journals/portal_libraries_and_the_academy/v003/3.2wade.html>

- Institutional support for on-demand conversion
- Resource-sharing and interlibrary loan for materials in alternative formats
- Importance of independent access to resources
- Materials on various disabilities, with particular attention to resources on student success

Regarding electronic resources, a useful starting place for a revision would be EAR's "Principles for CSU Acquisition of Electronic Information Resources," which states in part:

Information providers should offer interfaces that comply with basic standards for accessibility by users with disabilities.... Accessibility includes but is not limited to navigability by screen readers for the visually impaired, the option to use keystrokes rather than a mouse for page navigation, text alternatives for graphics, and captioning of any audio resources. In addition, any content retrieved from the information resource, such as full text files or other data, should be provided in formats [that] are accessible.⁴

3. Library IT and User Information

A. Revise library's Web site to add information about accessibility services.

To better serve all users, particularly ones who do not wish to publicly identify themselves as needing assistance, changes are recommended to the library's Web site.

1. New pages on the resources and services offered by the library to users of differing abilities should be created using "people first" language.

Providing clear and comprehensive information regarding accessibility services, including technologies, special equipment and services, policies, how to request conversion of materials, and links to the DRC Web site could be added to the library's Web site. The task group also recommends that language used on the library's Web site and publications embrace the "people first" philosophy, which puts the person before the disability and describes what the person has, rather than what the person is.⁵

An overview of the available adaptive technologies and their functions offers assistance without being intrusive could also be included. Even simple information about the universal design functions built into Windows and Mac OS

⁴ "Principles for CSU Acquisition of Electronic Information Resources," January 2005.

<<http://seir.calstate.edu/ear/docs/principles.doc>>

⁵ Kathie Snow, "A Few Words about People First Language."

<<http://www.disabilityisnatural.com/peoplefirstlanguage.htm>>

X operating systems (assistance with seeing, hearing, mouse, and keyboard) on library computers could also be shared in the spirit of universal design. The CSU San Marcos⁶ library Web site has an Accessibility page listing library services and resources, together with staff contacts, available at:
<http://library.csusm.edu/about/policies/disabilities.asp>

2. Provide an accessibility statement on the library's Web page.

A model accessibility statement is available at the DigitalCommons@CalPoly site at:
<http://digitalcommons.calpoly.edu/accessibility.html>

B. Prioritize additional adaptive technology purchases to increase capability.

ITS and Library IT recently added ZoomText to the standard image load for campus computers, making significant progress on universal design efforts for users with visual impairments. Through cooperation with ITS and Library IT, the labs located in the library are the first on campus to offer adaptive technology on instructor workstations.

A task group recommendation via the DRC is to increase the number of standard adaptive library workstations (desk, monitor, keyboard) available on each floor and in labs in the library to promote collection accessibility using universal design. The specifications for a standard adaptive workstation should be determined through a collaborative effort between DRC, ITS, and Library IT.

ZoomText keyboards could be added to some workstations on each floor. For users with visual impairment, the challenge of walking up to an unfamiliar computer and being able to read the standard-sized icons on the monitor screen to determine whether screen-reading software is installed or not is impossible, or nearly impossible. Being able to move the standard-sized cursor to the correct icon to select it and turn the screen reading software on is even more difficult. Having a few ZoomText keyboards available throughout the library would mean that a person with visual impairment could independently use that computer without having to ask a library staff person to come turn the ZoomText software on for them.

C. Work with Innovative Interfaces to make OPAC software 508-compliant.

At present, the OPAC software from Innovative Interfaces is not Section 508 compliant. The task group recommends multiple approaches to this issue.

⁶ The library's Web site already meets accessibility requirements, but the task group recommends review of CSU San Marcos ADA Project Team's study on accessibility of Web pages available at:
<http://www.hisoftware.com/case/csum.htm>

Of great concern is the apparent lack of organizational commitment on the part of Innovative toward achieving compliance. In public meetings, Innovative staff members have complained that compliance would limit future development of their product. Members of COLD and STIM members are aware of the problem and are speaking candidly with Innovative management about the importance to the CSU of compliance and the difficulty that could arise when contracts with this vendor are up for renewal.

CSU Sonoma has documented at least three technology issues with Innovative Interface's OPAC software:

A. Invalid HTML and lack of structured formatting

Although not part of the 508 requirements, valid code contributes to accurate presentation by both standard browsers and assistive technologies. The pages seem to be a mix of XHTML and HTML with a few deprecated HTML tags.

Along with valid html, adding structured formatting, like headings <h1>, <h2> etc., will convey semantic meaning to an assistive technology user. Using data tables for the lists of results instead of just layout tables will help users of screen readers can navigate through data tables, which depending on the results, can be over 50 rows. The one data table on a page tested was also lacking the scope attribute.

B. JavaScript

Several features do not work when JavaScript is turned off.

C. Forms

None of the forms have the label tag. Proper semantic markup, including forms, helps assistive technology to present form information and controls accessibly. One of the most frustrating things about the Web for a blind user is encountering a text entry field, and not knowing what information to type in that field. This is not only an issue for screen readers and talking browsers. People who use magnification software, especially at magnifications greater than 4x, have difficulty finding the prompt for text entry fields because of the limited amount of data that fits on the magnified display.

API workarounds are also being investigated and a new user interface called Mango is imminent.

4. Process Improvements

A. Consult with DRC regarding on-demand conversion.

DRC staff members possess a wealth of expertise and experience that they are willing to share with library staff. The task group identified several ideas that would facilitate the conversion of library materials, including:

- Setting up reciprocal tours of each unit to share expertise, understand workflows, and responsibilities,
- Investigate sharing equipment and technology
- Checking with DRC and their CAM database to determine if materials have already been converted
- Investigating ways in which CAM could be developed at the system level to be more accessible to faculty and library staff and how it might support access to the materials in addition to citations

B. Use Adobe's ADA Accessibility Function for PDFs

To ensure that PDF files are ADA-accessible, Adobe offers a Quick Check Accessibility feature. Reserve and other library staff who are creating PDFs can use this feature as a cost-free effective method of improving access as follows:

1. File is OCR'd (Document>OCR>OCR Using Text Recognition). If you get an error message that "Text is not renderable" this means that your document does not require OCR, so you may proceed to #2.
2. Tag file (Advanced>Accessibility>Add Tags to Document)
3. Set language to English (File>Properties>Advanced Tab> Under "Reading Options" select "English" for the Language.
4. Run the Quick Check Accessibility. No accessibility problems should be detected in the quick check. (Advanced>Accessibility>Quick Check)
5. Save the file and upload for use.

C. Accept requests to convert materials to useable formats on demand.

Because of diverse formats in the collection and limited funding, conversion of library materials on demand is the preferred method of providing access to existing materials. The staff member(s) who are tasked with facilitating access in Section 1.A. could coordinate these requests from users and insure compliance and responsiveness.

5. Outreach

A. Offer individual tours of library collections and services to users

Individual tours of library collections and services could be offered without requiring that the user have registered with DRC. The task group believes there

are library users with disabilities who have not identified themselves and are therefore underserved and could benefit from assistance with access. DRC-registered and other students could also be trained to give tours, if the tours prove to be popular.

B. Develop marketing plan to announce and promote accessibility features and services.

New and/or improved accessibility resources and strategies should be marketed through several venues (e.g., First Year Experience, ITS Portal -- New Students Tab, new faculty, etc.). A well-planned marketing strategy can raise awareness of services designed to support students and faculty, particularly those offering universal design benefits.

The librarian for the Orfalea College of Business is prepared to develop a marketing plan to reach out to users of all abilities as the library revamps its services and collections in the future.

CONCLUSION

Apart from the obvious benefits of compliance with CSU initiatives and federal law, the Kennedy Library, in partnership with campus colleagues, could transcend basic compliance with federal disabilities legislation and move beyond it to open the library's collections on demand to all users.

It should be the goal of all library faculty and staff, and perhaps even more so for academic librarians, to provide excellent service to all users. As librarian Gretchen Wade notes, "When a professional attitude is combined with the available adaptive technology, librarians can't help but provide the proper environment for learning."⁷

Technology and effective working relationships with users and key campus units are essential to increase accessibility to library collections. Well-planned technological solutions, based on the concepts of universal design, together with committed library faculty and staff, are essential for effective use of information and other library services by all users.

⁷ Gretchen L. Wade, "Serving the Visually Impaired User," *Libraries and the Academy* 3.2 (2003) 307-313.

<http://muse.jhu.edu/journals/portal_libraries_and_the_academy/v003/3.2wade.html>

ACCESSIBILITY INFORMATION

CSU's Accessible Technology Initiative

The Accessible Technology Initiative (ATI) represents the California State University's (CSU) commitment to provide access to information resources and technologies to individuals with disabilities. The CSU Board of Trustees Policy on Disability Support and Accommodations states:

It is the policy of the CSU to make information technology resources and services accessible to all CSU students, faculty, staff and the general public regardless of disability.⁸

Phase 2 of the ATI, addressing implementation, is most relevant to the task group's work:

The mission of the Accessible Technology Initiative is for the CSU system to provide its students, faculty, staff and campus community fully accessible technology environments for delivering a CSU education.... By 2012, all Web sites will be accessible, all instructional materials in electronic formats will be accessible, and all purchases of technology will conform to accessibility standards – and alternative means of access will be provided for any exceptions.

The objectives that are necessary for achieving these goals are:

- To provide standard methodologies, guidance and feedback to campuses and the Chancellor's Office in implementing the goals;
- To provide resources and tools to the campuses and the Chancellor's Office – such as training, centralized purchasing, and development of CSU specific tools;
- To facilitate collaboration, information sharing, identification and dissemination of best practices; and
- To represent the CSU with external stakeholders, and to encourage and strengthen external resources.⁹

⁸ "About the Accessible Technology Initiative." Executive Order 926 (EO 926)

<http://www.calstate.edu/accessibility/>

⁹ "Phase 2 of CSU's Accessible Technology Initiative: From Policy to Enabling Implementation."

<http://www.calstate.edu/accessibility/phase2/>

National Library Policies on Accessibility

Specific policies relating to libraries and persons with disabilities have been developed and adopted by the Association of Specialized and Cooperative Library Agencies (ASCLA), a division of the American Library Association.

The current ASCLA policy states:

Libraries play a catalytic role in the lives of people with disabilities by facilitating their full participation in society. Libraries should use strategies based upon the principles of universal design to ensure that library policy, resources and services meet the needs of all people. For the purposes of this policy, ‘must’ means ‘mandated by law and/or within ALA’s control’ and ‘should’ means ‘it is strongly recommended that libraries make every effort to...’

Libraries must not discriminate against individuals with disabilities and shall ensure that individuals with disabilities have equal access to library resources. To ensure such access, libraries may provide individuals with disabilities with services such as extended loan periods, waived late fines, extended reserve periods, library cards for proxies, books by mail, reference services by fax or email, home delivery service, remote access to the OPAC, remote electronic access to library resources, volunteer readers in the library, volunteer technology assistants in the library, American Sign Language (ASL) interpreter or real-time captioning at library programs, and radio reading services.

Libraries should include persons with disabilities as participants in the planning, implementing, and evaluating of library services, programs, and facilities.¹⁰

Section 4 of the ASCLA Library Services for People with Disabilities Policy addresses accessibility of library collections. It states:

Library materials must be accessible to all patrons including people with disabilities. Materials must be available to individuals with disabilities in a variety of formats and with accommodations, as long as the modified formats and accommodations are “reasonable,” do not “fundamentally alter” the library’s services, and do not place an “undue burden” on the library. Examples of accommodations include assistive technology, auxiliary devices and physical assistance.

¹⁰ “Library Services for People with Disabilities Policy.”
<<http://www.ala.org/ala/mgrps/divs/ascla/asclaissues/libraryservices.cfm>>

Federal Legislation

The Rehabilitation Act of 1973

Section 504 of the Rehabilitation Act of 1973 states:

*No qualified individual with a disability in the United States shall be excluded from, denied the benefits of, or be subjected to discrimination under any program or activity that either receives Federal financial assistance or is conducted by any Executive agency or the United States Postal Service.*¹¹

Section 508 was originally added as an amendment to the Rehabilitation Act of 1973 in 1986 to address accessibility of electronic and information technologies. In 1997, The Federal Electronic and Information Technology Accessibility and Compliance Act was proposed to correct the shortcomings of the original section 508 from 1986, which was ineffective in part because it lacked enforcement mechanisms. In 1998, this Act, with revisions, was enacted as the new Section 508 of the Rehabilitation Act of 1973.

Section 508 addresses:

- **Software Applications and Operating Systems:** includes usability for people that are visually impaired, such as alternative keyboard navigation.
- **Web-based Intranet and Internet Information and Applications:** assures accessibility to web page graphics by the visually impaired using assistive technology such as screen readers and refreshable Braille displays. This is accomplished by using text labels and descriptors for graphics.
- **Telecommunications Products:** addresses accessibility for people who are deaf or hard of hearing. This includes technology compatibility with hearing aids, assistive listening devices, and TTYs.
- **Videos or Multimedia Products:** includes requirements for captioning of multimedia products such as training or informational multimedia productions. Captioning or video descriptors must be able to be turned on or off.
- **Self-Contained Closed Products:** products with embedded software, such as information kiosks, copiers, and fax machines, often cannot be used with assistive technology. This standard requires that access features be built into these systems.

¹¹ “A Guide to Disability Rights Laws – Rehabilitation Act.”
<<http://www.ada.gov/cguide.htm#anchor65610>>

- Desktop and Portable Computers: discusses accessibility related to mechanically operated controls such as keyboards and touch screens.¹²

The Americans with Disabilities Act of 1990

ADA was enacted to eliminate discrimination in many areas, including access to private and public services, employment, transportation and communication. It states:

The ADA prohibits discrimination on the basis of disability in employment, State and local government, public accommodations, commercial facilities, transportation, and telecommunications. It also applies to the United States Congress.

To be protected by the ADA, one must have a disability or have a relationship or association with an individual with a disability. An individual with a disability is defined by the ADA as a person who has a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment. The ADA does not specifically name all of the impairments that are covered.¹³

The ADA is divided into five sections. Titles I, IV, and V are not concerned with accommodations in public spaces, and so will not be addressed here. However, Titles II and III are applicable to the relationship between library and user. Both sections guard against discrimination by institutions that provide service to the public, including libraries.

In a seminal article on libraries and users with visual impairments, librarian Gretchen Wade writes:

Title II of the ADA outlines the requirements for public institutions, such as state funded schools and libraries. A public institution is required to make all changes to their building and policies that can be achieved without "undue financial burden." The act was written broadly so that no one would be excluded. Because of this broadness, people are able to challenge definitions of disability and extents to which accommodations are made. Each new legal case further defines the limits of the ADA. Librarians may avoid some of the problems caused by this ambiguity by creating an environment, collections, and services that are as accessible

¹² "Section 508 Amendment to the Rehabilitation Act of 1973."

<http://en.wikipedia.org/wiki/Section_508_of_the_Rehabilitation_Act>

¹³ "A Guide to Disability Rights Laws – Americans with Disabilities Act (ADA)."

<<http://www.ada.gov/cguide.htm#anchor65610>>

*as possible. This approach can help avoid both legal and ethical problems.*¹⁴

Universal Design

Universal design is central to current thinking about accessibility. Universal design is defined as the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. Universal design includes the following attributes:

Equitable Use: The design is useful and marketable to people with diverse abilities.

Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.

Simple and Intuitive: Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Low Physical Effort: The design can be used efficiently and comfortably and with a minimum of fatigue.

Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.¹⁵

¹⁴ Gretchen L. Wade, "Serving the Visually Impaired User," *Libraries and the Academy* 3.2 (2003) 307-313.
<http://muse.jhu.edu/journals/portal_libraries_and_the_academy/v003/3.2wade.html>

¹⁵ "Principles of Universal Design," compiled by Bettye Rose Connell, Mike Jones, Ron Mace, Jim Mueller, Abir Mullick, Elaine Ostroff, Jon Sanford, Ed Steinfeld, Molly Story, and Gregg Vanderheiden at the Center for Universal Design at North Carolina State University. The National Institute on Disability and Rehabilitation Research, U.S. Department of Education provided major funding for universal design research.
<http://www.design.ncsu.edu/cud/about_ud/udprinciplestext.htm>

ADAPTIVE TECHNOLOGY RESOURCES

Adaptive technology is a constantly changing and evolving area of IT. The task group found the following resources relevant at the time the report was prepared:

Visual Impairment

Gretchen Wade writes:

Some materials are created with the low vision user in mind. Large print books have been published for many years. The enlarged font is often enough to make the book usable to a person with a visual impairment. There are, however, several significant drawbacks to this format. First and foremost, there are relatively few books published in large print, and the majority are fiction titles. This may be adequate for the recreational reader, but not for a more serious researcher, such as would be found in an academic library. Perhaps less significantly, large print books are more bulky than regular print books. While this may not be terribly important, it is still a drawback. Braille texts suffer from the same drawbacks, with even fewer available titles than large print. Talking books, too, are limited. Another point against these formats is the cost of purchasing, processing, and storing the materials. Unless the library serves a large visually impaired population, it may not be practical for the library to collect duplicate materials in large print or Braille. Purchasing materials on demand is a possibility, but could result in unreasonable delays for the user. Because of these reasons, many libraries choose instead to invest in equipment that can render their existing materials usable to their users with visual impairments. Visually impaired people, who have eye problems but still have some sight, require computers, which have enlarged screens so that images and text are much clearer to read.¹⁶

Assistive technology for visual impairment can be as simple as making high-quality magnifiers available. In addition to hand-held magnifiers, frame-mounted magnifiers and closed circuit television systems can enlarge and project text. Which device is used depends on several criteria: how much vision the user has, whether the user can hold a magnifier, and what the library can afford. Wade recommends frame-mounted magnifiers “as they are easy to use, offer high magnification, and are inexpensive.”

¹⁶ Gretchen L. Wade, “Serving the Visually Impaired User,” *Libraries and the Academy* 3.2 (2003) 307-313.
<http://muse.jhu.edu/journals/portal_libraries_and_the_academy/v003/3.2wade.html>

To make electronic resources available, the library already provides large monitors and Dragon Naturally Speaking software. There are other simple solutions indicated in the matrix that can be added at low cost, such as large print labels that are placed over the keys on a keyboard to make the keys easier to see.

Browsealoud from TextHelp Systems, Inc. is a leading speech-enabling Web site software provider:

<http://www.browsealoud.com>

Making text legible for people with partial sight usually involves improving color and contrast. A tutorial on improving text accessibility is available at:

<http://www.lighthouse.org/accessibility/legible/>

Blind

The foremost adaptive technology to enable persons who are blind to access text is screen-reading software, which attempts to identify and interpret what is being displayed on the screen. This interpretation is then re-presented to the user with text-to-speech, sound icons, or a Braille output device.

Mac OS X v10.5 Leopard includes a powerful screen reading technology for the blind called VoiceOver that supports a variety of refreshable Braille displays. VoiceOver automatically detects 40 different supported Braille display devices and sends it information about what is displayed on the screen.

Locally, the San Luis Obispo County Office of Education has Braille production technology, but its use is limited to K-12.

Other Braille production services nationally:

American Printing House for the Blind (APH)
1839 Frankfort Avenue
P.O. Box 6085
Louisville, KY 40206-0085
(800) 223-1839
www.aph.org

APH, established in 1858, manufactures materials for people who are blind. Reading materials include textbooks and magazines in Braille and large print. APH records books, and produces educational tools such as Braille writing and embossing equipment, computer software and hardware, educational games, low vision aids, Braille and large type paper, binders, and notebooks. APH also sells tape recorders designed to record taped publications

<http://www.viewplus.com/products/braille-embossers/braille-production/>

<http://www.nbp.org/ic/nbp/production/index.html>

<http://www.mi-braille.org/1.html>

[http://www.universalmediaservices.org/BrailleProduction Text.htm](http://www.universalmediaservices.org/BrailleProduction_Text.htm)

<http://www.braille.edu/>

Deaf and Hard of Hearing

Resources to assist users who are deaf or hard of hearing include media captioning and TTY phone service, although most deaf and hard of hearing people now communicate through the California Relay Service, email or text messaging. Information about accessing the California Relay Service can be found at: http://www.ddtp.org/california_relay_service/

On campus, closed captioning is facilitated by Media Distribution Services (MDS) through a contracted vendor. The vendor provides a written transcript of the video to MDS, which then puts time marks on it and 'attaches it' to the video material. Cal Poly MDS is part of the team evaluating and developing a proposal for the CSU to manage closed captioning at the system level. A decision has been made but is not public at this time.

MDS also manages on-demand streaming media service, where users post media files to a server for streaming over the Internet. Users of the service are required to make sure their video files are captioned to conform to the Accessibility requirements. MDS can assist with the open-captioned media using time-coded transcripts provided by the user. The transcripts are normally generated by a vendor, such as Automatic Sync Technologies, and are formatted for the type of media we use for streaming (QuickTime). There is a cost per minute associated with creating transcript of the submitted media, but this can be discounted if a script or simple text transcript accompany the submitted media. Sometimes, DVD producers will have transcripts (not time coded) available for certain DVD titles.

More information on current campus capability on closed captions is available at: http://mds.calpoly.edu/mds_videoservices/media_captioning.htm

Other auditory enhancement software is built in to Windows and Mac OS X (VoiceOver) operating systems.

Learning Disabled

Dyslexia is perhaps the most common learning disability in schools. A variety of software is available to enable persons with dyslexia cope with reading and writing tasks. Speech synthesizers (often referred to as text-to-speech (TTS) systems) receive information going to the screen in the form of letters, numbers, and punctuation marks, and then "speak" it out loud.

Kurzweil and E-Text Reader, though developed for visual impairments, assists individuals with reading disabilities by highlights the word/sentence as it reads aloud for the user, improving speed, confidence, and retention.

Individuals with writing disabilities can use Dragon Naturally Speaking to produce text just the way the person speaks the sentence. However, several hours of training are needed for the user, and the computer program must "learn" to recognize the speech patterns of the user.

Browsealoud from TextHelp Systems, Inc. is a leading speech-enabling Web site software provider.

<http://www.browsealoud.com>

Capabilities built into operating systems can also be of value. Screen review utilities make on-screen information available as synthesized speech and pairs the speech with a visual representation of a word, for example, highlighting a word as it is spoken. Screen review utilities convert the text that appears on screen into a computer voice. This helps some people with language difficulties and impairments by giving them information visually and aurally at the same time.

Physically Disabled

A primary way of providing access to users with mobility impairments is through software that enables non-manual methods of computer use, such as eye-driven keyboarding or speech recognition software. Typing aids such as word prediction utilities and add-on spelling checkers make it possible for users to select the letters they want and to avoid inadvertently selecting keys they don't want . These products reduce the required number of keystrokes. Touch screens are devices placed on the computer monitor (or built into it) that allow direct selection or activation of the computer by touching the screen.

CAMPUS RESOURCES

Three principal units on campus work together on accessibility issues: The Disability Resource Center (DRC), the Kennedy Library, and Cal Poly's Information Technology Services (ITS).

Disability Resource Center

The mission of the Disability Resource Center is to assist in creating an accessible university community where students with disabilities have an equal opportunity to fully participate in all aspects of the educational environment.

At present, the staff of the DRC consists of the Director, Trey Duffy; a department coordinator, Cheryl Westfall; four Access Specialists: Brittany Ianneo, Chris

Parker-Kennedy, Jennifer Allen-Barker, and Sarah Clark; and three Service Coordinators: Barbara Burnett, (Alternative Testing, Tram), Cheryl Westfall, (Note-Takers), and Debie McArdle, (Alternative Media).

The Access Specialists are responsible for determining eligibility for services from the DRC, determining appropriate accommodations and services in collaboration with the student with disability, and assisting the student in advocating for their accommodations from the campus community.

Additionally, each Access Specialist has a special area of expertise that they bring to the department: Brittany (learning disabilities); Chris (hearing impairments/deafness including arranging for real-time captioning and interpreting of class room instruction and educationally related programs on campus, health impairments, mobility impairments); Jennifer (visual impairments/blindness, health impairments, mobility impairments); Sarah (attention deficit, psych/emotional disorders).

The role of the Service Coordinators is to ensure, through collaboration with faculty and staff, appropriate delivery of services and accommodations to the educational programs on campus. The Tram Services provide on-campus transportation for those qualified students who cannot safely and effectively navigate the campus environment due to their disability. The Testing Services proctors alternative testing for those qualified students who cannot take tests / quizzes in the typical manner due to their disability. The Testing Services staff must coordinate these efforts with instructors and students in the provision of these services. The Note-taker Services solicits and hires peer note-takers for those students who qualify. Often, the Note-Taker Services staff must enlist the assistance of instructors to secure needed note-takers to meet the needs of its students.

Alternative Media Services staff members also provide conversion of print media assigned by instructors as reading or needed to support the qualified student's coursework studies. The Alternative Media Services staff members coordinate with instructors, the campus bookstore staff and library staff, among others, to obtain the print media to be converted. The Alternative Media Center, where staff members manage conversion of textbooks and other materials for use in classes and related assignments, uses the following technology:

- Textbook Scanning (via high-speed textbook scanning system)
- Electronic Text (via OCR software to convert any digital page into modifiable electronic text (e-text))
- Audio Conversion (using AT&T text-to-speech voices to convert any e-text document to audio)
- Volunteer Reading (64 active volunteers reading texts for audio production)

DRC staff also work with CSU's Center for Accessible Media (CAM), which helps expedite the delivery of electronic texts (e-texts) of instructional materials to

eligible CSU students with disabilities. The CAM significantly reduces redundant requests to publishers by the CSU campuses and encourages the sharing of alternative media resources. The CAM also researches, develops, and disseminates best practices regarding accessible digital text and multimedia.

In addition, the DRC Alternative Media Services staff members operate and maintain the Adaptive Technology Center (ATC), two small computer labs with adaptive software and equipment located on the library's second floor. The library has recently agreed to provide end-user support for the ATC, which contains the following resources:

- Voice-activated computer system (Dragon Naturally Speaking)
- Screen-reading software (Jaws)
- Text-enlarging software (ZoomText)
- Closed circuit television for print enlarging)
- Kurzweil 1000 & 3000 (reading software)

One self-service workstation is also available, including a scanner and computer with the following software: ABBYY FineReader OCR (character recognition), Text Aloud (text-to-audio conversion) and Roxio (burns audio to disc in WAV or MP3 formats). The Web site for the Adaptive Technology Center is managed by DRC and is located at:

http://www.drc.calpoly.edu/services/adaptive_computing.htm

Information Technology Services

Campus IT manages compliance with ADA and Section 508 for software purchases for the campus. They also work closely with both DRC and the Kennedy Library to deliver technology-based solutions to individuals with disabilities. ITS staff members with accessibility responsibilities include Mary Shaffer, Office of the CIO and Sally Anderson, Accessibility Specialist.

ITS is also taking the lead on implementation of the CSU Accessible Technology Initiative. They provide the campus with a comprehensive Web site on Accessibility containing the following:

- Communications, such as the full text of the President's Announcement on the CSU Accessible Technology Initiative of March 29, 2007
- Web accessibility (priority 1 of the ATI)
- Instructional materials accessibility (priority 2 of the ATI)
- Procurement (priority 3 of the ATI), including Cal Poly Electronic and Information Technology (E&IT) Procurement Implementation Plan - September 14, 2007
- Policies, including CSU coded memos, CAP, and supporting documents and links to legislation

- Links and Resources for on-campus resources and universal design information
- Disability Access Compliance Committee records
- Contact Information

The ITS Accessibility site is available at:

<http://accessibility.calpoly.edu/>

ITS recently added ZoomText (text-enlarging software) to the standard image load, which has been applied to all workstations in the library stacks and in labs located in the library. ITS and LIT partners to provide the first instructor workstations with adaptive technology in the labs located in the library.

Robert E. Kennedy Library

The Kennedy Library, a unit of Academic Affairs, provides instructional services and information resources for student and faculty teaching, learning, and research.

At present, no job classifications specifically address working with persons with disabilities, either individually or collectively.

The library also provides the following adaptive technology directly to users:

- Motorized, height-adjustable workstations
 - 2 tables in schedulable labs: 111B, 216A, 216B, 217C, 217D (1 each for a student and the instructor workstation)
 - 1 on each floor with Open Computing: 3rd, 4th, 5th (forthcoming)
- ZoomText text-enlarging software on all public library workstations
- 22 in. widescreen monitors in 216B (open access & scheduled, forthcoming)
19 in. monitors on public workstations

Formats of Existing Collections

The library's Collection Management staff identified the following formats of materials in Kennedy Library holdings that conceivably could be requested for conversion on demand:

Print

- Books
- Journals
- Newspapers
- Abstracts/Indexes
- Loose-leaf services

- Government documents
- Maps
- Atlases
- Music scores

Electronic

- Books (e-books)
- Journals (e-journals)
- Article databases
- Image databases
- Specialized research databases (e.g. Beilstein, MRI)
- Sound/music databases
- E-reserves
- ILL articles
- GIS/map files (in databases and on campus servers)
- Specialty software (e.g. Win2Data)
- DigitalCommons (institutional repository)
- Captivate instructional videos
- Podcasts

Microform

- Microfilm (newspapers, journals, government documents)
- Microfiche (senior projects, government documents, some Reference works)
- Aperture cards (rarely used)

Multimedia

- CD-ROM (music)
- CD-ROM (software, data, or forms) (often included with a book)
- CD-ROM (government document)
- DVD
- VHS
- Learning kits (LRDC)
- Braille books

Special Collections

- Manuscripts
- Photographic media (prints, negatives, transparencies)
- Architectural drawings and plans
- Rare books

SUGGESTED READING & ADDITIONAL RESOURCES

LC4813 .B85 2002 (CTL)

Building the team : faculty, staff, and students working together : presentation and resource materials

RETAINED IN CENTER FOR TEACHING AND LEARNING (RM. 209).

LC4812 .S34 2004

Scherer, Marcia J.

Connecting to learn : educational and assistive technology for people with disabilities

CALIF S4085 D47 (Docs)

Disability Support and Accommodations: The California State University : Bakersfield, Fresno, Fullerton, Humboldt, Long Beach, Northridge, San Bernardino, San Diego, San José, Sonoma, Systemwide.

LC4813 .B85 2002b (CTL)

Building the team : faculty, staff, and students working together : presentation and resource materials. (2 videocassettes)

RETAINED IN CENTER FOR TEACHING AND LEARNING (RM. 209).

Cal Poly DRC Web site Resources for Faculty and Staff

<http://www.drc.calpoly.edu/resources/resources.htm>

Ten Things Faculty Should Know about Students with Disabilities

http://www.drc.calpoly.edu/resources/ten_things.html

Faculty FAQ

<http://www.drc.calpoly.edu/resources/facultyFAQ.htm>

Additional Resources

http://www.drc.calpoly.edu/support/additional_resources/links.htm

Universal Design

http://www.drc.calpoly.edu/support/additional_resources/links.htm#q9

Web Accessibility

http://www.drc.calpoly.edu/support/additional_resources/links.htm#q10

Adaptive Technology

<http://discoveringat.blogspot.com/>

<http://www.assistivetechologies.com/>

Universal Design for Libraries

http://www.washington.edu/doit/Brochures/PDF/equal_access_lib.pdf