

INSTRUCTIONAL TECHNOLOGY

Pensacola Junior College

Designing Accessible Web Sites

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Designing Accessible Web Sites

The Internet is a powerful and versatile tool able to provide access to information and resources at any time. Because of this, many educators have incorporated Internet components in courses they teach. Some of these are done as course companion websites. Others are complete online courses of instruction. The Americans with Disabilities Act (ADA) of 1990 requires that U.S. programs and services be accessible to individuals with disabilities. A 1996 Department of Justice ruling makes it clear that ADA accessibility requirements apply to Internet resources. In order to utilize the Internet as a teaching tool the information provided must be fully accessible to all students, including those with disabilities.

In general, there are five types of disabilities that can affect Internet usage. These are:

- Visual impairments
- Hearing impairments
- Mobility impairments
- Cognitive impairments
- Seizure disorders

People using older computer equipment are also at a disadvantage when utilizing web resources that are not accessible.

There are many assistive and adaptive technologies used to assist people in accessing the Internet. Some are:

- Screen readers
- Text magnification
- Refreshable Braille display
- Braille printer
- Voice recognition
- Adaptive keyboard
- Touch screen
- Assistive listening devices
- Closed captioning

The World Wide Web Consortium (W3C) develops common protocols used on the Web to insure interoperability to promote universal access. The W3C's Web Accessibility Initiative (WAI) has proposed guidelines for designing accessible web pages that stress applying Universal Design for Learning (UDL) concepts. UDL stresses that curriculum, materials, and teaching practices should be flexible and adaptable to include alternatives so that students with learning differences and disabilities can be successful learners.

The purpose of this guide is to show what you can do to make your course website accessible to all students. The following suggestions are based on the WAI guidelines for web content. Follow these guidelines when developing and revising your course web pages to ensure that they are accessible to all students.

Accessibility Suggestions

1. Maintain a simple, consistent page layout and navigational structure throughout your site.
2. Keep backgrounds simple. Make sure there is enough contrast by using easy to read fonts in dark shades of blue, purple, or black.
3. Use the clearest and simplest language appropriate for a site's content.
4. Provide an alternative text-only version for your web site.
5. Provide a text equivalent for every nontext element such as graphics and images.
6. Do not create pages that flicker.
7. Use frames and tables sparingly.
8. Don't rely on color alone. Ensure that all information conveyed with color is also available without color.
9. Provide an HTML version of any document that is available in PDF.
10. Create meaningful links.

Hint 1: Maintain a simple, consistent page layout and navigational structure throughout your site.

Everyone benefits from well-designed web sites, regardless of cognitive capabilities. A clear, consistent presentation will especially assist people with visual impairments or learning disabilities who have difficulty following disorganized presentations. A simple consistent design and look makes it easier to locate specific information within your site.

For example, a feature presented on every page, such as a standard navigation menu or logo for the site should always appear in the same place. Clear navigation mechanisms on each page allow users to easily find navigation buttons between pages as well as locate the primary content for each page. While this makes it easier for everyone, it is especially helpful to people with learning and reading disabilities. Making it easy to predict where the needed information is found on each page will increase the likelihood that it will be found. A carefully planned organizational scheme will help everyone use your site.

Hint 2: Keep backgrounds simple. Make sure there is enough contrast by using easy to read fonts in dark shades of blue, purple, or black.

People with low vision or colorblindness, or those using black and white monitors can have difficulty reading information at sites with busy backgrounds and dark colors. Some background images obscure text and make reading difficult. Simple easy to read fonts in dark shades of blue, purple, or black are easiest to read on unpatterned backgrounds. Make sure there is enough contrast between your text and the background of the page. Choose background, text, and link colors carefully and always test your site by viewing it a different resolutions and color depths. For example, you can change your monitor settings to a resolution of 640x480 and 16 colors for one test and to 1024x768 and 24 bit color for another.

Hint 3: Use the clearest and simplest language appropriate for a site's content.

Using clear and simple language promotes communication. Access to written information can be difficult for people who have cognitive or learning difficulties. Using clear and simple language also benefits people, whose first language differs from your own, including those who communicate primarily in sign language.

1. Strive for clear and accurate headings and link descriptions. Link phrases should be brief and make sense when read out of context or as a part of a series of links. Headings should be informative so that users can scan a page quickly for information.
2. State the topic of the sentence or paragraph at the beginning.
3. Limit each paragraph to one main idea.
4. Avoid slang, jargon, and specialized meanings of familiar words, unless defined within your document.
5. Favor words that are commonly used. For example, use "begin" rather than "commence."
6. Use active rather than passive verbs.
7. Avoid complex sentence structures.

Hint 4: Provide an alternative text-only version for your web site.

Text is considered accessible to almost all users since it may be handled by screen readers, non-visual browsers, and braille readers. Text may also be magnified. Providing an alternative text-

only version of your site provides the option of having text read by one of these technologies for those who rely on them. The link to the text-only version is best placed in the upper left hand corner of the screen where users' screen readers will find it first.

An example of a text-only version can be found at PJC's main page: <http://www.pjc.cc.fl.us>

Hint 5: Provide a text equivalent for every nontext element such as graphics and images.

Use the ALT tag to describe the function of all images and graphics appearing on your site. The more important the information conveyed by a graphic, the more important it is to have ALT text associated with it. The ALT tag provides alternative text descriptive information for graphical elements of a web page. The text should be a brief description of the image's purpose. The ALT tag helps visitors understand what is on the page if they are not viewing the graphic. This could be because they are blind or are using a text-based browser or graphical browser with the image loading feature turned off.

Graphical elements that add no content to a page, like a divider bar or decorative object, still need ALT tags, but they should be empty, like this: ALT="". By using two quotation marks with no content, you can reduce the amount of distracting text when a page is viewed with graphic capabilities turned off or with a text-based browser.

Image maps should include ALT tag text to describe each hotspot. Complex graphs and charts should be accompanied by a detailed text description elsewhere on the page (or on another page) in addition to having an ALT tag.

It is important here to address an apparent conflict between the needs of individuals with visual impairments (who benefit from text rather than graphics) and those with cognitive impairments (who benefit from graphics and icons). There is no need to interpret these needs as mutually exclusive. Those using screen readers are not harmed by the use of images, as long as alternative text is provided. Those with cognitive disabilities will not be harmed by the presence of the alternative text supplied for images. It is possible, and desirable, to create Web pages that cater to both of these audiences, without alienating non-disabled audiences.

To test your site, clear your cache, set your browser to images "off", and browse your site.

Hint 6: Do not create pages that flicker.

Pages that have flickering and flashing elements can cause several accessibility problems. A flickering or flashing screen may cause seizures in users with photosensitive epilepsy. Because of

this, web developers should avoid creating pages that flicker at a rate that is likely to cause seizures. Seizures can be triggered by flickering or flashing in the 4 to 59 flashes per second (Hertz) range with peak sensitivity at 20 flashes per second. Some banner ads, designed to grab attention, flash or flicker at rates that may indeed induce seizures in those susceptible to them.

Also screen readers can be set to report any new information appearing on the screen. Blinking or flashing text is sometimes reported over and over, interrupting the users reading of the screen.

Hint 7: Use frames and tables sparingly.

Frames are currently considered inaccessible page presentation. In time, this may change as browsers handle them with greater sophistication and the screen-readers can more intelligently map the screen. Until that happens, avoid using frames, but if you must, title each frame to facilitate identification and navigation.

Tables also create problems for screen readers. The current state of screen readers is that most of them are unable to discern columns in web pages. They read from left to right, jumbling the meaning of information in tables. Some blind visitors can interpret tabular information, but it is best to look for other ways to present the information to ensure that visitors with visual impairments can reach your data. Avoid or offer an alternative to multiple columns. Since the page will be read left to right and top to bottom, it's best to use single columns only.

Techniques:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Frameset//EN">
<HTML>
<HEAD>
<TITLE>A frameset document</TITLE>
</HEAD>
<FRAMESET cols="10%, 90%" title="University Book Store">
<FRAME src="nav.html" title="navigational links">
<FRAME src="doc.html" title="main content of page">
</NOFRAMES>
```

Hint 8: Do not rely on color alone.

Color coding should not be used as the only way to convey information. Information conveyed through color alone can be difficult for people with color deficiencies. For example, when asking for input from users, do not write "Please select an item from those listed in green." Instead, ensure

that information is available through other style effects (e.g. a font effect) and through context (e.g. comprehensive text links).

Techniques:

1. Use bold effect for fonts instead of color alone to call attention to important text.
2. Underline all hyperlinks instead of just relying on color difference.
3. Contrast is good. Test color contrast by printing pages in grayscale.
4. If color is used to convey important information, include an alternative indicator such as an asterisk (*) or other symbol.

To Test:

To test whether your document still works without colors, examine it with a monochrome monitor or browser colors turned off. Also, try setting up a color scheme in your browser that only uses black, white, and the four browser-safe grays and see how your page holds up. To test whether color contrast is sufficient to be read by people with color deficiencies or by those with low resolution monitors, print pages on a black and white printer (with backgrounds and colors appearing in grayscale).

Hint 9: Provide an HTML version of any PDF document.

Adobe Acrobat PDF files are sometimes accessible, but access can be limited or unpredictable. Offering an HTML version provides an accessible format. It is also useful to people who want to "skim" the document before deciding whether to download and print the entire PDF file.

Hint 10: Create meaningful links.

Make links descriptive so they are understood out of context. Visitors who use screen-reading software can adjust their software to read only the links on a page. For this reason, links should provide enough information when read out of context. Use a more descriptive phrase than "Click here" as a link or next to a graphic used as a link.

Techniques:

BAD EXAMPLE:

```
<a href="http://www.pjc.cc.fl.us/">click here</a>
```

GOOD EXAMPLE:

```
<a href="http://www.pjc.cc.fl.us/">Pensacola Junior College</a>
```

Resources:

For more information on making your web pages accessible visit the following sites:

WebAIM: Web Accessibility in Mind
<http://www.webaim.org/intro/>

W3C: World Wide Web Consortium
<http://www.w3c.org>

CAST: Center for Applied Special Technology
<http://www.cast.org>

