



Office of Human Rights & Equity Services

Creating Accessible Electronic Materials

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Table of Contents

INTRODUCTION	3
QUICK TIPS TO ENHANCE ACCESSIBILITY OF ELECTRONIC DOCUMENTS	4
I. Contrast	5
II. Colour Schemes	5
III. Point Size	8
IV. Font Family	8
V. Letter Spacing	9
VI. Leading	9
VII. Paper Finish	10
VIII. Cover Sheets and Title Pages	10
IX. Alternative Text (Alt-Text)	10
X. Tables and Charts	11
XI. Headings	13
XII. Images	13
XIII. Electronic Forms	14
DOCUMENT TYPE	14
I. Portable Document Format (PDF)	14
II. Rich Text Format (RTF)	15
III. PowerPoint Presentations	15
IV. HTML	17
V. Alternative Formats	18
TESTING WEBSITES FOR ACCESSIBILITY	18
i. Accessibility for All	18
ii. Tools	20
CONCLUSION	21
References	22
Appendix: Table of Alternative Formats	24

Introduction

This document is a user-friendly guide on how to navigate some of the basic accessibility features that are readily available for use by anyone using a computer. For example, font size and colour contrast are important variables that can enhance or inhibit accessibility of electronic materials. This document provides guidance on how to make electronic documents accessible to a diverse range of users.

A “Quick Tips Checklist” of the main points to consider when creating documents is provided in the next section for easy reference. The remainder of this manual provides further details on how to enhance accessibility in electronic documents.

Please note that the information presented in this document is a reference guide only. Adhering to the standards contained herein will not necessarily ensure that full accessibility has been achieved. Keep in mind that “one size does not fit all” and there are no hard or fast rules for accessibility.

The Information and Communications provisions in the Proposed Integrated Standard under the AODA sets out standards for the provision of accessible alternative formats. In the spirit of this Regulation it is strongly advised that you seek guidance and ask the intended user/reader for their accessibility preferences.

Quick Tips to Enhance Accessibility of Electronic Documents

Colours

- Printed materials are most readable in black and white. Other preferred combinations include yellow text on black background
- If using coloured text, restrict to items such as titles, headlines or highlighted material
- If using coloured background on presentation slides, opt for solid pastel colours
- If using different colours, photocopy the text in black and white to check the contrast is legible
- Upload document to <http://www.vischeck.com/vischeck/vischeckImage.php> to check document images and text

Font & Spacing

- Font size for text documents should be a minimum of 12 points. Font size should be 16 points for presentation slides
- Paragraph spacing on presentation slides should be 1.5
- Spacing between lines of text should be at least 25 to 30 percent of the point size
- Use sans-serif fonts such as Ariel, Tahoma or Geneva
- Use unjustified, ragged right, margin settings with even word spacing. Do not justify the text margin

General

- Add a text description to images (Alt-text)
- Use true headings (the table of contents function)
- Compress images in Word documents
- Use text-based documents such as Word as these are more accessible than PDF files

Making Text Accessible

I. Contrast

- Text is easier to read when there is a high degree of contrast between the text and the background. Therefore, ensuring that there is a strong colour contrast between the text and the background is important.
- For example, light (white or light yellow) text on a dark (black) background or dark letters on a light background are preferable.



II. Colour Schemes

- Printed material is most readable in black and white.
- If using coloured text, restrict to things like titles, headlines or highlighted materials.
- If using colours other than black and white, photocopy the text in black and white to assess the legibility of the colour combinations.
- If the text is clear, the contrast is good; if not, consider amending the combinations or the shades.

- It is Important to take note of the use of colour as persons with varying degrees of colour vision deficiencies¹ may not be able to identify the differences between colours. This could prevent them from accessing, or understanding the content presented.

- Colour vision deficiencies vary in severity and type; however in general terms, there are three main forms.
 - a) Protanopia is a severe and most common form of red-green colour-blindness, where red is perceived as beige.
 - b) People living with deuteranopia cannot see reds and greens. This is the least severe and most common form of colour-blindness.
 - c) Tritanopia is the least common form of colour-blindness and makes it difficult to distinguish between yellow and blue. Green and blue are often confused and yellow can appear to be pink.

- Differences in how colours may be viewed by persons with colour vision deficiency are illustrated below.² (Note the differences with views of red/green and blue/yellow).

¹ Colourblindness is a misleading term as it assumes persons with this condition can only see in black and white, which is untrue.

² <http://www.vischeck.com/examples/>

The World



View with Deuteranopia



View with Tritanopia



Colourful Hats



View with Deuteranopia



View with Protanopia



- These examples highlight the challenges one would face if items in a document were differentiated by colour.
- If colour differentiation cannot be avoided, use an asterisk (*) in front of the highlighted fields to indicate that they are distinguished by colour or add another feature to highlight differences.
- To check how an image or document may look to persons with Protanopia, Deuteranopia or Tritanopia, use the Vischeck website³ to upload the document to assess the suitability of the colour contrasts used.
- Websites can also be checked for the differences between foreground and background colours for text elements using the AccessColor Tool.⁴

³ <http://www.vischeck.com/vischeck/vischeckImage.php>

⁴ <http://www.accesskeys.org/tools/color-contrast.html>

III. Point Size

- Text in word processing documents should be a minimum of 12 points.
- Text on presentation slides should be larger - at least 16-18 points.

NB: These are suggested point sizes for general accessibility. If you know person(s) who require accessible texts it is better to ask for their preference.

IV. Font Family

- Avoid complicated, decorative or cursive fonts. If they must be used, reserve them for emphasis only.
- Traditional italic type fonts should not be used for continuous text for any group of readers.
- Serifed faces are regarded as more 'readable' in continuous text for regular reading.
- Standard serif or sans serif⁵ fonts with familiar and easily recognizable characters are best. Avoid serif fonts such as Times New Roman. Use common sans serif fonts such as Arial and Tahoma. Examples:

Roman typefaces are effective
Decorative typefaces are not as effective
Sans-serif typefaces are effective
Condensed typefaces are not as effective

⁵ Sans-serif fonts are those fonts that have no "serifs": the little hooks on the end of the letters. Examples include: Arial, Geneva, Helvetica, Lucida Sans, Trebuchet and Verdana

- Text set in capitals is much harder to read than normal-case continuous text. However, one or two words set in capitals do not create reading problems. Because they are bigger, capital letters are easier to see than lower-case letters, so may be suitable for labels.
- Headings should be clearly differentiated from the main text using a combination of size and space.

V. Letter Spacing

- Text with close letter spacing often presents difficulties for readers. Use unjustified, ragged right, text setting with even word spacing.
- Do not justify text as this creates uneven word spaces and makes the text harder to read.
- Where possible, spacing should be wide. Monospaced fonts⁶ rather than proportionally spaced fonts seem to be more legible for readers.

VI. Leading

- Leading is the amount of space between the lines of the text. This should be at least 25-30% of the point size.

⁶ Monospace fonts (Such as Courier or LetterGothic), or "fixed pitch" fonts, contain characters that all have the same character width, producing text that can be used to create forms, tabular material (data in columns or tables) or documents that require exact text line lengths. An example of a fixed pitch font is Courier 12 pitch, which is a 10-point font that will print at exactly 12 characters per inch. Retrieved on November 4, 2010 from <http://www.lowing.org/fonts/>

- Consider using '1.5 spacing' in presentation slides, reports and other text documents to ensure text is not cluttered.

Effective Leading	Not effective leading
Leading, or spacing between lines of text, should be at least 25 to 30 percent of the point size	Leading, or spacing between lines of text, should be at least 25 to 30 percent of the point size

VII. Paper Finish

- Use a matte or non-glossy finish to cut down on glare. Reduce distractions by avoiding watermarks or complicated background designs.

VIII. Cover Sheets and Title Pages

- Use distinctive colours, sizes and shapes on the covers of materials to make them easier to tell apart.

IX. Alternative Text (Alt-Text)⁷

- Alt-Text is a function that provides a text description of an image. This provides the reader with an alternative method of 'viewing' the information, contained therein.
- To add alt-text in Windows:
 - Right-click on the non-text object
 - Click on Format
 - Click on the Web tab and enter the alternate text for the object

⁷ Government of Michigan
http://www.michigan.gov/documents/dmb/How_to_Make_Your_PowerPt_Presentations_Accessible5_199082_7.pdf

- You should provide a description of the image, which clearly conveys what you want the user to get out of the image. If the graphic is purely decorative, you do not necessarily have to mention it.
- *Note to Mac users: Currently, there is no way to create alt text for an image in MS Office for Mac. This must be done in Office for Windows, or you must convert it to HTML and add the alt text manually.

X. Tables⁸ and Charts⁹

- Tables are very difficult to make accessible. To make sure your document is usable, consider using narrative to deliver information instead of a table. If you do use a table, try to describe its content in narrative detail.
- Complex charts or tables may not contain proper headings, captions or summaries, which may make it difficult for a screen reader to adequately convey the information. To avoid this, repeat the header row at the top of each page by:
 - Windows:
 - Select the table and click Table
 - Click Table Properties
 - Click Row tab
 - Click Repeat as Header Row at the top of each page
 - Mac users:
 - Select Table
 - Click Heading Rows Repeat

⁸ Government of Michigan
http://www.michigan.gov/documents/dmb/How_to_Make_Your_PowerPt_Presentations_Accessible5_199082_7.pdf

⁹ <http://www.ncdae.org/tools/factsheets/word.cfm>

- If a table has more than one row of headers, or it has a set of column headers, it is not possible to add proper headings.
- A screen reader may read a piece of clip art or a text box out of order. That is, the reading order and the visual order may be different.
- Select the toolbar button with the ¶ symbol. This should allow you to see special characters showing the layout of the page. With these formatting marks enabled, select an image or other object. An anchor should appear, showing you where the object appears in the reading order. If the anchor does not appear in the proper place, you can move it with your mouse.
- If you cannot find the ¶ button on your toolbar you can also enable this feature through the menu:
 - Windows:
 - Select Tools
 - Click Options the View tab or section
 - Under the Formatting Marks section, select the checkbox labeled “All”
 - Mac Users:
 - On Mac select Word
 - Click Preferences > View.
 - Under the Non-printing characters section select the checkbox labeled “All”
- Verify the reading order using a screen reader, if possible.

XI. Headings¹⁰

- The use of headings is extremely important for persons using screen readers as this provides structure and allows them to navigate different sections with greater ease.
- Only true headings and lists will convey semantic meaning to a screen reader user. To change the appearance of a heading:
 - Select Format
 - Click Styles and Formatting (Format > Style in Mac). This will change the appearance of all instances of a certain element (e.g. every Heading 1)
 - Create true bulleted or numbered lists

XII. Images

- Large files may make it difficult to download a file can be a challenge for all users. Reduce file size by importing correctly-sized images instead of resizing them in Word:
 - Compress a resized picture by selecting the image and choosing Format
 - Click Picture
 - Click the Compress button
- Add Alt-Text to images to provide an alternative method of 'viewing' the information.

¹⁰ <http://www.ncdae.org/tools/factsheets/word.cfm>

XIII. Electronic Forms

- Documents with forms that can be filled in on the screen (checkboxes, text fields etc.) may not be accessible to screen reader users and may not export correctly to other formats.
- If using online forms, make sure that the form elements have text descriptions. Verify that the form can be completed using common screen readers.

Document Type

I. Portable Document Format (PDF)

- Before discussing the accessibility of PDF files, it is important to distinguish between Adobe, Acrobat and PDF. Sometimes these terms are used interchangeably, but they are not the same.
 - Adobe is a company; they are the creators of Acrobat
 - Acrobat is a tool for creating, editing and viewing PDF files
 - PDF is a format or type of document. It stands for Portable Document Format. The PDF format was created by Adobe.
- Adobe PDF files are traditionally inaccessible to persons using screen readers.¹¹ Image PDF's are not accessible as they do not have text data.

¹¹ A screen reader is a software application that attempts to identify and interpret what is being displayed on the screen. This interpretation is then re-presented to the user with text-to-speech, sound icons, or a Braille output device. Screen readers are a form of assistive technology (AT)

- Newer versions of Acrobat (version 5 onwards) have been developed with accessibility in mind; however, much depends on the user preferences and the accessibility settings. Consequently, it is advisable to assume that PDF documents are not accessibility-friendly unless otherwise stated.

II. Rich Text Format (RTF)

- RTF is a document file format standard for text-based documents. Most word processors are able to read and write versions of RTF.
- Microsoft Word is the most commonly used word processor that employs RTF standards.
- RTF documents and word processing software such as Microsoft Word and iWork Pages are generally compatible for use with screen readers.

III. PowerPoint Presentations

- PowerPoint Presentations¹² are generally readable by screen readers.¹³ Below are some quick tips to help enhance accessibility for presentation slides.
 - Use clear and simple language. It is important to use punctuation at the end of each bulleted line so the screen reader knows where to pause or stop.

potentially useful to people who are blind, visually impaired, literate or learning disabled, often in combination with other AT, such as screen magnifiers

12 See

http://www.michigan.gov/documents/dmb/How_to_Make_Your_PowerPt_Presentations_Accessible5_199082_7.pdf

¹³ Sometimes PowerPoint presentations are not readable so it is best to check with the individual reader as to how best to present the information

- Choose a template with high contrast between the background and text. Printing a slide in black and white or uploading the document to the 'Check Accessibility by File' feature on the Web Accessibility Checker can help to assess the degree of contrast¹⁴. If using coloured backgrounds, use pastel colours that are in a solid block, not textured or graduated.¹⁵
- Headings should be relevant to the slide, with a minimal use of capitalization. Avoid underlining headings and italics.
- Use bullet points. Limited the number of bullets to no more than four per slide.
- All slides should be numbered in the bottom right hand corner in point size 14 if they are to be distributed as handouts.
- Animation should be used sparingly.
- Images should be clear and uncluttered. Text should never be overlaid across images. If images are essential to the content of the presentation, the speaker should describe the image.
- Non-text images, charts, tables, and graphics require alternate text (alt-text). Alt-text is text that is attached to the image but hidden from sight. This is typically used to provide a narrative description of the item for people who are blind and use screen readers. For example, the department logo might say "(department name) Logo" for the alt-text.

¹⁴ <http://www.achecker.ca/checker/index.php>

¹⁵ <http://www.lluk.org/documents/FS - Making Powerpoint Presentations Accessible.pdf>

- Slide transition should be wiped left to right, at medium speed. A sound should also indicate slide transition.
- For advanced PowerPoint presentations that use multimedia (such as streaming video), captioned text will be required. If some visual information presented is not described in audio, but is important for understanding the information, it should be described in the captioning.
- Text transcript of videos should always be made available.
- Items on a slide are read by a screen-reader in the order they are added to the slide. This is called the "object order." To check the object order, use the Tab key in the slide view. Each press of the Tab key selects the next item in sequence.

IV. HTML

- HTML stands for HyperText Markup Language and is used to build webpages.
- HTML is a type of computer language that is primarily used for files that are posted on the Internet. It is a simple programming language that describes how a set of text and images should be displayed to the viewer.
- Posting information online on a webpage's that is in HTML format is accessible to readers using screen readers.

V. Alternative Formats

- “Alternative formats” refers to making use of formats other than standard print to enable information to be accessible to a variety of readers.
- A table is appended to this document providing a brief definition of the type of alternative formats that are available from AERO (Alternative Education Resources for Ontario) and the resources and skill sets required to use them.¹⁶
- When providing text or images in large print, enlarging the document in its original electronic form is preferred. Enlarging documents by photocopying reduces the quality of the text and image.

Testing Websites for Accessibility

i. Accessibility for All

- Testing the accessibility of a website is not as simple as using a screen reader for a given website or document because different website users experience and use web pages in a variety of ways (Badeyes.com, 2010).
- For example, a sighted user tends to scan the content on the page “at a glance”. A sighted user’s gaze can jump from right to left, top to bottom, and back. Someone using screen-reading software gets to see the information in the order it appears on a page i.e. from the top of the page to the bottom.

¹⁶ AERO (Accessible Education Resources Ontario) under the Ontario Ministry of Education, In Partnership with the Ministry of Training, Colleges and Universities.

- The other issue to consider is that a site could be fully accessible to a screen-reader user but not at all accessible to other people as everyone has different accessibility requirements.
- The same principle of “one size does not fit all” applies equally to assessing the accessibility of electronic documents. Considering the intended user of documents will help in identifying the appropriate testing tools.
- The accessibility of electronic information is not simply an issue for web users with visual impairments. Individuals with a variety of disabilities are likely to encounter a number of barriers when accessing information electronically and on the Internet.
- Internet surfers who use a keyboard to navigate the web rather than a mouse or track pad may encounter problems if a website's navigation cannot be triggered using a keyboard; for example, persons with quadriplegia, for example, who may not be able to use a mouse and, therefore, may encounter such barriers.
- Persons who are Deaf may find information on websites inaccessible in the absence of real-time captioning or transcripts of online videos or podcasts. While the evolution of such technology is meant to broaden overall accessibility to information, the lack of basic alternatives renders this form of communication exclusionary.
- Persons with neurological impairments may also be prevented from accessing information online especially if websites have flashing or blinking elements. For persons living with a seizure disorder, some flashing patterns may trigger seizures, headaches or a migraine.

ii. Tools

- It is beyond the scope of this document to detail the technical aspects of website accessibility standards; however, there are some basic standards and tools that can be used to conduct a basic accessibility check.

-  Websites should adhere to the WCAG 2.0 accessibility guidelines. Compliant websites will bear this logo by the page author or content provider to indicate conformance with the standards
- ii. For a general test of a website's accessibility, enter the URL on the Wave¹⁷ Web accessibility evaluation tool or the Web Accessibility Checker¹⁸, which will show the original web page with embedded icons, and indicators that reveal the accessibility of that page. These websites can also be used to test document files and HTML codes.
- iii. To check the colour combination of a website, enter the URL on the Vischeck website¹⁹ and it will provide a simulation of how a person with Protanopia, Deuteranopia or Tritanopia may view the colours on the website.

¹⁷ <http://wave.webaim.org/>

¹⁸ <http://www.achecker.ca/checker/index.php>

¹⁹ <http://www.vischeck.com/vischeck/vischeckURL.php>

Conclusion

We hope the information contained within this document is helpful to you as you strive to ensure enhanced accessibility to all persons and, in particular, to persons with disabilities. Please do not hesitate to contact us should you have any additional suggestions to improve the accessibility features of electronic materials.

References

ATRC Web Accessibility Checker

<http://www.achecker.ca/checker/index.php>

Condensed Typefaces

<http://www.fonts.com/AboutFonts/Articles/fyti/CondensedTypefaces.htm>

CNIB: Clear Print Accessibility Guidelines. Toronto

How to Make Your PowerPoint Presentations Accessible

http://www.michigan.gov/documents/dmb/How_to_Make_Your_PowerPt_Presentations_Accessible5_199082_7.pdf

Lifelong Learning UK

http://www.lluk.org/documents/FS_-_Making_Powerpoint_Presentations_Accessible.pdf

Lighthouse International, Making Text Legible, Designing for People with Partial Sight

<http://www.lighthouse.org/accessibility/design/accessible-print-design/making-text-legible>

Monospace/Fixed Width Programmer's Fonts

<http://www.lowing.org/fonts/>

National Centre on Disability and Access to Education

<http://www.ncdae.org/tools/factsheets/word.cfm>

Ontario Ministry of Education, In Partnership with the Ministry of Training,
Colleges and Universities

<http://aero.psbnet.ca/aero/Public/AlternatFormat.aspx>

Should Sighted Developers Use Screen Readers to Test Accessibility?

<http://www.badeyes.com/?p=249>

Text Matters: Typography for visually impaired users:

http://www.textmatters.com/our_interests/guidelines/typog_visual_impaired/

Vischeck <http://www.vischeck.com/vischeck/vischeckImage.php>

Web Accessibility: AccessColor Tool

<http://www.accesskeys.org/tools/color-contrast.html>

WebAim Web Accessibility in Mind:

<http://webaim.org/techniques/fonts/>

<http://wave.webaim.org/>

<http://webaim.org/resources/reader/>