LIBRARY WEBSITE DESIGN AND DATABASE ACCESS

It won't mean a thing if the site's got too much zing!

Enabling accommodations can be made within the physical library for special population; however, if websites and electronic databases are not designed for usability and accessibility barriers will still exist.

Web page designers and electronic database providers should keep in mind that some people are using screen readers and listening to the pages rather than seeing them. Or that some users may have difficulty separating information from decoration on websites where the designer made use of every available applet. Designers also should realize that some users may be using a slower connection, and most graphics take a long time to load.

Design websites for every use and every user. Website design should never create a barrier to the information.

A library website should be both accessible and usable

In their work Website Design with the Patron in Mind, website design and usability experts Susanna Davidsen and Everyl Yankee point out "a library's website is no longer an add-on service but has become the library's presence to more and more users…[the design of which is as important] as that of the circulation desk or a children's room…[and] should be designed to steer patrons to quality information."[1]

Like the physical library, the library's website should allow all patrons to visit the library without experiencing any frustrations or difficulties.[2]

UsableNet, a vendor of Web testing and repair software, defines an accessible website as one which "can be perceived, navigated, utilized with a tool other than a mouse and can be easily understood...whereas a usable website is one which is aimed at making the target population of the website happier, with a more efficient and effective website."[3]

In other words, an accessible site meets a set of technical performance requirements that enable assistive software to function. It does not guarantee, however, that all people will be able to or even want to use it. For example, some users may be stymied by language use on a site that is accessible, but a text-only site might turn off others because they need illustration.

As with the physical library with open doors, wide aisles, and a knowledgeable librarian to assist the patron, a usable site is one that patrons can enter and want to use because it has logical direction. The library's website should be valuable enough for patrons to bookmark on home or work computers. Visitors should always want to return to the site because they can easily find the information needed and feel the information was useful and trustworthy.

Defining access: World Wide Web Consortium (W3C)

The Web is immediately recognizable as tool that can help people with disabilities independently access information that was previously unobtainable. It also is a tool that can be an equalizer between the information *haves* and the *have nots.*

Tim-Berners-Lee, inventor of the Internet, realized the Web also had the potential to create a greater gulf between these two groups so he founded the World Wide Web Consortium (W3C). This multinational and multicultured group establishes and supports guidelines that promote universal access.

One of the goals of the W3C is "to make the Web accessible to all by promoting technologies that take into account the vast differences in culture, languages, education, ability, material resources, access devices, and physical limitations of users on all continents."[4]

W3C works to reach its defined goal

The reach the goal of universal access the WC3 established a Web Accessibility Initiative (WAI). WAI members work to:[5]

- Ensure Web technologies support accessibility
- Develop guidelines for accessibility
- Improve tools to evaluate and repair Web accessibility
- Develop materials for education and outreach
- Coordinate research and development

WAI members blend common sense with technology to establish Web design guidelines that are easy to understand and execute.

W3C looks at Web users

Some members of the working group are visually or physically impaired, some work with people who have impairment; others simply want to assure the Internet receives maximum usage. To accomplish the goal of developing meaningful guidelines, the working group acknowledges that Web users:[6]

- May not be able to see, hear, move, or may not be able to process some types of information easily or at all.
- May have difficulty reading or comprehending text.
- May not have or be able to use a keyboard or mouse.
- May have a text-only screen, a small screen, or a slow Internet connection.
- May not speak or understand fluently the language in which the document is written.

- May have an early version of a browser, a different browser entirely, a voice browser, or a different operating system.

The WAI working group works to ensure that those people who may be challenged by equipment usage are not challenged by Web design.

Guidelines are developed

Only after considering all the above-mentioned points, WAI issued a 14 multi-part set of guidelines. The guidelines are not difficult to follow, but rather ask Web designers to stop, look, and listen to the Web page as others may be experiencing it.

The first version of WAI Guidelines was released in 1999. It divided access needs into three priorities:

Priority 1—must adhere to

Priority 2—should adhere to

Priority 3—may adhere to[7]

All websites, but most importantly the library's, should as a minimum meet Priority 1 guidelines or offer an alternate text-only version of the content.

The WAI guidelines section is currently working on Version 2. The updated guidelines will not include "standard usability recommendations, except where they have specific ramifications for accessibility, nor will they offer a prioritization of recommendations."[8]

W3C, www.w3.org/TR/WAI-WEBCONTENT/#gl-structure-presentation

Web designers and developers currently working on new sites can view the new guidelines, and incorporate them within their website.

A quick accessibility request

Designers should adhere to all the W3C Guidelines, but professionals who work with and for special populations, such as those with a disability, seniors, or people for whom English is a second language, acknowledge that this adherence probably will not happen so they suggest designers at least do the following:[9]

- Use familiar sans serif fonts. Use relative font sizes that are expressed in percentages, rather than absolute font sizes. This practice allows users to make the text larger or smaller as desired—an important feature for users with low vision.
- Provide text equivalents for all meaningful graphics is absolutely necessary. If the graphic includes text, ensure the alternative (alt) text supplies all the information required. If the image exists solely for decorative purposes use <alt=""> to make the screen reader skip it.
- Give links definition. Many screen reader users tab-through links and hear "click here" or "link, www.DogsToday.com/workingdogs.htm." For patrons to hear "click here for JAWS tips" or "click here for Guidedog article" is more useful.

- Use the "skip links" attribute. "Skip links" allows the adaptive technology user to bypass information that is repeated on every page, such as navigation bars. "Skip links" allows these users to jump past the repetitive navigation links to go to the main content on the page.

  Note: To implement skip links, place a link before the repeated information as follows:

  <img src="empty.gif" height="15" border="0" alt="Skip Main Navigation" width="5">

  then place an anchor at the beginning of unique copy as follows:

- Buttons should be large and specifically state information or directions. For example, do not rely on patrons being able to click the red or green button since they may be colorblind.
- Design your forms in a logical, consistent way. For example, assure that the question or description for each input field is on the same line as the input field itself. Enclose the label associated with an input field in a <label for=""> tag. Then, add an ID attribute to the input field and make both the ID and FOR equal to the same value. ID values must be unique. You cannot give multiple inputs in a form the same ID value.
- Ensure labels do not wrap. Those using screen magnification systems and screen reading software read the current line of text to find out where they are in the form; if the label wraps, only part of it is read.
- Avoid having to use combo boxes (a Java pull-down menu tool), but if they cannot be avoided when designing the boxes, the default item in the combo box should define the purpose of the box. Many screen readers and browsers fail to connect the label with the combo box, so users may never see the label.
- Use the clearest and simplest language appropriate for a site's content.
- Divide large blocks of information into manageable groups. Web pages should not be overly long.
- Avoid using library jargon and keep sentence structure simple.
- Avoid frames whenever possible. If the use of frames is unavoidable, give each a meaningful name.

Design and development staff also can avail themselves of an easy-to-use checklist prepared by W3C to review a page or site for accessibility.

W3C Checklist of Checkpoints for Web Content, www.w3.org/TR/WAI-WEBCONTENT/full-checklist.htm

A quick usability request

Making a website usable may be more challenging than making it accessible, as accessible is a case of following specific rules and guidelines. Making a website usable does require watching how patrons interact with the electronic data. Two usability experts, Mary Frances Theofanos and Ginny Redish observed how 16 people used screen readers to access information.

The people they observed over a four-month period represented a good cross-section of computer users in regard to familiarity with computers. Theofanos' and Redish's observations could be summed up in one sentence: "Even though W3C guidelines are followed, if the website isn't usable, it isn't accessible."[10]

Some usability suggestions they make do mirror those of accessibility but are sometimes stated differently. Theofanos and Redish, as well as others working with challenged groups, suggest the following:

- Write links that start with relevant keywords, avoiding links that start with the same word or phrase.
- Do not make up unusual names for products, services, or elements of a website.
- Include a "skip" link at the top of every Web page. Name it "Skip to main content" as opposed to "skip navigation."
- Pay attention to wording of pages to assure pages include the keywords that would draw users to the page.
- Do not create subtle differences between the text on the page and the ALT text since it may confuse patrons when they are searching for words on the page.
- Use anchor links when a page has several topics. Do not use a time stamp on a page, since it refreshes the page with each click and sends screen readers to the top of the page.
- Use headings on the Web page that are plentiful, clear, meaningful, and parallel.
- Mount forms on the upper left side of the page. Do not put a lot of text on the same page as a form.
- Avoid making pages refresh.
- Do not write long pages since they take a long time to download and users may become lost scrolling to the end of page. Note: A page of about 30,000 bytes gives an acceptable download time.

Usability guidelines, http://usability.gov/guidelines

Accessibility and usability of Web design need to be evaluated outside the librarian's typical world. Most librarians' world extends to the needs their co-workers, friends, and co-workers' friends.

Asking friends to evaluate the accessibility and usability of the library's website is not sufficient or fair. Instead, convene focus groups of users who are able to give an honest, helpful opinion of the site and use one of the online website evaluators. (See "Website Accessibility and Usability Tools" later in this chapter.)

Consider text-only option for access—also helps those with slower connections

Supporting a text-only version of the library's website is an option. Some users with disabilities do not want a text-only version of the website and want the W3C guidelines followed. Others say if this option is the only option for access, then it is acceptable.

When deciding to opt for a text-only interface, keep in mind that another population benefits from it—people using slower modems. Some patrons can barely afford a standard Internet provider's charges, let alone a high-speed connection. Even websites that are accessible and usable might disenfrancise the home user if graphics take a long time to load.

If the library's Web page is written by a third party, a text-only page could be made available for a small sum. Pricing depends on the amount of pages that make up the site.

Lift Text Transcoder gives use and access to websites

Libraries also could consider another route to text-only sites. A new commercial interface product, Lift Text Transcoder, provides an even easier and immediate solution.

Lift Text Transcoder, a product from UsableNet, allows people viewing the website to customize the resulting content to suit their needs without compromising the design or usability of the existing site.

Lift Text Transcoder and product demo, www.usablenet.com/products_services/text_transcoder/text_transcoder.html

To add these text-only pages, staff only need to create a new link on the library's home page and have that link point to the Lift Text Transcoder. The charge to link to the Transcoder is about $1,000 per year.

The Lift Text Transcoder hides some accessibility defects so they do not hinder the experience of using the text-only site. It does not fix or repair the pages. The Web designer can use annotations to specify how features of the website (such as forms) should be transcoded into true accessible pages. The Lift Text Transcoder also is able to present tables in meaningful formats.

Give Web visitors accessible and usable help

If the library is not in a position to redesign the website, make a usable and accessible online help function available. Keep in mind, however, the only useful online accessibility help function is one that describes items or topics without visual references.

The feature should be labeled as such—that is, "Accessible Help" versus "Help"—and should actually help user access and use the Web application or site by telling patrons:[11]

- What is happening within the Web application or site
- What and how many choices are available
- How to start and move around in the space
- How to undo actions they have started
- How to save what they want
- Who to contact for help if they become stuck

Providing an accessibility help feature helps patrons using adaptive technology solve their own problems.

Evaluating the library's website for accessibility and usability

At least five methods can be employed to assure the library that its Web pages are accessible to all users. Pundits disagree as to which method is most effective. Staff can consider using one or more method as time and resources permit.

Study accessible and usable design

The first method is to study accessible design principles so you can make a skilled judgment on your own page. Although not difficult, the task does take time, dedication, and discipline. The principles addressed in this discussion only skim the surface of what needs to be done to make electronic information accessible.

Listen to what the computer is saying

The second method is to turn off the images on your browser or better yet—turn off the monitor and listen to the Web pages being read. Ask yourself if the pages convey everything the library wishes the public to know, or is something missing?

Go mouseless

The third way is to turn the mouse upside down and use the tab key to navigate the links on your page. This exercise gives staff a glimpse of how the pages are experienced by someone who is blind and cannot see the images or a patron with a mobility impairment who cannot use the mouse.

Listen to the users

The fourth way of assessing accessibility is to use focus groups. Use several groups for acquiring a well-rounded set of opinions—for example, an older adult focus group, a group of users who do not speak English fluently, and a group of users with disabilities.

When meeting with the group of users with disabilities, request that they to surf the library's pages and share their experience. The library's Web managers should sit down with a cross-section of users and watch them use the Web.

The designer should observe how the website is viewed by patrons using a screen reader or a refreshable Braille display to determine if the text can stand alone and still convey information (that is, does the patron understand what is being conveyed without seeing the photographs?).

Find out whether people who do not speak fluent English understand what the library offers them. This knowledge does not replace user testing or usability inspection activities.

Use online Web validators

A fifth assessment tool is to use online Web page validators that check Web pages for their accessibility. Most of these tools are based on the guidelines established by the W3C or mandates of Section 508.

Website accessibility and usability tools

Several software tools can check websites for accessibility and usability. The automatic website testing tools can help you find (and perhaps fix) many small defects in a fraction of the time you would need to do it manually.

The programs quickly perform an item-by-item accessibility check, with some even communicating knowledge about usability. Although these tools are only rough indicators of accessibility, they provide an excellent beginning picture of your page's accessibility.

A-Prompt Toolkit

A-Prompt, http://aprompt.snow.utoronto.ca

The A-Prompt Toolkit was created by the University of Toronto and the Trace Center at the University of Wisconsin. The software tool examines Web pages for barriers to accessibility, performs automatic repairs when possible, and assists the author in manual repairs when necessary. The software tool helps Web authors improve the usability of Web pages created in HTML.

A-Prompt first evaluates an HTML Web page to identify barriers to accessibility by the disabled, and then it provides the Web author with a fast, easy way to make the necessary repairs. The tool's evaluation and repair checklist is based on accessibility guidelines of the W3C. This free program also offers a tutorial for Web designers and is available in French and German.

Wave (Version 3.0)

Wave tool, www.wave.webaim.org/index.jsp

The Wave Web page evaluator is a joint project of WebAim and the Pennsylvania Initiative on Accessible Technology. The public may use it free.

Installing Wave requires Web server administration expertise. Wave is Java-based and uses Java Server Pages (JSP) and requires a Web server that supports JSP (such as Tomcat). Wave consists of two parts: the WebAIM Web content parser and the Wave library.

The Wave tool offers an assessment of the library's website and provides a convenient tool to evaluate frequently used websites. Wave allows a toolbar to be installed on the browser that can be used to evaluate Web page simply by clicking "WAVE this page!" Users could type the Web address of the page they want to view, using the "WAVE a different page" field.

The Wave tool is useful for libraries offering online reference services. Staff can quickly evaluate Web pages for accessibility and usability before they are presented to patrons. Staff should not refer inaccessible and unusable documents to any patron.

Lift products

Lift products evaluate and fix websites based on W3C and Section 508 guidelines and are available from Usablenet. The software tools allow users to define

corporate or agency-wide guidelines to meet their specific needs. Tables, images, scripts, and links are easy to manage with the Fix Wizard, a simple step-by-step tool that guides users through creating accessible content.

Lift products, www.usablenet.com

Relatively speaking, the cost for this product is small compared with other library software products. Links to websites using a Lift product are provided.

W3C Evaluator

The W3C Evaluator tool supports general guidelines for conducting performance evaluation on Web, which may be a way to receive a introductory evaluation of the library's website. Sites that adhere to the guidelines may download the W3C symbol to proclaim the site is accessible.

W3C evaluator, www.w3.org/WAI/eval

Bobby Evaluator

Bobby was the first evaluator. Developed by the Center for Applied Special Technology (CAST), it was a free program. The tool was purchased in 2001 by a for-profit company that now attaches a fee to have more than a few pages evaluated.

Bobby, http://bobby.watchfire.com/bobby/html/en/index.jsp

The purchased program does make repairs and is not overly expensive. Users may load the Bobby symbol, which is widely known to mean the site is accessible.

Section 508

The Section 508 self-evaluation is supported by the federal government and is free. It allows website designers to evaluate websites to determine if the sites comply with Section 508. It covers many important criteria of access and usability, since Section 508 was developed to ensure that all people have access to government information.

To learn more about Section 508, the evaluator, and more about accessibility equipment, visit www.usdoj.gov/crt/508/web.htm.

The promise of distance learning

Many colleges and universities now offer distance learning, which is a boon for all people who have difficulties with independent travel. Distance learning may include people with disabilities, older adults, and even a few people who do not speak English well enough to feel comfortable traveling to classes.

Accepting that distance learning is a viable entity for higher educations, libraries—both college and public—must assure that their Web-based library is accessible since it is the students' connection to research.

A look at the websites

In 2001 Axel Schmetzke, the accessibility advocate and librarian/assistant professor at University of Wisconsin—Stevens Point, conducted a study of 219

higher-education sites that offered distance-learning opportunities.[12] Using Bobby, a website accessibility evaluator, Schmetzke found that only 15.1% of the sites' homepages were barrier-free of major accessibility errors.

This website study was not Schmetzke's first. In 1999 to 2000 he conducted evaluations that focused on a broad range of libraries, library schools, and special education programs. The percentages of accessible Web pages varied from study to study, averaging 14% to 59% accessible.[13]

This study indicates that although the school welcomes the students, the students must use another library. Many schools do realize the desire for more distance-learning classes will grow in the future and may serve to boost enrollment. The schools need to ensure students are able to use the college's online library as well as the individual class site.

A look at online databases

The news is better on the database front. The Technology Access Program (TAP) at Oregon State University supports a live document titled "Accessibility of Online Databases: A Usability Study of Research Database Providers."

TAP staff, using standard screen readers tested all the electronic databases licensed to the University of Oregon, (a well-rounded research collection) to determine if they meet the standards imposed by Section 508.

The good news is that the staff found much progress had been made by database vendors to make their products at least meet minimum access standards. The flipside is that all are not usable.

The survey of databases are evaluated on a regular basis to ensure no backsliding in regards to access by vendors.

To determine a database's accessibility, see Accessibility of Online Databases, update due May 2004, http://tap.oregonstate.edu/research/ahg.htm.

Libraries need to be access and usability leaders

Developing and maintaining an accessible and usable website is not hard or costly. An awareness of the concepts is needed and the commitment to demand vendors to provide the library with interfaces everyone can use.

Look at your library's website, and then look over the databases the library purchases. Look at them not only with an eye on content, but for their usability and accessibility as well. If a vendor's database does not meet the guidelines, give them a deadline for fixing it or cancel it.

Notes

[8]Davidsen, Susanna, and Everyl Yankee. "Web Site Design With the Patron in Mind." American Library Association: Chicago. 2004. p. 1-2.

[2]Ibid. p. 7.

[3]UsableNet.com/accessibility_usability/accessibility.html (accessed Jan. 6, 2004).

[4]W3C goals. www.w3.org/Consortium/#background (accessed Feb. 20, 2004).

[5]www.w3.org/Talks/WAI-Intro/slide13-0.html.

[6]Web Content Accessibility Guidelines 1.0. www.w3.org/TR/WAI-WEBCONTENT/#Introduction.

[7]www.w3.org/TR/WAI-WEBCONTENT.

[8]WEBCONTENT Accessibility Guidelines 2.0. Working Draft. Feb. 14, 2004. www.w3.org/WAI/GL/WCAG20.

[9]American Foundation for the Blind, Information Center. "Web Developers—Tips & Tricks to Improve Accessibility" Published Nov. 8, 2002. www.afb.org/info_document_view.asp?documentid=1453 (accessed Feb. 21, 2004), and Kirkpatrick, Cheryl H. "Getting Two For the Price of One" posted on State Library of South Carolina. www.state.sc.us/scsl/access/twoforone.html.

[10]Theofanos, Mary Frances, and Janice (Ginny) Redish. "Guidelines for Accessible and Usable—Web Sites: Observing Users Who Work With Screenreaders." *Interactions.* November/December 2003. vol. X.6, pp. 38-50.

[11]Reed, Will; Everyl Yankee; and Wendi Fornoff, with Deborah Murray. "Guidelines for Writing Accessible On-line Help." *Usability Interface.* Society for Technical Communication Usability SIG, vol. 9, no. 4, April 2003. www.stcsig.org/usability/newsletter/newsletter-archives.html.

[12]Schmetzke, Axel. "Distance Education, Web-Resources Design, and Compliance With the Americans With Disabilities Act." Paper Presented ACRL Conference. March 15-18, 2001. Denver, Colo.

[13]Ibid.