

## Research Libraries and Individuals with Print Disabilities

**R**esearch libraries acquire materials in many formats and aspire to make all of them discoverable and accessible to their many diverse constituents. Doing so is consistent with our professional values and legal requirements. To the extent that libraries have provided reformatting services (or partnered with other entities to do so) for large retrospective print collections “without undue burden” and/or “undue hardship” under the ADA for more than two decades, they should continue to optimize those processes and services. Research libraries are challenged to continue that access while expanding access to digital information resources in increasingly diverse formats. Ensuring that both print and digital versions are accessible to patrons with print disabilities requires different strategies for each format.

Technology considerations play a key role in making library collections and services accessible. The technology issues surrounding library services for patrons with print disabilities are diverse and evolving. Despite the challenges, library professionals need to stay well informed about the issues, monitor trends, and respond to opportunities for improving library services for this user group. This section of the report provides research library administrators and interested library professionals with an introduction to the major technology considerations involved in making library collections and services more accessible for patrons with print disabilities.

### Retrospective Print Collections

The most common method for making retrospective print collections accessible to patrons with print disabilities is to combine digital scanning and optical character recognition (OCR) technology to reformat print source materials into electronic formats that can be “read” by user-facing adaptive technology tools. Many ARL member libraries currently provide “scan and reformat” services for patrons with documented print disabilities. The most common approach is to digitally scan the print material and convert it to PDF with embedded text for text-to-speech delivery on the user’s preferred adaptive technology tool. Other output formats may include specialized electronic files (such as DAISY book format), braille documents, or tactile diagrams.

The typical reformatting workflow to convert printed work into an accessible digital format involves a sequence of technology-enabled and human-mediated steps. Below is an example workflow:

1. Capture a digital still image of a page using a digital photocopier, flatbed scanner, or specialized book scanner.
2. Run OCR software on the page image to automatically extract electronic text.
3. Repeat step 1 if the OCR process yields too many errors due to a poor-quality scan.
4. Repeat steps 1–3 for each page of text to be reformatted.
5. Ensure that the reading order is proper (if there are columns, footnotes, sidebars, etc.).
6. Edit the digital copy for OCR errors and add additional description, if needed.
7. Convert pages containing mathematical symbols to MathML using one of a number of open source or inexpensive programs.
8. Deliver a final digital copy of the text in the requested accessible format.

Although advances in information technology have lowered the hardware and software costs for the overall reformatting process, this service still requires non-trivial equipment, training, and ongoing staffing costs. Staff time to edit reformatted documents can vary greatly depending on the source material and the level of quality control desired. Advances in book scanning technology show great promise in improving page scanning and OCR processing throughput. The UC Berkeley Library, for example, has recently acquired an Atiz scanner designed to quickly scan bound books without damaging the spine. The library estimates that such high-quality scanning, even without extensive staff editing and processing, will produce two errors per page or less. However, the high capital-equipment costs of purchasing such high-performance book-scanning equipment may be out of reach for some libraries.

## Licensed Electronic Resources

Licensed electronic resources, such as e-journals, e-books, databases, online reference sources, and digital media collections, pose a different set of accessibility challenges, due to the diversity of digital content formats and delivery methods. Although accessibility standards exist for many digital content formats, content publishers do not always utilize them to maximum advantage.

Consider the case of electronic books. The current e-book technology landscape is rapidly evolving with many combinations of file formats, devices, and platforms. E-books are published in a variety of formats, some open and some propriety, with varying levels of support for accessibility. EPUB 3 is an example of an emerging standard that was developed from the ground up with accessibility for print-disabled users in mind. Open standards for digital content that incorporates accessibility features from the start are the clear path forward to making digital content broadly accessible.

In many cases, the library provides patrons with proxy access to licensed electronic resources that are hosted and delivered on a content provider's website. In this model, it may be logistically difficult, and in some cases technically infeasible, for the library to provide an alternative accessible copy or version of the resource if the resource itself was not properly encoded for accessibility from the start.

Under these circumstances, it is critical that libraries independently exercise their power as buying agents to improve the state of electronic resource accessibility. Libraries should require publishers and vendors to comply with legal requirements for accessibility (e.g., Americans with Disabilities Act, Section 508 of the Rehabilitation Act Amendments, state and provincial laws) and implement industry best practices for accessibility (e.g., World Wide Web Consortium [W3C] Web Accessibility Initiative guidelines) in their products and services. The inclusion of model language in publisher and vendor contracts specifically addressing accessibility requirements could have a significant impact if broadly adopted (see Appendix A for model language).

There are success stories in the marketplace to replicate. In early 2010, under a new system-wide technology accessibility initiative in the California State University (CSU) system, the CSU campuses rejected a bid from Blackboard Learning—then the most widely used learning management system among CSU campuses—citing lack of accessibility. In his February 2012 testimony before the Senate Committee on Health, Education, Labor and Pensions, Mark Turner, Director of CSU's Center for Accessible Media, stated that this experience was a "wake-up call" for the company, and that "subsequent to that RFP process, Blackboard® undertook a major accessibility review and remediation process for their product, culminating in an award by the National Federation of the Blind for its robust support for

persons who are blind.”<sup>44</sup>

Libraries can also request (or require, if need be) that prospective vendors complete a Voluntary Product Accessibility Template (VPAT) form for their product to document in detail the extent to which their product complies with Section 508. Although VPAT forms are non-binding, they do provide a communication tool for libraries and vendors to talk about accessibility issues at a granular level. Compliance with Section 508 is required, but there is no substitute for reasonably proficient user testing, preferably by a person with print disabilities who is an typical user of her selected assistive technology. Several universities have protocols by which their disability services offices evaluate any software whose acquisition is being contemplated. Even in cases when vended products are not fully compliant, VPATs can be a useful tool for encouraging vendors to establish accessibility roadmaps for their non-compliant or partially accessible products.

## Library Website Accessibility

Research libraries, indeed all of higher education, rely upon the web to present and make available extensive amounts of information and instructional e-content. The degree to which websites are accessible varies greatly from institution to institution. Most research libraries provide access to information resources online through a library-managed website presence. The typical library website includes a mix of library resource discovery tools, subject guides, links to licensed electronic resources, and information about library services. Standards exist to improve the accessibility of web content for people with disabilities. The World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI) develops guidelines and provides resources for web publishers to improve web accessibility. The W3C WAI website includes a wealth of information on the topic of web accessibility, including specific standards such as the internationally recognized Web Content Accessibility Guidelines (WCAG) standard. Library administrators are strongly encouraged to assess and create a plan for improving the accessibility of their library website and supporting web applications.

To gain more clarity on current practice and opportunities to make websites more accessible, the US Department of Justice issued an Advance Notice of Proposed Rulemaking in 2010 regarding accessibility of information and services on the web.<sup>45</sup>

The DOJ intends to publish a Notice of Proposed Rulemaking concerning website accessibility based on comments filed in 2012. In several settlements, DOJ has required places of public accommodation to comply with WCAG 2.0 AA standards.

## Electronic-Book Readers

The recent explosive growth in popularity of portable e-book readers in the consumer marketplace has led many libraries to consider lending e-book devices as a service. E-book readers can vary greatly in terms of their support of accessibility features. The most accessible devices include screen magnification, text-to-speech functionality, and navigation features enabling individuals with print disabilities to access the content natively. The pairing of accessible e-book formats with accessible reading devices is key.

E-book accessibility may involve as many as three different considerations: the accessibility of the content, the accessibility of the reading platform, and the accessibility of the device. Thus, even if the

content is rendered in an accessible format like EPUB 3, it may be wrapped in digital rights management (DRM) software that prevents a device with screen-reader software from getting to the content. Similarly, even if the device and the content are accessible, if it is on a platform that is not, the book will not be accessible.

Libraries that are considering e-book device lending as a service are strongly encouraged to examine the current state of accessibility support in the e-book device marketplace and opt for lending devices that have accessibility features built-in.

## User Services

Most research libraries have a designated liaison librarian who can provide or coordinate library assistance for users with disabilities in partnership with disability services offices,<sup>46</sup> which typically handle curricular needs or materials serving as textbooks and are required for all students enrolled in courses. For some undergraduate courses, these materials may be sufficient for the course. Print-disabled students generally turn to the libraries for assistance with other needed materials, although disability services may play an intermediary or facilitator role.

Everyone who works at a library service desk, including temporary staff and part-time students, needs to be aware of how best to direct users with print disabilities for assistance. Since these positions can have regular turnover in many libraries, accessibility service awareness needs to be a standard part of staff training. Similarly, it is important to have user-focused policies and procedures that are readily available and kept up to date.

Not all those who may benefit from adaptive technology tools have access to these tools, in part due to economic factors or infrastructure requirements. Research libraries can, and many ARL member libraries do, provide access to adaptive technology tools as a library service within the physical library space. The prevalence of adaptive technology centers varies from one campus to the next. Many universities offer students access to adaptive technology equipment and support in a computer lab that is managed by the disability services office or the campus IT department. However, even with campus-wide support services, libraries can always add value by locating adaptive technology in the physical library space, since libraries are typically open much later than other buildings on campus. In such spaces, staff should be well trained in the use of this equipment and software.

The librarian liaison can consult with a student regarding what materials would be helpful and how best to make these resources accessible in light of his/her specific disability. Some libraries have designated staff to handle these requests, while others use departments that do all library scanning or technical support to provide these services. Students do not customarily give themselves much lead time on assignments, so having a policy and procedure in place to provide students with a reasonable expectation of the speed of handling these requests is critical.

Experience teaches us that some users would prefer to be able to do it themselves rather than have to ask for some additional service, and independence is a value research libraries routinely foster. For example, at UC Berkeley, the library provides 26 scanners throughout the system. Starting in fall 2012, students with print disabilities receive campus ID cards pre-loaded with funds for scanning. (Non-disabled students are charged for scanning.) These 26 scanners convert hard-copy print into electronic documents, in several digital format options, which the student can download onto a personal thumb

drive to take home for their screen reader to read aloud via synthesized speech. For students who are print disabled and wish to self scan, UC Berkeley offers two locations with scanners where a synthesized speech software program has been installed.

There are many constituencies with print disabilities who have a wide range of information needs. Some students with learning disabilities may not require special equipment or software, but rather some special facilities arrangements. A student at one ARL institution requested quiet study space where she can read the text aloud without disturbing others. Most research libraries can deal with these kinds of requests, but it is useful to keep in mind that specific kinds of space may be the answer for some user needs.

Going forward, it will be important that universal accessibility be embedded in library and information products, which are licensed and acquired, so special conversion to a usable format will only be required for retrospective works. With born-digital texts, e-readers, and other mobile devices, research libraries must be strong advocates for accessible solutions up front—born-accessible materials—obviating the need for resource-intensive reformatting and retrofitting.

Although the focus of this report is on primary users, i.e., students, faculty, and staff, many publicly supported institutions also serve the public. However, in order to be eligible for special services or accommodations on campus, users with print disabilities need to self-identify and register with disability services. This registration process, and the desire among some to keep invisible disabilities undisclosed, likely means that there are more than the officially registered population who would benefit from a more inclusively designed physical and information environment.

---

#### **SIDEBAR: ONTARIO COUNCIL OF UNIVERSITY LIBRARIES (OCUL) REPOSITORY**

---

The OCUL Repository and Training Pilot serves as an example of large-scale collaboration and vision necessary to achieve equality of services for the print disabled.

In partnership with the University of Toronto, OCUL Scholars Portal received an Ontario government grant to explore an innovative approach that would allow students to more independently acquire the materials they need for study. The OCUL consortium received funding to pilot a project that would:

- Build a collective repository of digitized material held in libraries that had been requested by print-disabled students.
- Provide an authentication interface for registered print-disabled students that would allow them to directly access resources in this repository and, if something is not found, to generate a request.
- Develop workshops and tool kits for library staff so that they could more effectively change processes to improve library support for print-disabled students, for example, developing acquisition staff scripts for negotiating with vendors on purchasing and licensing accessible products, as well as requiring all staff to consider accessibility when developing new services and creating information pages on the web, etc.

The OCUL project will provide an opportunity to explore the potential for success of this kind of service. If successful, more funds would be sought to expand and improve the new collaborative service. Ultimately, the program would be fully sustained by OCUL libraries that participate in the program.

In this first phase, taking full advantage of the Scholars Portal digital library infrastructure, at least four libraries will contribute alternative format materials to a repository that has the ability to authenticate disabled students that have self-identified and registered at each institution. These students may then search for and access materials from the repository. If something is not available, they may submit a request. Either the home institution will digitize the materials in-house or take advantage of the Internet Archive operation at the University of Toronto to digitize materials.

The goal is to reduce duplication of resources by retaining scanned copies for reuse in a digitally secure repository that allows self-service through a robust authentication system. The repository will contain alternative copies of materials held at OCUL libraries. The target is to have 1,000 items available by the end of the year-long pilot.

---