Collection Accessibility

A Best Practices Guide for Libraries and Librarians

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Abstract

The purpose of chapter 5 of Library Technology Reports *(vol. 48, no. 7) "Making Libraries Accessible: Adaptive Design and Assistive Technology" is to provide libraries and librarians with best practices for increasing the accessibility of library collections to patrons with print disabilities. The chapter summarizes demographic, legal, and technological information that is relevant when considering how to improve library accessibility; it also discusses the methods for enhancing access to library resources, print and digital.*

About the Authors

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Introduction

Over the past decade and a half, the growth of the Internet and the rapid migration of a majority of periodicals, journals, and online library resources and tools into the digital environment have reshaped the meaning of access. This shift brings a responsibility for making collections decisions that encourage accessibility of online resources to users with print and other disabilities. Chapters 1–4 of this issue of *Library Technology Reports* outline foundational steps in this undertaking, from building awareness about disability among library staff to understanding adaptive technology to accessible Web design and emerging e-text formats. This chapter will suggest approaches to building accessible library digital collections from the perspective of persons with print disabilities.

Summarizing the Accessibility of Library Digital Collections

For users with disabilities, "design in the online world matters as much as it does in the physical world."[1] While there is a dearth of research into the accessibility of digital content after 2010, studies by Comeaux and Schmetzke; Byerley, Chambers, and Thohira; and Tatomir and Durrance examine the extent to which federal and international Web accessibility guidelines outlined in chapters 1, 3, and 4 have been incorporated into the products and services that still comprise the open and subscription-based library digital information environment.[2]

In 2007, Comeaux and Schmetzke examined the accessibility of the webpages belonging to American and Canadian library schools and their associated university libraries. Analyzing all American and Canadian library schools based on barriers (such as unreadable icons, images, text, and links) per page and page complexity as measures of accessibility, the researchers found that 47 percent of library school pages and 60

percent of university library websites did not comply with the high-priority components of the WCAG standards and even less in regard to compliance with Section 508 standards.[3] Their data indicate that the "majority of LIS and university library web sites fail to provide adequate skip-navigation links, text descriptions and/or alternative plaintext versions for integral components of web pages."[4]

In 2007, Byerley, Chambers, and Thohira conducted a study of twelve online databases commonly subscribed to by libraries. After extensive questioning of each participating company, the researchers found that, due to the lack of comprehensive usability testing with disabled users, persons with disabilities were unable to easily or fully utilize these online products. Of the twelve companies studied, only four—ABC-CLIO, Elsevier, JSTOR, and ProQuest—stated that their products met all of the accessibility guidelines established under Section 508 of the Rehabilitation Act and the WCAG standards. Similarly, researchers found that only seven of the twelve participating companies had incorporated and were continuing to integrate accessibility features into their products, while the remaining five companies indicated that accessibility represented a low priority concern due to the difficulty and expense of complying with federal and international standards.[5]

A more recent study by Tatomir and Durrance found that twenty-five of thirty-two major database vendor platforms such as ProQuest and JSTOR were "marginally accessible" or "completely inaccessible" to screen readers, a sobering proportion considering the share of annual library budgets these materials consume. Tatomir and Durrance found that reasons for noncompliance given by Web developers in both commercial and library environments for websites and tools include:

- the difficulty and expense of creating accessible sites
- the absence of visually appealing graphics
- the presumed absence of users with disabilities in the target audience
- a misconception that screen reader technology will catch up with mainstream technology due to the rapid innovations occurring in computing technology over the past decade[6]

Why Accessible Collections Make Sense

While becoming familiar with accessibility standards and coding techniques to achieve compliance does take an initial investment of time, designing and purchasing compliant materials and resources ultimately make websites and collections that are easier to migrate; more portable, maintainable, and upgradeable; and more likely to interoperate with other tools. Moreover, in the long run, compliance can actually save time and money, as accessibility lawsuits are costly not only in dollars, but also in terms of customer faith and loyalty, which are much harder to fix than inaccessible webpages and resources. Most importantly, planning with an eye toward universal design—based on the idea that websites and digital resources constructed using accessibility standards provide better experiences for all visitors—ensures that there will be no need to retrofit or redesign existing sites and tools.

Recommendations for Collections Accessibility Best Practices

What do the accessibility checkpoints and guidelines outlined in previous chapters mean for library collections accessibility? While a thorough exploration of the standards is beyond the scope of this issue of *Library Technology Reports*, the remainder of this chapter will highlight core collections accessibility approaches for library professionals.

Vendor Database Accessibility

In their recent paper discussed above, Tatomir and Durrance "operationalized accessibility into ten component parts as the Tatomir Accessibility Checklist, or TAC,"[7] which combines both the "federal web accessibility legislation, international web accessibility standards and the researcher's personal experiences engaging with online and digital environments to distill the ten features that are key to accessibility for users of adaptive technologies."[8] This list can be used as a cost-effective guideline to reviewing online content for its accessibility performance. The TAC contains the following accessibility best practices:

1. accessible versions of PDF webpages and documents;
2. skip navigation and jump-to links;
3. clearly labeled page elements;
4. text captions for tables, images, graphics, graphs, and charts;
5. limited use of incompatible programming languages and scripts;
6. the absence of identically named page elements;
7. text transcripts of videos, animations, and podcasts;
8. logical and consistent page organization;
9. absence of timed responses; and
10. digital forms and functionalities accessible and usable with adaptive technologies[9]

Databases and websites such as Google, Google Book Search, Google Scholar, ProQuest, FirstSearch,

	Contains Accessible Version of PDF Documents	Contains Skip-Navigation and Jump-to Links	Contains Clearly Labeled Page Elements	Contains Text Captions of Tables, Graphs, and Charts	Limited Use of Inaccessible Programming Language and Scripts	Contains No Identically Named Page Elements	Contains Text Transcripts of Videos, Animations, and Podcasts	Logical and Consistent Page Organization	Contains No Timed Responses	Contains Forms and Functionalities Accessible to Adaptive Technologies	Load Time (Minutes) and Load Time Rating	Number of Missing Features	Overall Accessibility Rating
ABI-Inform Global	Y	Y	N	Y	Y	N	Y	Y	Y	Y	3.2 (Q)	2	MO
Cancer Lit	Y	Y	N	Y	Y	N	Y	Y	Y	Y	3.0 (Q)	2	MO
General Science Abstracts	Y	Y	N	Y	Y	N	Y	Y	Y	Y	3.2 (Q)	2	MO
Google Book	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	3.0 (Q)	1	MO
Google Scholar	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	3.0 (Q)	1	MO
Humanities Abstracts	Y	Y	N	Y	Y	N	Y	Y	Y	Y	3.8 (Q)	2	MO
JSTOR	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	3.0 (Q)	1	MO
OCLC World Cat	Y	Y	N	Y	Y	N	Y	Y	Y	Y	4.0 (Q)	2	MO
ProQuest	Y	Y	N	Y	Y	N	Y	Y	Y	Y	4.0 (Q)	2	MO

MO = Moderately Accessible, Q = Quicker Loading

Table adapted from Jennifer Tatomir and Joan C. Durrance, "Overcoming the Information Gap: Measuring the Accessibility of Library Databases to Adaptive Technology Users," in "Best Young Professionals 2," special issue, Library Hi Tech 28, no. 4 (2010): 577–594.

Table 5.1
Moderately accessible databases.

JSTOR, and government websites remain some of the most accessible websites and research databases available to adaptive technology users (see table 5.1). For the most part, these websites and databases load quickly, are organized in a logical manner, and return results that are easily read. Interaction with the webpages is relatively smooth, and learning to use the websites requires minimal time and effort. With that being said, many of these websites are still missing one or two TAC features, such as skip-navigation links, which in fact can make using the page more frustrating and time consuming than it has to be for adaptive technology users. Moreover, the accessibility features are not always easily located and activated, which can also lead to increased frustration and difficulties using the databases and webpages.

By contrast, a majority of academic databases and library sites remain only marginally accessible or inaccessible to adaptive technology users (see tables 5.2 and 5.3).

As these tables indicate, as of 2010, popular library databases and websites such as Lexis-Nexis, WilsonWeb, Medline, Elsevier, Sage Journals, and Gale were all missing four or more TAC features, such as easily located search windows, skip-navigation links, logical page organization, compatible programming scripts and languages, and forms and functions accessible to adaptive technology users. In addition to taking a long time to load, usually from five to seven minutes, the databases, if successfully loaded (which is not guaranteed), often read slowly or as blank, communicated things that were not there, did

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AccessScience	Y	N	N	Y	Y	N	Y	Y	Y	Y	3.2 (Q)	3	MA
BIOSIS	Y	N	N	Y	Y	N	Y	Y	Y	Y	3.2 (Q)	3	MA
CINAHL	Y	N	N	Y	Y	N	Y	Y	Y	Y	3.75 (Q)	3	MA
Directory of Open Access Journals	Y	N	N	Y	Y	N	Y	Y	Y	Y	3.5 (Q)	3	MA
HighWire Press	Y	N	N	Y	Y	N	Y	Y	Y	Y	4.0 (Q)	3	MA
Project Muse	Y	N	N	Y	Y	N	Y	Y	Y	Y	4.2 (Q)	3	MA
Psych Info (EBSCO)	Y	N	N	Y	Y	N	Y	Y	Y	Y	4.2 (Q)	3	MA
PubMed	Y	N	N	Y	Y	N	Y	Y	Y	Y	4.8 (Q)	3	MA
Science Citations	Y	N	N	Y	Y	N	Y	Y	Y	Y	4.0 (Q)	3	MA

MA = Marginally Accessible, Q = Quicker Loading

Table adapted from Jennifer Tatomir and Joan C. Durrance, "Overcoming the Information Gap: Measuring the Accessibility of Library Databases to Adaptive Technology Users," in "Best Young Professionals 2," special issue, Library Hi Tech 28, no. 4 (2010): 577–594.

Table 5.2
Marginally accessible databases.

not easily allow users to move around the page, and, most commonly, froze or crashed the computer. As a result, a majority of the databases and webpages that individuals need to utilize for academic or work-related research are inaccessible to adaptive technology users.

As this chapter concentrates primarily on the technical aspects of database accessibility, a brief discussion of the authors' personal experiences with adaptive technologies and engaging with websites and databases will hopefully help librarians understand the difficulties and barriers faced by adaptive technology users. The absence of one or more TAC features significantly reduces the user experience of a webpage or a digital resource for a screen reader or other type of adaptive technology user. As a means of

highlighting the need for improvement in Web content accessibility in general, it should be noted that *none* of the databases studied contained all ten TAC features.

Use an Accessibility Checklist

An accessibility checklist can be used during the purchasing process to evaluate the performance of a database, website, or piece of software to determine if it meets accessibility criteria, or to evaluate the performance of your current subscriptions. The Association of Specialized and Cooperative Library Agencies (ASCLA) provides several such checklists at its Think Accessible ALA site, referred to in several places throughout this issue of *Library Technology Reports*.

	Contains Accessible Version of PDF Documents	Contains Skip-Navigation and Jump-to Links	Contains Clearly Labeled Page Elements	Contains Text Captions of Tables, Graphs, and Charts	Limited Use of Inaccessible Programming Language and Scripts	Contains No Identically Named Page Elements	Contains Text Transcripts of Videos, Animations, and Podcasts	Logical and Consistent Page Organization	Contains No Timed Responses	Contains Forms and Functionalities Accessible to Adaptive Technologies	Load Time (Minutes) and Load Time Rating	Number of Missing Features	Overall Accessibility Rating
Abstracts in Anthropology	Y	N	N	Y	Y	N	Y	Y	Y	N	4.0 (Q)	4	I
BioMed Central Journals	Y	N	N	Y	N	N	N	Y	Y	N	5.5 (S)	6	I
Cambridge Scientific Abstracts	N	N	N	Y	N	N	N	Y	Y	N	6.2 (S)	7	I
Current Index to Statistics	N	N	N	N	N	N	N	Y	Y	N	5.5 (S)	8	I
Elsevier Science Direct	N	N	N	Y	N	N	N	Y	Y	N	5.0 (S)	7	I
General Reference Center Gold	N	Y	N	Y	N	N	Y	Y	Y	N	5.0 (S)	5	I
Health Reference Center Academic	N	Y	N	Y	N	N	Y	Y	Y	N	5.4 (S)	5	I
Humanities and Social Science Perspectives	N	N	N	N	N	N	N	N	N	N	7.0 (S)	10	I
Lexis-Nexis Academic	N	N	N	N	N	N	N	N	N	N	5.5 (S)	10	I
Medline CSA	N	N	N	Y	N	N	N	Y	Y	N	5.0 (S)	7	I
Newsbank	Y	N	N	Y	N	N	N	Y	Y	N	6.0 (S)	6	I
Sage Journals Online	N	N	N	Y	Y	N	Y	Y	Y	Y	4.8 (Q)	4	I
Sociological Abstracts	N	N	N	Y	N	N	N	Y	Y	N	5.2 (S)	7	I
WilsonWeb	N	N	N	N	N	N	N	N	N	N	5.8 (S)	10	I

I = Inaccessible, Q = Quicker Loading, S = Slower Loading

Table adapted from Jennifer Tatomir and Joan C. Durrance, "Overcoming the Information Gap: Measuring the Accessibility of Library Databases to Adaptive Technology Users," in "Best Young Professionals 2," special issue, Library Hi Tech 28, no. 4 (2010): 577–594.

Table 5.3
Inaccessible databases.

ASCLA's "Think Accessible before You Buy" provides evaluation checklists for databases and software as well as Web-based content. The former checklist specifies twelve accessibility points to consider when making database purchases:

Electronic Database and Computer Software Accessibility Evaluation

1. Can just a keyboard be used to effectively operate this product?

2. Can you use the product while running adaptive technology or user enabled accessibility options?

3. Does the product have any of its own useful accessibility features to assist users?

4. If using adaptive technology, can users distinguish where they are on the interface?

5. Have controls and functions for operating the software been properly labeled or described?

6. Are images associated with certain user

actions consistent throughout the program?

7. Can all text be read when using adaptive technology, especially screen magnifiers and readers?
8. Can any animations be disabled without interfering with the product's performance, and do they all have a text equivalent?
9. If color is removed, can users still effectively operate and use the product?
10. If users can adjust screen colors, do the color choices allow for a variety of contrasts?
11. Can any elements on the display that blink or flash be disabled without affecting use of the product?
12. Can adaptive technology users effectively enter information where appropriate?[10]

ASCLA's Think Accessible Before You Buy
www.ala.org/ascla/asclaprotools/thinkaccessible/default

Money Talks! Require a VPAT

Another straightforward step a public or academic library can take toward combatting inaccessible collections, both locally and globally, is to state your commitment to accessible and compliant digital content in collection development policies, and also back this up by requiring that e-content vendors submit a Voluntary Product Accessibility Template (VPAT) as a standard part of their technical requirements documentation or licensing agreements.

The VPAT is a form developed by the Information Technology Industry Council that helps federal agencies determine the accessibility of their online and technology contracts and can be used similarly by libraries to great effect. By requesting that online content vendors self-disclose their own products' accessibility performance, a library can use the VPAT to encourage vendor accountability and transparency, reduce its own burden of compliance proof, and become better informed on the positive and negative accessibility features of specific products, which it can then pass on as valuable information to its users. You can learn more and download sample VPATs from the Information Technology Industry Council website.

Information Technology Industry Council: VPAT
www.itic.org/index.php?src=gendocs&ref=vpat

As an example of this strategy in action, in 2011, the University of California system's California Digital Library adopted a groundbreaking VPAT requirement in its Technical Requirements for Vendors specifications:

> 5.11 COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA)
>
> The CDL is committed to providing resource access to members of the UC community with disabilities. Preferred vendors will comply with World Wide Web Consortium (W3C) "Web Content Accessibility Guidelines" and Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d). As part of the Selection/Evaluation document submitted to the vendor, vendors should submit proposals that include a reasonable response to applicable sections of the Voluntary Product Accessibility Template (VPAT), particularly sections 1194.21 - Software Applications and Operating Systems; 1194.22 - Web-based Internet Information and Applications; 1194.31 - Functional Performance Criteria; and 1194.41 - Information, Documentation and Support, in order to describe product accessibility compliance. Disclosure of noncompliance as well as a clear timeframe for compliance should be included in the Remarks and Explanations column.
>
> The CDL reserves the right to conduct real-world testing of a vendor's product or services to validate claims regarding Section 508 compliance.[11]

Library Websites

Beyond the accessibility performance of the database itself, library websites often have extensive navigation within guides, maps, service or department information, forms, and other resources that make e-research difficult for users with disabilities. This can result in a webpage or digital resource featuring e-content that is packed with more than fifty links organized into five or six main headings. To simplify the database access process, some skip-navigation method should be used to prevent a user with a screen reader from having to endure hearing this entire list of links read every time a page containing such organization is loaded. Refer to chapter 4 by Debra Riley-Huff for a list of additional methods your institution can employ to make Web content more accessible.

Metasearch and E-learning Tools

Many libraries employ metasearch tools such as federated searching, next-generation catalogs, and discovery layer products. These metasearch tools should be vetted to ensure that any code used for a single-search experience, whether developed in-house or provided by

a vendor, follows best practices for coding forms. For example, broken search forms on library home pages render the most important parts of the site useless for users with disabilities. Tutorials, podcasts, videos, and other audiovisual content have also become popular mainstays of instruction and engagement in libraries. Transcripts or captions that convey the content as accurately as possible for disabled users should be provided.

Mobile = Accessible

One of the things the authors of this article have discovered as librarians and frequent Internet users is that the mobile websites created for smartphones and other portable computing devices are more accessible, due to their reduced complexity and decreased number of features, than the regular webpages created for laptop users. Consequently, a real and viable solution may be to create mobile apps that are designed specifically to be accessible, in order to promote the same ease and depth of access that mainstream users enjoy, in an application that has been designed and tested to meet the needs of adaptive technology users. These features often reflect the fundamentals of good usability and design, so a mobile app designed for accessibility can provide a great user experience for all. With the baby boomer generation and adaptive technology users needing and demanding equal access to information and webpages for all aspects of work, academics, and personal life, creating accessible apps may be a way of providing the best quality services and access to all library patrons.

Conclusion

While becoming acquainted with the nuances of Section 508 and the WCAG requires some initial time and effort, we owe it to our patrons with disabilities to educate ourselves, and the vendors who support us, about accessibility issues. If libraries and librarians choose to champion accessibility as an important social issue, many of the obstacles impeding progress towards accessible libraries would be more easily and swiftly overcome with the backing of these influential institutions. We can use our considerable advocacy and purchasing power to select those digital resources, databases, and tools that are the most standards-compliant as a means of encouraging product vendors to become more compliant with accessibility and make accessibility a higher priority. As libraries and librarians are their primary customers, we can create change by emphasizing the importance of all of our user groups.

Recommended Resources

- ASCLA. "Think Accessible before You Buy." www .ala.org/ascla/asclaprotools/thinkaccessible/ default.
- Disability.gov. "Find Information on Technology." https://www.disability.gov/technology.
- Evans, Shirley and Graeme Douglas. "E-learning and Blindness: A Comparative Study of the Quality of an E-learning Experience." *Journal of Visual Impairment and Blindness* 102, no. 2 (February 2008): 77–88.
- Provident, Michael and Robert Zai III. "Web Accessibility at Academic Libraries: Standards, Legislation, and Enforcement." In "Special Sections on Accessibility and OPAC," special issue, *Library Hi Tech* 25, no. 4 (2007): 494–508.
- United States Access Board. www.access-board .gov.

Notes

1. David Comeaux and Axel Schmetzke, "Web Accessibility Trends in University Libraries and Library Schools," in "Special Sections on Accessibility and OPAC," special issue, *Library Hi Tech* 25, no. 4 (2007): 457–477.
2. Comeaux and Schmetzke, "Web Accessibility Trends"; Suzanne L. Byerley, Mary Beth Chambers, and Mariyam Thohira, "Accessibility of Web-Based Library Databases: The Vendors' Perspectives in 2007," in "Special Sections on Accessibility and OPAC," special issue, *Library Hi Tech* 25, no. 4 (2007): 509–527; Jennifer Tatomir and Joan C. Durrance, "Overcoming the Information Gap: Measuring the Accessibility of Library Databases to Adaptive Technology Users," in "Best Young Professionals 2," special issue, *Library Hi Tech* 28, no. 4 (2010): 577–594.
3. Comeaux and Schmetzke, "Web Accessibility Trends."
4. Ibid., 470.
5. Byerley, Chambers, and Thohira, "Accessibility of Web-Based Library Databases."
6. Tatomir and Durrance, "Overcoming the Information Gap."
7. Ibid., 577.
8. Ibid., 577.
9. Ibid., 583.
10. ASCLA, "Think Accessible before You Buy: Questions to Ask to Ensure That the Electronic Resources Your Library Plans to Purchase Are Accessible" (Chicago, ASCLA, 2008): 20, www.ala.org/ascla/files/ascla-protools/thinkaccessible/thinkaccessible.pdf.
11. California Digital Library, Technical Requirements for Licensed Resources (Oakland: California Digital Library, March 8, 2011), 18–19, www.cdlib.org/gateways/vendors/guidelines_technical.html.