

CASE STUDY
How Important is Web Accessibility Design?

for
Academic Advisor
Margaret Chandler
Mount Royal College
Calgary, Alberta

by
Cyndi Roberts
Directed Field Studies II Student

April 28, 2008

Table of Contents

Executive Summary	1
Accessible Web Design	2
How Web Accessibility Relates To My DFS2 Work Environment	3
Assistive Technologies at Mount Royal College.....	4
My Assessment of Web Accessibility at Mount Royal College.....	5
My Critical Analysis of Web Accessibility	8
Values at Stake for Web Accessibility at Mount Royal College	10
How Stakeholder Interests and Actions Affect Web Accessibility	11
Inferences about the Importance of Web Accessibility	11
Accessible Design Solutions.....	11
Citation.....	13

Executive Summary

Accessibility on the Web in its most general definition is to have no barriers for any person with a disability using the Internet.

The people who are accessing your website may or may not have a disability. We are not able to predict what kind of limitations the visitor may have (i.e. sight or hearing impairments, mobility issues, language barriers, small screen size or low resolution, short attention span, or slow connection speed) (Niederst and Featherstone 2006, 56-57).

The website visitor may be using assistive technologies, a mobile device, or software program to interact with your website. Therefore, developers need to plan for web accessibility in order to include as many potential users as possible.

Benefits of accessible website design include:

1. Improved usability with minimal barriers.
2. Compatibility and flexibility with a variety of devices, software and browsers.
3. Creating a search engine friendly site.
4. Faster page download time
5. Ease of maintenance.
6. Inclusion of a larger group of users.
7. Increased commercial value for the design client.
8. Forward-compatibility.

Accessible Web Design

I reviewed a variety of sources for web accessibility recommendations such as the Web Standards Project (WaSP) Accessibility Task Force¹, the World Wide Web Consortium (W3C) Web Content Accessibility Guidelines 1.0 (WCAG 1.0)², and the United States Section 508 Web Accessibility Law (Thatcher et al. 2006).

Some of the recommended guidelines for designing an accessible website project are:

1. Plan effective and accessible site navigation.
2. Design clean and semantic code using title, description, and keyword metatags, logical heading hierarchies, clearly written content, and ordered or bulleted lists.
3. Separate document content from presentation by using Cascading Style Sheets (CSS).
4. Utilize behavioral scripts only when it makes sense to do so.
5. Use images appropriately, include alternate text attributes, and provide clearly written image captions.
6. Design simple tables with assistive metadata, and plan for linearization.
7. Forms should be logically organized using labels, field sets, and tab order sequences.
8. Transcribe videos or provide Closed Captioning³.
9. Translate content when appropriate using professional bilingual writers.
10. Avoid flash design.

¹ Web Standards Project (WaSP) Accessibility Task Force (ATF) <http://webstandards.org/action/atf>

² W3C Web Content Accessibility Guidelines 1.0 (WCAG 1.0) <http://www.w3.org/TR/WAI-WEBCONTENT/>

³ For an example of a site that offers Closed Captioning, visit Lynda.com at <http://movielibrary.lynda.com/html/modpage.asp?ID=448&cc=yes#cc>

How Web Accessibility Relates To My DFS2 Work Environment

The Mount Royal College website⁴ serves a variety of purposes. The External Relations purpose for the website is to be an integral tool for attracting and recruiting students and faculty worldwide. This potentially international audience is likely seeking information about and the programs and courses currently offered at the College.

Potential students need access to up-to-date information such as financing and housing options, and may also choose to apply online. Current students may want to know about upcoming events, any newsworthy stories that may affect their studies, departmental information such as parking prices and maps, or information about the facilities.

The content published needs to be searchable within the entire website in order for the visitor to find the information they are seeking relatively quickly. Mount Royal College currently uses a *Swish-e*⁵ open source index search tool to generate search results from content of the website. This search tool does simple tag-based and/or operator searches of a regularly updated server-side index.

As described on the *Swish-e* homepage, “*Swish-e* can index plain text, e-mail, PDF, HTML, XML, Microsoft® Word/PowerPoint/Excel and just about any file that can be converted to XML or HTML text.”

⁴The Mount Royal College website is located at www.mtroyal.ca

⁵ *Swish-e* “Simple Web Indexing System for Humans – Enhanced” <http://swish-e.org/>

According to my teammate Dean Redgwell in Information Technology Services (ITS) – Web Development, the *Swish-e* index search is based on the following levels of HTML importance:

1. Keywords and/or phrases
2. Heading levels (i.e. h1, h2, h3)
3. Content such as paragraphs and lists
4. Title and description metatags

Dean said that our version of *Swish-e* is configured to only index the *.shtml, *.php, and *.txt files. It does not search for Microsoft® Word, Adobe® PDF documents, images, or videos stored on the server.

Assistive Technologies at Mount Royal College

Sarah Love, Disabilities Services⁶ Coordinator for Mount Royal College Learning Skills Centre encourages all faculty and departments post Microsoft® Word documents to the website and Blackboard Academic Suite™ as they are more compatible with screen reading software than PDF documents.

Ultimately, the content of the website and Blackboard should be accessible to as many devices, software, browser size and resolutions, and website visitors as possible.

⁶ See Mount Royal College Disabilities Services at <http://www.mtroyal.ca/learningskills/disabilitiesservices.shtml>

Sarah finds that the disabled students need the most assistance getting assignments, using Blackboard, finding articles, and researching. She advised me that the proposed *E-brary* website is not compatible with assistive devices most popular with disabled students⁷, and so she is working with the Mount Royal College library to rectify this possible accessibility issue.

Sarah said that many of the students with disabilities subscribe to Closed Captioning Television (CCTV)⁸, which is the most widely recognized and accessible way to experience audio and video content for persons with hearing disabilities.

She also told me that screen reading software drivers and some textbooks⁹ are now available on USB sticks, which will make more devices accessible to text reading technology into the future.

My Assessment of Web Accessibility at Mount Royal College

Depending on the browser size and resolution, clean and semantic HTML code is rendered hopefully fairly consistently. But, what devices are the visitors using to access the information, and what language is the visitor using to find information?

⁷ Kurzweil reading machine <http://www.kurzweiltech.com/kesi.html>, JAWS for Windows, and TextHelp.

⁸ Wikipedia “Closed Captioning” http://en.wikipedia.org/wiki/Closed_captioning

⁹ Mount Royal College Disabilities Services “Process for Obtaining Alternative Format Textbooks” <http://www.mtroyal.ca/learningskills/studentaltformat.shtml>

I believe that a Canadian college should at minimum provide their website content in both English and French in order to recruit more students across Canada, and also recruit internationally.

Many translation engines (such as Alta Vista Babel Fish¹⁰) only translate word for word and do not follow proper sentence structure, so it is highly recommended that translations are provided by professionally trained bilingual writers. Even then, translations are not always perfect (Shea and Holzschlag 2005, 41).

Best practice also suggests that text embedded in images should be avoided, as they will not be translated by translation engines, and will not be available when images are turned off or obscured when scaled in a browser.

Currently, the college uses text-embedded images for their rollover navigation buttons. The background colour of these buttons in their hover/active states are red, and may be an issue with visitors that have Dichromacy, which is a red-green form of color deficient vision. A ratio of 1:12 North Americans (males more than females) have color deficient vision (Shea and Holzschlag 2005, page 71). The rollover action itself is not accessible for persons with mobility issues.

For users with text-based browsers or images turned off, an alternate HTML sitemap page is available¹¹. Breadcrumb links are placed at the top of each page to give the visitor clues as to where they are in the site. Repeated references such as “Money Matters” and

¹⁰ Alta Vista Babel Fish translation <http://babelfish.altavista.com/>

¹¹ See the Mount Royal College “Menu for Low Vision and Blind Users” at <http://www.mtroyal.ca/jsfiles/topnavlinks.shtml>

“Apply Now” links point to existing pages, which can eliminate the need for redundant content throughout the entire website.

In my opinion, search engines are like unsighted visitors using assistive technologies (like text reading browsers.) They cannot see images, but they can read the contents of source code.

Text readers only read text, this is why having alternate text and title attributes for images in the source code is important, so that visitors will know what the significance of the image is, even if the images are turned off in the browser.

In addition, video and flash movies posted to the website should include transcriptions in XHTML or plain text format so that the content can still be accessible to sight or hearing impaired users, and also to users that have sound turned off on their device or a slow internet connection.

Currently, the Media Relations Services for External Relations and Academic Development Centre do not provide transcriptions, translations, or Closed Captioning for their website videos¹².

I asked another ITS Web Development teammate Tracie Byers whether the College publishes Macromedia Flash on their website, and she said that they rarely display flash movies on the website, if at all, due to accessibility issues.

¹² See Mount Royal College Criminal Justice video example at http://www.mtroyal.ca/healthcomm/criminal/video/crim_justice_MSTR.mov

My Critical Analysis of Web Accessibility

Website developers should test and validate HTML code according to the WCAG 1.0¹³ in order to be accessible to as many assistive and mobile devices, browser sizes and resolutions, and as many users as possible. The W3C HTML validator is located at <http://validator.w3.org> (Shea and Holzschlag 2005, 34).

Developers of new software should follow W3C Authoring Tool Accessibility guidelines¹⁴ in order to be forward-compatible with current and future browsers, assistive technologies and devices.

By everyone following the same W3C guidelines and recommendations, compatibility between devices and software, and code rendered in different browsers can remain consistent in delivery of information to the user.

The user also holds the responsibility to be able to effectively use the assistive devices and software when accessing the Internet (Niederst and Featherstone 2006, 60).

But, although users can adapt quickly to new technologies, some may process information slower than average or differently because of cognitive or disabling limitations, language barriers, and capabilities or limitations of the technology used.

¹³ W3C Web Content Accessibility Guidelines 1.0 (WCAG 1.0)

<http://www.w3.org/TR/WAI-WEBCONTENT/>

¹⁴ W3C Authoring Tool Accessibility Guidelines www.w3.org/TR/WAI-AUTOOLS/

Many Internet users may be limited to slow dial-up service, or may have to pay a fee per kilobyte downloaded from the Internet on a mobile browser. So, they may need to purchase an unlimited data plan in order to save costs. It is the developer's job to create smaller sized files, which will expend less bandwidth and enable faster downloads.

Can new mediums, such as mobile browsers and assistive technologies access the same information as a standard browser? The answer is yes. A developer considering a text-based browser can link a Cascading Style Sheet (CSS) to the entire website, separating the content from the presentation style.

A style sheet can display similar information only in a more delineated fashion. The images and layout structures can be stripped out in order to fit the browser displaying the content, or software reading the content to the user. Additionally, a Braille style sheet can convert the content to be accessible for a Braille display.

In 2007, Apple introduced the iPhone, which uses adaptive zooming technology to give users a similar experience as a personal computer or small laptop. Other mobile web browsers such as the BlackBerry® and Palm® Treo™ are two of its closest competitors (Moll 2007, pages 32-33).

In *Mobile Web Design*¹⁵ Cameron Moll writes if the markup is meaningful and standards based, repurposing sites on the fly is possible without style sheets. With some mobile

¹⁵ Excerpt from Cameron Moll's *Mobile Web Design*. "Four Methods, Revisited."
<http://downloads.indesignmag.com/cp/MobileWebDesign.pdf>

browser display software, “the layout is linearized and images optimized to present content more efficiently” (Moll 2007, pages 31-32).

For an example of how the Mount Royal College website appears linearized with images turned off, visit a mobile search engine like *Skweezer.net*¹⁶ or *Mowser.com*¹⁷.

Values at Stake for Web Accessibility at Mount Royal College

For disabled students at Mount Royal College, financing and grants are assessed on a case-by-case basis¹⁸. Not everyone has access to the all of the assistive technologies that they want.

But, for other students that are able purchase mobile devices and assistive technologies, it will be easier for them to download assignments, contact their instructors, research , and upload assignments to Blackboard.

If we consider the user’s limitations, we can hope to offer equal opportunities and barrier-free access to information for everyone.

And by adding new accessible content, such as Microsoft® Word documents, transcribed videos, and linearized information for mobile devices and text readers, the website can be accessible to all students (disabled or not) even potential international exchange students.

¹⁶ *Skweezer.net* search results for mtroyal.ca as viewed at <http://www.skweezer.net/s.aspx?url=mtroyal.ca%2f&i=0>

¹⁷ *Mowser.com* search results for mtroyal.ca as viewed at <http://mowser.com/web/http%3A%2F%2Fwww.mtroyal.ca%2F>

¹⁸Disabilities Services “Grants for Assistive Technology and Services” <http://www.mtroyal.ca/learningskills/studentfunding.shtml>

How Stakeholder Interests and Actions Affect Web Accessibility

Clients retrofitting old websites or commissioning new websites need to understand how accessibility affects decisions about the design of their site. The costs for translations, transcription and flexible design can be beneficial to the users.

Designing standards-compliant websites that download faster, is accessible to a larger audience, and is easier to maintain can, in the end, justify the cost for the client.

Costs of development and technologies can be a drawback for accessibility, but with everyone working to the same standards of compatibility, we can hopefully deliver the best access at the lowest costs to the users.

Inferences about the Importance of Web Accessibility

By providing easier access you can increase the number of users that can reach your website. The less barriers and limitations that the user encounters is a sure sign of increased accessibility.

Accessible Design Solutions

How can developers make sites more accessible for everyone? The best way to have an accessible website is to plan for it. Content for the pages must be written concisely and in

a logical order. Planning for linearization can assist users of mobile devices, screen readers and screen magnification software to help the user find content.

Using appropriate HTML structural elements such as page titles, hierarchical headings, paragraphs and lists, and adding alternate text attributes for images will increase accessibility to many different search engines, browsers user settings, operating systems, assistive technologies and output devices.

The web developer should plan that the user browser preferences may resize text or magnify images, and browser software can remove background images, advertisements, and secondary navigation when styling for text-reader or mini-browser layouts.

Depending on their browser preferences, the output device may use an alternate font family or change contrast settings to display content in the best format for the user. User browser settings override external style sheets.

Always practice strategic planning for all web design projects. This is important to maintain effective accessibility. My personal directive is to keep in mind the issues and trends for optimizing web sites of today and into the future, and to keep in tune with the latest recommendations for accessibility.

Citation

Alta Vista. *Babel Fish translation engine*. <http://babelfish.altavista.com/> (accessed April 18, 2008)

Kurzweiltech.com. Kurzweil reading machine. <http://www.kurzweiltech.com/kesi.html> (accessed April 4, 2008)

Lynda.com. “Web Accessibility Principles with Zoe Gillenwater.”
<http://movielibrary.lynda.com/html/modpage.asp?ID=448&cc=yes#cc> (accessed April 28, 2008)

Moll, Cameron. *Mobile Web Design*. “Four Methods, Revisited.”
<http://downloads.indesignmag.com/cp/MobileWebDesign.pdf> (accessed April 25, 2008)

Mtroyal.ca. Mount Royal College website.

___Disabilities Services <http://www.mtroyal.ca/learningskills/disabilitiesservices.shtml> (accessed April 4, 2008)

___“Grants for Assistive Technology and Services”
<http://www.mtroyal.ca/learningskills/studentfunding.shtml> (accessed April 27, 2008)

___Learning Skills Centre “Process for Obtaining Alternative Format Textbooks”
<http://www.mtroyal.ca/learningskills/studentaltformat.shtml> (accessed April 4, 2008)

___“Menu for Low Vision and Blind Users”
<http://www.mtroyal.ca/jsfiles/topnavlinks.shtml> (accessed April 1, 2008)

___ Video for Criminal Justice Program

http://www.mtroyal.ca/healthcomm/criminal/video/crim_justice_MSTR.mov

(accessed April 18, 2008)

Mowser.com. <http://mowser.com/web/http%3A%2F%2Fwww.mtroyal.ca%2F> (accessed

April 10, 2008)

Niederst Robbins, Jennifer. 2006. *Web Design in a Nutshell: A Desktop Quick Reference.*

3rd Ed. USA: O'Reilly.

___ Featherstone, Derek. Chapter 5. "Accessibility". Pages 56-71.

Shea, Dave and Molly E. Holzschlag. 2005. *The Zen of CSS Design: Visual*

Enlightenment for the Web. <http://csszengarden.com/> Berkeley, CA: Peachpit Press.

Skweezer.net. <http://www.skweezer.net/s.aspx?url=mtroyal.ca%2f&i=0> (accessed April

10, 2008)

Swish-e.org. Swish-e "Simple Web Indexing System for Humans – Enhanced".

<http://swish-e.org/> (accessed April 10, 2008)

Thatcher, Jim, et al. 2006. *Web Accessibility: Web Standards and Regulatory*

Compliance. USA: Friends of Ed.

Wikipedia.org. "Closed Captioning". http://en.wikipedia.org/wiki/Closed_captioning

(accessed April 18, 2008)

W3.org. World Wide Web Consortium (W3C)

___ Authoring Tool Accessibility Guidelines www.w3.org/TR/WAI-AUTOOLS/

(accessed March 2, 2008)

___ HTML Validator. <http://validator.w3.org> (accessed April 27, 2008)

___ Web Content Accessibility Guidelines 1.0 (WCAG 1.0) <http://www.w3.org/TR/WAI-WEBCONTENT/> (accessed March 2, 2008)

Web Standards Project (WaSP) Accessibility Task Force (ATF)

<http://webstandards.org/action/atf> (accessed March 2, 2008)