

**Web Accessibility Checklist**  
**Inclusion on the Internet: 10 Things to Double-Check Before You Publish Online**  
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**Introduction**

The internet is frequently the first point of contact between community members and their libraries, but, like many other spaces, online spaces often exclude people with disabilities. Only 25 percent of disabled adults report having high-speed internet at home. They are three times as likely as other adults to say that they never go online, and do not report high levels of confidence using the internet. This is one of many digital divides that still exist in the United States. Careful design and use of digital resources, online spaces, and social media can help ensure that libraries do not exclude people with disabilities and contribute to this problem.

There are clear ethical and legal arguments for ensuring that all library services are equitable, and that all community members are served by libraries in physical and online space. We argue that libraries and information are vital to a functioning society, that libraries strengthen communities, and empower individuals (American Library Association 2010). Title II of the Americans with Disabilities Act (2005) prohibits state and local governments from discriminating on the basis of ability. Many local governments turn to the federal guidelines established in section 508 standards for electronic and Information Technology, and the Web Content Accessibility Guidelines (WCAG) for practical implementation (U.S. General Services Administration 2018). The most current version of the WCAG guidelines (2.1) were set in June 2018. WebAIM (n.d.-a), hosted by the Center for Persons with Disabilities at Utah State University, provides additional related content, training, and automatic web evaluations.

Additionally, there are many reasons that libraries should be *particularly* focused on creating inclusive online spaces for people with disabilities. Although their internet use is lower than the overall population, young people with disabilities have higher rates of internet use than their elders. As school inclusion rates increase (National Center for Educational Statistics 2019), they are increasingly likely to be exposed to technology in educational spaces. The internet is useful for advertising events in the physical library space and providing clear information about accessibility and event details ahead of time. Social media offers many opportunities to connect with community members who might never enter the library building, but who might take part in virtual events like read-alongs, group chats, virtual meetings (using web conferencing software or gaming platforms) or online story times. Many disability activists and self-advocates are active on social media and the internet has proved to be an effective media for learning from, and participating in conversations related to disability, activities and justice for disabled people. Connecting the library to these conversations is a good way to connect the library community to them as well. Partnering with community organizations or just listening to conversations happening in social media communities online could educate library staff about community members' experiences and needs.

## Institutional Considerations

Beyond the technical expertise needed, there are several institutional actions that can be taken to create more inclusive online spaces. Below are a few to consider:

- 1. Consider division of labor, responsibility, and control.** Figuring out who has control over what elements of the library's online presence saves time and makes planning, development, and maintenance easier. Library staff will sometimes need to request support from city or state IT staff. Staff may not have control over all elements of websites that are embedded in other municipal sites. Clossen and Procees write, "A library can choose to use an inaccessible widget or search box, but it likely cannot opt out of an institution-wide header and footer" (2017, 820).
- 2. Set clear guidelines across the library's internet presence.** Staff who represent the library on social media should have clear guidelines for everything from acceptable terminology (e.g., do you use people first language? Identity first?) to proper photo captioning, to appropriate reading level for written text. Web developers should have a good handle on WCAG to consider whether state or municipal branding guidelines are being followed. Staff who post documents and videos should ensure they run internal accessibility checks (especially for PDFs), videos are captioned, and whenever possible, provide transcriptions.
- 3. Working with vendors.** Encourage vendors to confirm their products are accessible. Ultimately, the library is responsible for ensuring they not discriminate, but much of the material that libraries provide is contracted to outside vendors. Ask contractors to explain if and how their service or materials are ADA and Section 508 compliant.
- 4. Not all inclusion is about technical accessibility.** Remember that inclusion isn't just about ensuring that people can view the material. It also requires that libraries think about the content being provided. Is the material readable? Does it use overly complex language? Do the programs or content provided by the library systematically exclude people with disabilities? Does it meet their needs?
- 5. Check your work/Try the tools.** Many accessibility tools are available as part of standard operating systems. It is worth spending a bit of time learning how to use them, as they give you a way to test the usability and accessibility of the library's online spaces and content. Others, such as NVDA (screen reader) are open source and freely available for download.
- 6. Accessibility is never finished.** Making library spaces accessible is an ongoing process. As software updates and changes, the staff should check to ensure that accessibility is not affected. As needs of individuals and communities change, so must inclusion strategies. Building relationships with and listening to disabled community members can help library staff maintain a welcoming and inclusive online presence.

Creating inclusive online spaces requires some forethought and a bit of planning, but it does not have to be expensive. The following list provides a brief introduction to a few considerations for designing accessible spaces. It is general enough to be used on a simple HTML website, but outlines principles that will help you consider how these elements operate in your institution's catalog, on social media, and other spaces in which the library has an online presence. These should also be used to evaluate materials provided by publishers and library contractors.

## **Web Accessibility Checklist**

### **1. Content should be organized into a contemporary hierarchical structure**

#### *Examples*

- *Paragraph tags instead of page breaks separate content.*
- *Pages with multiple headings are nested correctly (e.g., <h3> must come after <h2>).*

Organizing code clearly into a consistent hierarchy (such as following HTML5's document structure) is essential for assistive technology and tools (which rely on this hierarchy) to navigate through content. For people using screen readers, encountering incorrect code – like out-of-order headings or list types – is like asking sighted readers to navigate a physical book with mis-numbered pages (Riley-Huff 2012, 32). It is very difficult for anyone using a screen reader to make sense of disorganized content. An analysis of academic research library tutorials found only 25 percent of Web-based tutorial pages used appropriate heading levels; errors included improper nesting, skipping levels, or using duplicate headings (Clossen and Proce 2017, 816). Yoon et al.'s (2016) study of visually impaired people using a library website found catalogue search results were not formatted semantically (e.g., did not use headings or an ordered list of links), which meant that rather than begin able to quickly browse between results by title, users were forced to listen to each full bibliographic entry on a page before moving to the next result – a burdensome task for searches with thousands of results (253).

#### **Sample HTML Code Structure**

```
<!DOCTYPE html>
<html>
<body>
<h1>Page Heading</h1>
<p>My first paragraph. </p>
<h2>Secondary Heading</h2>
<p>My second paragraph. </p>
</body>
</html>
```

### **2. Text should be easy to read and not formatted as an image**

#### *Example*

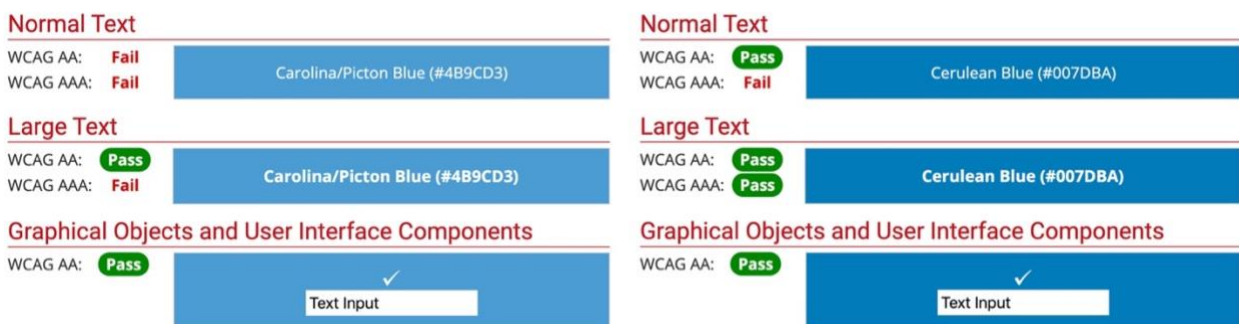
- *Text uses an appropriate reading level, font, and contrast ratio.*
- *Files, including PDFs, are text-readable (not images).*

Visitors should be able to understand a website’s written content. Consider using an online readability assessment to review text, such as WebFX’s Readability Test Tool (2019) or the built-in Microsoft Word readability statistics in Office 2019 (unfortunately, they are not yet available in Office 365 as of October 2019). To access Word readability tools, visit Preferences, Spelling & Grammar, and select “Show Readability Statistics” (Mac), or File, Options, Proofing, and select “Show Readability Statistics” (PC). The resulting Flesch Reading Ease and Flesh-Kincaid Grade Level will appear after each spelling and grammar check. Please note, however, each readability tool uses different formulas to derive grade levels and their results may differ. The U.S. Department of Health and Human Services recommends interpreting grade level scores as a general range of difficulty and provides specific guidance on using readability formulas in their *Toolkit for Making Written Material Clear and Effective* (McGee 2010).

Readability is also influenced by typographical choices (Koszyánné Mátrai 2018, 628). Sans serif, monospaced, and roman font styles improves readability for both people with and without dyslexia compared to serif, proportional, and italic fonts (Rello and Baeza-Yates 2016). Specific color combinations should provide enough contrast to be easily read by people with visual impairments, including colorblindness. Running the official color codes of a certain university through WebAIM’s Color Contrast Checker (n.d.-b) finds white text with a Carolina/Picton blue background (hexadecimal code: #4B9CD3) only passes WCAG’s level AA rating (which requires a 3:1 contrast ratio) for large text. Work with marketing or communications team members to adjust shades and provide higher ratios for smaller text, such as using Cerulean blue (hexadecimal code: #007DBA) and white (see Figure 1).

Additionally, written content should use letters– not images. This includes PDFs, which are often uploaded as image files without readable text. Use Adobe Acrobat’s “Enhance Scans” tool and select “Recognize Text” – and later “Correct Recognized Text” – to perform an OCR (optical character recognition) conversion. PDFs with recognized text are also searchable, making it much easier for everyone to find a specific chapter or quote in your document. Don’t forget to save your newly upgraded PDF document before publishing it online.

**Figure 1: Comparison of WebAIM’s Color Contrast assessment for Carolina/Picton blue (#4B9CD3) and Cerulean blue (#007DBA) backgrounds with white text.**



### 3. Alternative formats should be provided for all multimedia

#### Examples

- *An image of a landscape has the alt tag “Rolling hills with flowers.”*
- *All spoken words are captioned inside a video.*
- *An audio podcast page links to a text transcript of the episode.*
- *A table of apartments for rent includes the caption, “Column one contains the apartment numbers, column two contains the square footage, and column three contains rental prices.”*

Alt text allows people with visual disabilities to digest information presented in an image or other visual representation by conveying an equivalent description or identifying an image as decoration (Kimmons 2017, 441). The University of Michigan’s Library created the Describing Visual Resources Toolkit, which provides detailed information and guidance for alt text development (Rosen n.d). Social media outlets, including Facebook and Twitter, allow users to include alt tags on images inside their “Edit Image” options, although Twitter currently requires users to set-up the ability to “Compose image descriptions” inside their accessibility settings panel. Facebook allows users to add caption files for their videos in an SRT file format as well. Captioning benefits second language speakers, children and adults learning to read, and people with attention and hearing disabilities (Gernsbacher 2015; Gass, Winke, Isbell, and Ahn 2019). It was the first legally required electronic media accessibility measure (for television broadcasts) and is mandated for many online videos through the 2010 Communication and Video Accessibility Act (Youngblood, Tirumala and Galvez 2018). YouTube provides automatic captioning for all videos, although these only provide a 60-70 percent accuracy rate (UMD n.d.), which can lead to embarrassing mishaps (Besner 2019). However, YouTube also offers the ability to upload caption files as well as provides easy-to-use transcription tools. Providing transcripts of audio and video material also helps information consumers by offering an easily searchable format. Finally, using correct structural code in tables, which may include captions, labels, and summary text, decreases table accessibility barriers by not asking users to rely solely upon visual cues (W3C 2019).

#### Sample Code

```

```

### 4. Hyperlinks should be descriptive

#### Example

- *Link reads “[Laura’s Website](#)” versus “[Click Here for Laura’s Website](#).”*

As the name implies, descriptive hyperlinks describe their destination. Links, like other parts of online systems, should employ the users’ language and follow real-world conventions to limit confusion and support readability (Moreno Martínez and Ruiz-Mezcua 2009, 294). Unlike ambiguous phrases such as “click here” or “more,” a descriptive link can be discerned by

listening to or reading the link context without other distinguishing information (WebAIM n.d.-c). Moreover, many mobile users (or users that navigate with keyboards) do not physically click a mouse to traverse the Web. Descriptive linking provides a usable and inclusive experience.

### Sample Code

```
<p>
<a href="https://lauramarch.com"
target="_blank">Laura's Website</a> will open in a new tab.****
</p>
```

## 5. Distractions should be limited (Including Pop-ups, Excessive Animations, or Flashing Colors)

### Example

- *Important content is integrated into the top of the page instead of a pop-up window.*

Reconsider creating a website experience with popups, unnecessary animations, and flashing colors. These additions could impact users with attention disorders and those who are prone to seizures. Regardless of ability, all information seekers appreciate simplicity and clear-cut workflows (Riley-Huff 2012, 30).

### Sample Code for Websites with Bootstrap

```
<div class="alert alert-primary" role="alert">
The library's Makerspace will be closed on July 4 and will re-
open on July 5.
</div>
```

## 6. Layout should be responsive and adjust automatically to differently sized browsers

### Example

- *A half-page CSS class sets a width of 50% instead of a specific pixel count.*

Instead of using tables or pixel-based locations to create page layouts, use CSS to define content sections and set their desired sizes and positions on the page. Styles can adjust according to screen size, so a website that has three horizontal columns on a large computer browser window will automatically shift to three vertical sections on a thinner browser accessed on a mobile device (Figure 2).

### Sample Code (CSS)

```
/* Style the header */
.header {
  background-color: #f1f1f1;
  padding: 1em;
  text-align: center;}
/* Style the top navigation bar */
.topnav {
  overflow: hidden;
```

```

    background-color: #333;}
/* Create three equal columns that floats next to each other */
.column {
    float: left;
    width: 33.33%;
    padding: 1em;
    color: #f2f2f2;
    background-color: darkgreen;
    border-style: solid;
    border-width: 5px;}
/* Clear floats after the columns */
.row:after {
    content: "";
    display: table;
    clear: both;}
/* Responsive layout - makes the three columns stack on top of
each other instead of next to each other */
@media screen and (max-width:600px) {
    .column {
        width: 100%;}

```

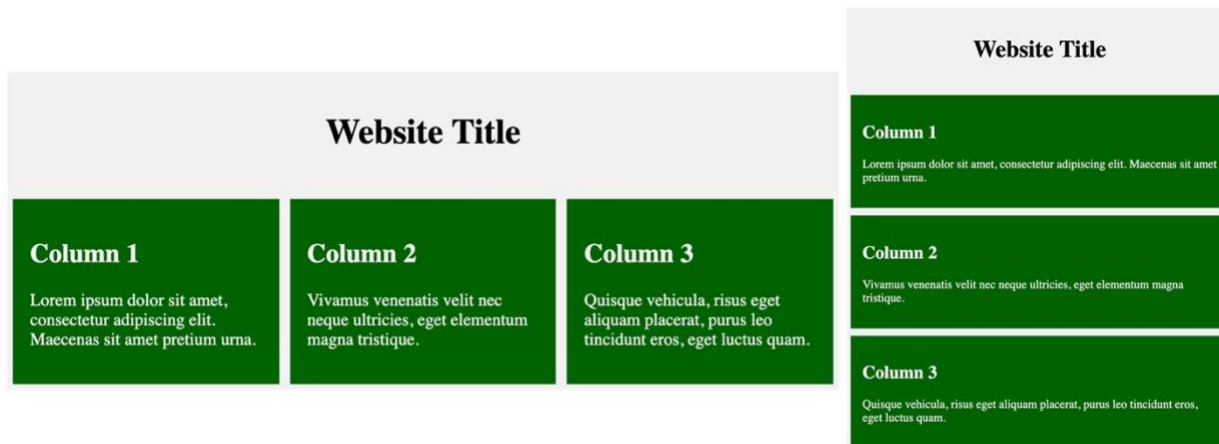
### Sample Code (HTML)

```

<div class="header">
  <h1>Website Title</h1>
</div>
<div class="row">
  <div class="column">
    <h2>Column 1</h2>
    <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit.
Maecenas sit amet pretium urna. </p>
  </div>
  <div class="column">
    <h2>Column 2</h2>
    <p>Vivamus venenatis velit nec neque ultricies, eget
elementum magna tristique.</p>
  </div>
  <div class="column">
    <h2>Column 3</h2>
    <p>Quisque vehicula, risus eget aliquam placerat, purus leo
tincidunt eros, eget luctus quam.</p>
  </div>
</div>

```

**Figure 2: Responsive layout with 3 horizontal columns (left) and 3 vertical sections (right) using sample code**



## 7. Style (CSS) should be separated from content (HTML)

### Example

- CSS code (`{font-weight: bold;}`) is used to emphasize content instead of deprecated HTML inline code (`<font size=2>`).

Placing website style into its own CSS document improves overall accessibility by allowing assistive technology to easily parse and re-render content as well as allowing people to better control their personal page layout and appearance (Richards et al. 2012, 82). For example, someone who prefers high contrast content and dark backgrounds can set up their own styles in Mozilla Firefox by selecting the Preference menu, finding the Language and Appearance section, and setting their text color to white and background color to black. It also makes it much easier to change overall styles, such as switching all links to a different color or text to different font in one code update.

### Sample CSS Code

```
/* Header Area */
.header {
  padding: 2em;
  text-align: center;
  background: white;
}
/* Header Text Styling*/
.header h1 {
  font-size: 3em;
  font-family: Arial;
}
```

## 8. Forms should be fully accessible

### Example

- Input areas (including search bars) and bot checks are keyboard-accessible and labeled.



A study of UK web development company homepages found most accessibility errors of sites which failed manual keyboard checks were caused by forms that either pre-selected radio buttons or prevent navigation outside of the search box (Gilbertson and Machin 2012, 19). Moreover, including visual tests within forms (e.g., CAPTCHA codes) is not only problematic for users with visual impairments, but also for users with dyslexia (Freire, Petrie, and Power 2011, 50). Ensure all forms are logical, easy-to-use, keyboard accessible, and have associated labels and controls (WebAIM 2013).

### Sample Form Code

```
<fieldset>
  <legend>Which is your favorite ice cream flavor? </legend>
  <div>
    <input type="radio" name="flavor" value="Vanilla"
      id="flavor_vanilla">
    <label for="flavor_vanilla">Vanilla</label>
  </div>
  <div>
    <input type="radio" name="flavor" value="Chocolate"
      id="flavor_chocolate">
    <label for="flavor_chocolate">Chocolate</label>
  </div>
  <div>
    <input type="radio" name="flavor" value="Strawberry"
      id="flavor_strawberry">
    <label for="flavor_strawberry">Strawberry</label>
  </div>
</fieldset>
```

## 9. Run content through an automated accessibility-checker

### Example

- Website is run through the WAVE accessibility checker and detected problems are addressed.

There are many free automated website assessment tools. These include WebAIM's WAVE evaluation tool (n.d.-d), Mozilla Firefox's Accessibility Inspector (2019), and Google Chrome's DevTool's accessibility audit (Basques n.d.). Each one of these tools provide specific feedback on any errors encountered and often include specific recommendations on how to update your code to be more accessible (see Figure 3).

### Figure 3: WAVE error report for the Library of Congress's homepage

The following apply to the entire page:

**h1**

Everything

Search Loc.gov

`role="textbox", aria-multiline="false"`

`aria-autocomplete="list", aria-`

`haspopup="true", aria-`

`owns="Autocomplete_ea42f"`

**LIBRARY** LIBRARY OF CONGRESS

**Details**

Filter: Full

**Errors (5)**

- 5 X Broken ARIA reference

**Alerts (70)**

- 5 X Long alternative text
- 1 X Missing first level heading
- 63 X Redundant link
- 1 X Accesskey

**Features (88)**

- 22 X Null or empty alternative text

Feedback | Powered by WebAIM

## 10. Ask real users for feedback

### Example

- Ask people who use different types of assistive technology to evaluate your website.

When updating content or creating new online sites, include testers who use assistive technology. Remember that a webpage can pass all the automated tests available but still be confusing or unusable to your actual users. Full compliance testing requires human checking, with a WCAG testing criteria goal of 80 percent of agreement among evaluators – even if that goal is elusive in practice (Richards et al. 2012, 80).

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