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Technical Accessibility

Download PPT slides here:

<https://bit.ly/technicalaccessibility>

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Topics

- Definitions of disability and accessibility
- Assistive technology
- Web Content Accessibility Guidelines (WCAG)
- How to make content accessible
- Resources



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Ways of thinking about disability

Medical model

Disability as an individual problem, affliction, or deficit that needs a cure or accommodation.

Social model

Disability as a spectrum that can affect different people in different ways depending on their context, environment, and the tools they have access to, and is a product of history and culture.

What is "accessibility"

Accessibility is what happens when we design and create resources, experiences, tools, and spaces that make space for and support the diversity of our bodies and minds and centres the needs of people with disabilities to ensure they can engage in the ways that work best for them.



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Assistive technology

"Any item, piece of equipment, software program, or product system that is used to increase, maintain, or improve the functional capabilities of persons with disabilities." ([Assistive Technology Industry Association](#))

- Can be low to high tech
- Can be designed specifically for an individual or very common

Screen readers

Screen readers will read aloud content on the screen, including structure and navigational elements, and allow someone to navigate using only their keyboard.

Examples: NVDA, JAWS, VoiceOver

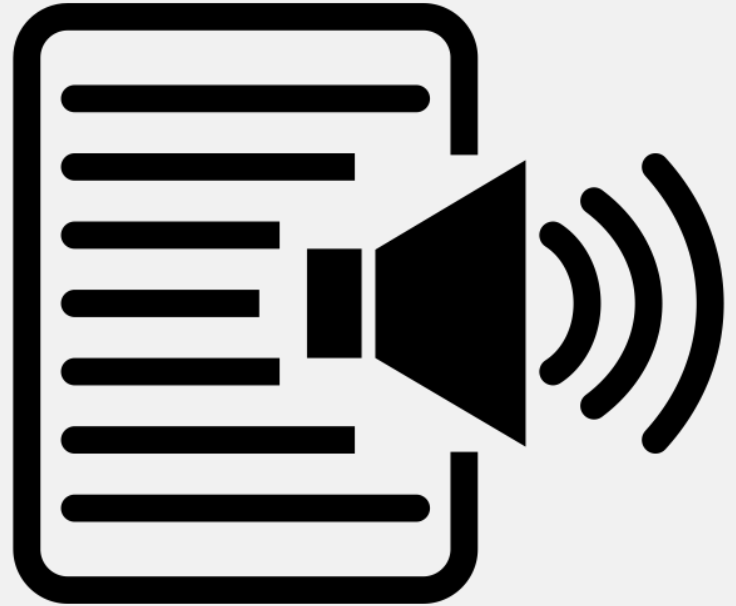


["Blind student working on laptop"](#) by [Access Matters](#). [CC BY-NC-SA 2.0](#).

Text-to-speech

Technology that will read text aloud.

Available as separate software, but also built into many tools like Adobe Reader, Microsoft Word, and internet browsers.



"[Text to speech](#)" icon by [Trevor Dsouza](#). [CC BY 3.0](#).

Zoom text

- Software that allows someone to enlarge content on the screen much beyond what is usually possible. It is often combined with text-to-speech.



“[Magnifying Glass](#)” is [CC0 Public Domain](#).



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Technical Accessibility

Web Content Accessibility Guidelines (WCAG)

- Perceivable
- Operable
- Understandable
- Robust

Principle 1: Perceivable

Information and user interface components must be presented to users in ways they can perceive.



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Principle 2: Operable

User interface components and navigation must be operable.



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Principle 3: Understandable

Information and the operation of user interface must be understandable.



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Structure and Navigation

- Headings
- Links
- Tables

Organizing Content

- Content is organized under headings and subheadings
- Headings and subheadings are used sequentially

<h1>Chapter 1: Introduction to Sociology</h1>

<h2>Introduction</h2>

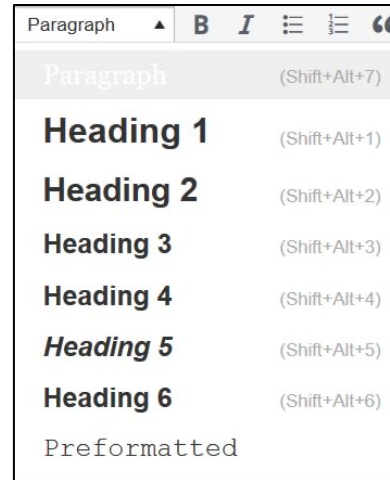
Concerts, sporting matches and games, and political rallies can have...

<h2>1.1 What is Sociology</h2>

A dictionary defines sociology as the systematic study of...

<h3>What are Society and Culture?</h3>

Sociologists study all aspects and levels of society...





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Links

- The link text describes the link destination when taken out of a sentence
- Links that open files include the file type in the link text (such as “[PDF]”)
- Links do not open in new windows or tabs (unless a text reference is provided)
- The web address is available for those using a print copy



Poll: Which link is accessible?

1. For more information on web accessibility, [click here](#).
2. For more information on web accessibility, refer to the [Accessibility Toolkit](#).
3. For more information on web accessibility, go to <https://opentextbc.ca/accessibilitytoolkit>
4. The [BC Open Textbook Review Template \[Word File\]](#) provides guidelines for completing an open textbook review.



Answer:
2 and 4 are
accessible

1. For more information on web accessibility, [click here](#).
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Data Tables

- Tables include a caption.
- Tables include row and/or column headers.
- Row and column headers have the correct scope assigned.
- Tables do not have merged or split cells.
- Tables have adequate cell padding.

Table 15.1 One way scholars have categorized religions is by classifying what or who they hold to be divine

Religious Classification		What/Who Is Devine	Example
Polytheism		Multiple gods	Hinduism, Ancient Greeks and Romans
Monotheism		Single god	Judaism, Islam, Christianity
Atheism		No deities	Atheism, Buddhism, Taoism
Animism	Nonhuman beings (animals, plants, natural workd)		Indigenous nature worship, Shinto

“[Religious Classification table](#)” © William Little. CC BY.



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Multimedia

- Audio
- Video



Audio

- Include a transcript

Examples: Podcasts, interviews, recorded lectures

A transcript provides a text equivalent of audio content. It includes

- Speaker name(s)
- Headings and subheadings
- All relevant audio content, including
 - All speech content
 - Relevant descriptions of speech
 - Descriptions of relevant non-speech audio



Video

- All relevant visual information is conveyed via an audio description or transcript
- All relevant audio information is conveyed via captions or a transcript

Captions: Text that is synchronized with audio in a video.

Audio descriptions: Audio descriptions of visual content shown in the video that isn't conveyed through audio

Transcript: Includes the same information as with audio transcripts, but may also include relevant description of visual content



Poll: Who might want captions on videos?

1. People who are Deaf or hard of hearing.
2. People with auditory processing difficulties.
3. People for whom the language of the video is not their first language.
4. People who like crunchy, loud snacks.
5. All of the above.



Answer: Who might want captions on videos?

1. People who are Deaf or hard of hearing.
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Visuals

- Visual cues
- Colour contrast
- Decorative and informational images



Visual Cues

- Colour
- Icons
- Text style

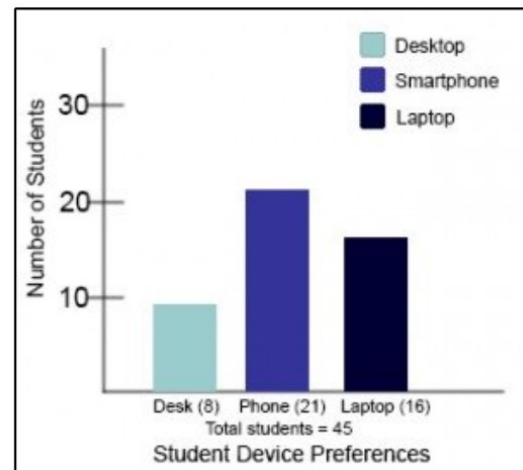
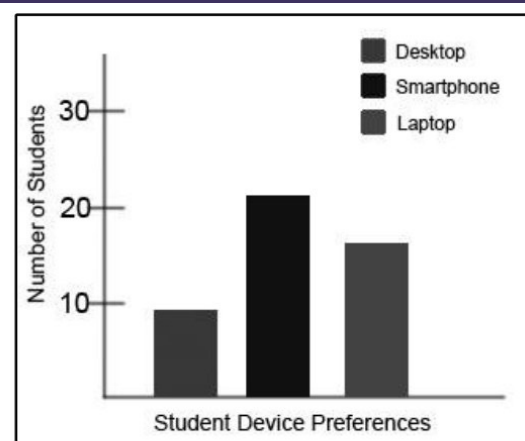
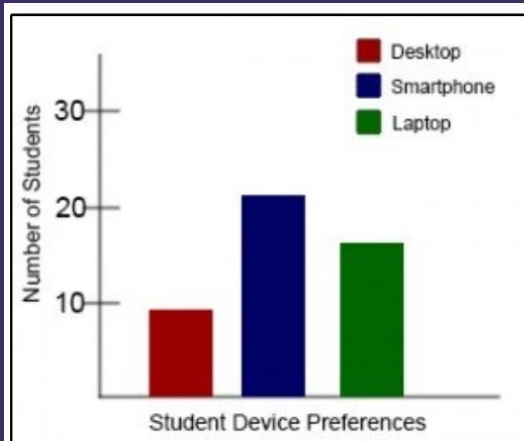
- Use visual cues consistently throughout the resource.
- Visual elements that are used to convey information are also accessible in non-visual ways.
- Colour alone is not used to convey information.



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Never use colour alone to convey information





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Contrast Checker

<https://contrastchecker.com/>



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Poll: Is this
colour
combination
accessible?

Is this colour
combination accessible
for regular size text?

Foreground: 2f9700

Background: ffffff

Answer: Not Accessible

Regular size text:

- AA, AAA: FAILS

Large text:

- AA: PASS
- AAA: FAILS

Contrast: 3.79:1

CONTRAST CHECKER

COURTESY OF ACART COMMUNICATIONS

COLOR SELECTION ?

SEE GRAYSCALE | SHARE SAMPLE | RESET

<p>FOREGROUND</p> <p>2F9700</p>	<p>Sample</p> <p>12px</p> <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy eiusmod rom tempor incididunt ut labore et dolore magna aliquam erat volutpat.</p>
<p>BACKGROUND</p> <p>FFFFFF</p>	<p>Sample</p> <p>18px</p> <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit</p>

GET FROM IMAGE | RATIO: **3.79** | + ADD TO HISTORY

AA
✗

AAA
✗

AA18pt
✓

AAA18pt
✗

COLORS
PASS
✓

COLOR DIFF
567
✓



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Images

A decorative image does not need a text description.

- Is primarily for design
- Does not convey content (or are already described in surrounding text)

A functional image contains content that requires a text description.

- Alt text
- Surrounding text or caption
- Long description



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A bag of potato chips weighs 48 grams.
How many milligrams is that?

Decorative
Image

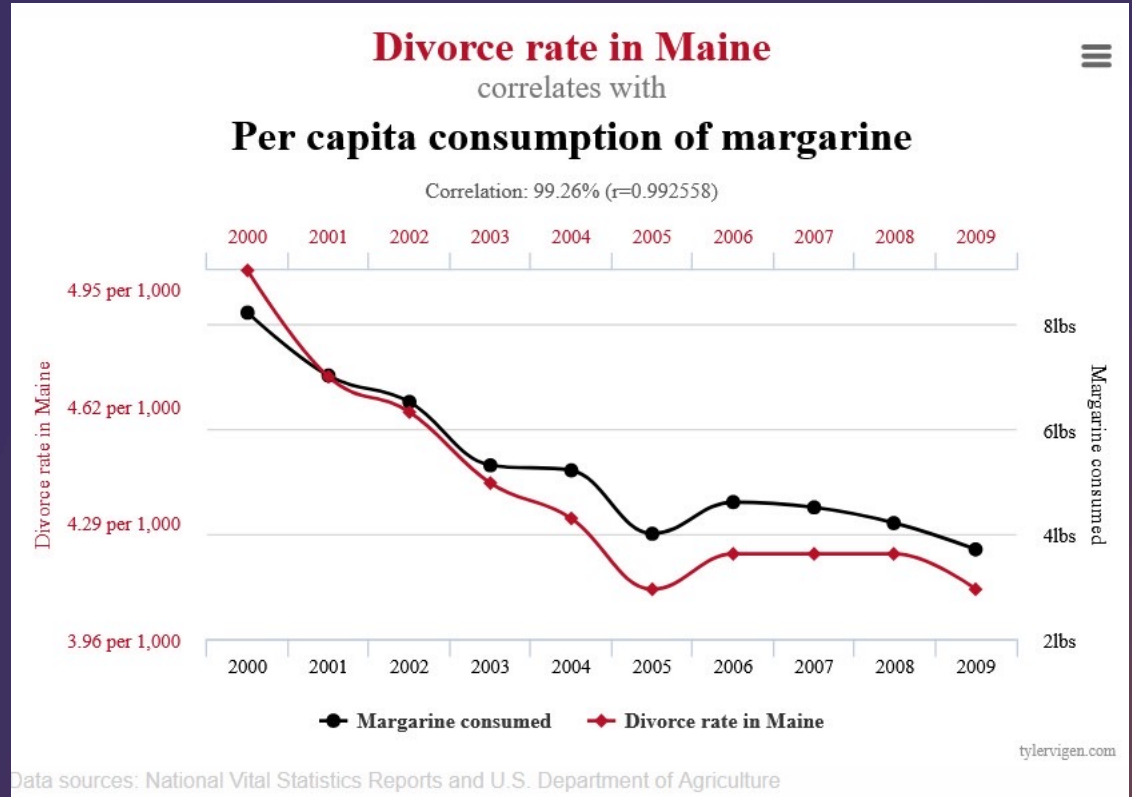




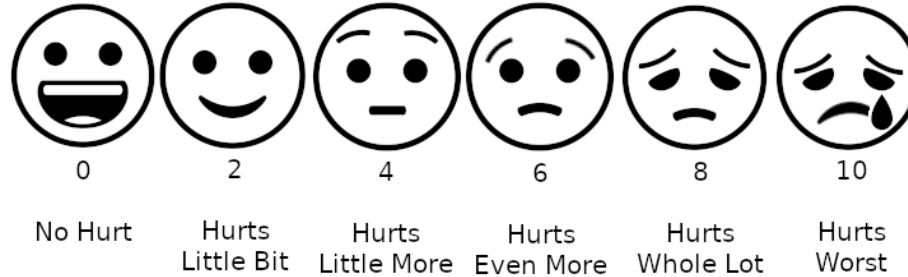
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Functional Image



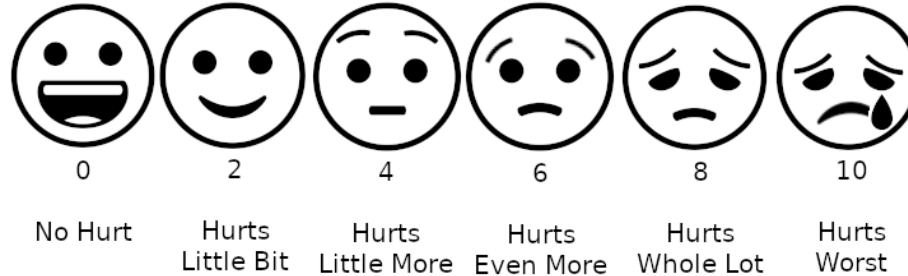
Poll: Which image description is best?



1. The Wong-Baker Faces Pain-rating scale.
2. A collection of happy, neutral, and sad cartoon faces with numbers 0-10 underneath.
3. A scale that uses cartoon faces to illustrate the different levels of pain that correspond to a numbered scale from 0 to 10. Zero is smiling, 2 is a small smile, 4 is a straight face, 6 is a slightly sad face, 8 is a big sad face, and 10 is a bigger sad face that is crying.

"[Wong-Baker scale with emoji](#)" by [Lord Belbury](#). CC BY-SA 4.0.

Answer: Which image description is best?



1. The Wong-Baker Faces Pain-rating scale.
2. A collection of happy, neutral, and sad cartoon faces with numbers 0-10 underneath.
3. A scale that uses cartoon faces to illustrate the different levels of pain that correspond to a numbered scale from 0 to 10. Zero is smiling, 2 is a small smile, 4 is a straight face, 6 is a slightly sad face, 8 is a big sad face, and 10 is a bigger sad face that is crying.



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Alt Text

A short text description of an image that appears in the alt attribute of the image tag.

- Will not appear visually
- Can be accessed by text-to-speech technology (including screen readers)
- Should be less than 125 characters
- Does not need to include “Image of..”



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Surrounding Text or Caption



Figure 1. A Stó:lō woman,
weaving baskets, n.d.



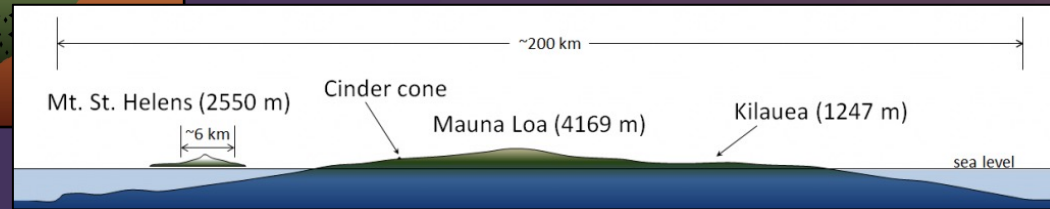
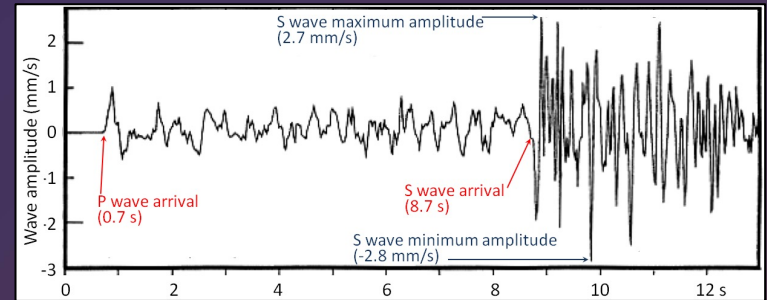
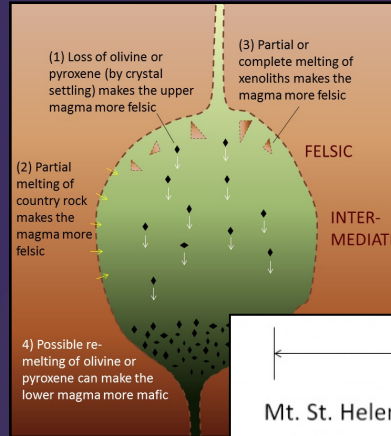
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Examples

pie charts, bar charts, line graphs, flow charts, diagrams, illustrations, math graphs, and maps

Long Descriptions for Complex Images



Magma Chambers, P and S Waves, and Volcano Size © Steven Earle. CC BY



Tips for Writing Image Descriptions

What to describe

- Content/purpose of the image.
- Will depend on audience/context

How to describe

- Be objective
- Be concise.
- If image is complex, go from general to specific



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x or × or ·

- or – or —

Symbols

÷ or /

1/2 or 1/2



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Formulas: LaTeX and MathJax

MathJax

This is a display engine that translates mathematical markup (like MathML or LaTeX) into accessible, high-resolution equations.

This allows the equations to be rendered **aurally** or **visually**.



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$$m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$$

Other Ways of Making Math Accessible

Text description:

m equals begin fraction m sub 0 over begin square root 1 minus begin fraction v squared over c squared end fraction end square root end fraction



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Resources for Describing Images

- [Accessibility Toolkit](#) from BCcampus
- [Complex Images for All Learners](#)
[\[PDF\]](#) by Supada Amornchat

Testing for Accessibility

- Automated testing: Using accessibility checkers
- Manual testing: Testing yourself
- User testing: Testing with disabled students



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WAVE

(Web Accessibility Evaluation Tool)

wave.webaim.org/

The screenshot shows the WAVE web accessibility evaluation tool interface. At the top, there is a navigation menu with the following items: Site-wide WAVE Tools, Browser Extensions, API, Help, About, Terms of Use, and Feedback. Below the navigation menu is the WAVE logo, which consists of a blue circle containing a white wave-like shape, followed by the text "WAVE" in a large, bold, sans-serif font. Underneath the logo is the text "web accessibility evaluation tool" in a smaller, lowercase, sans-serif font. Below this text is a text input field with the label "Web page address:" and a right-pointing arrow button.



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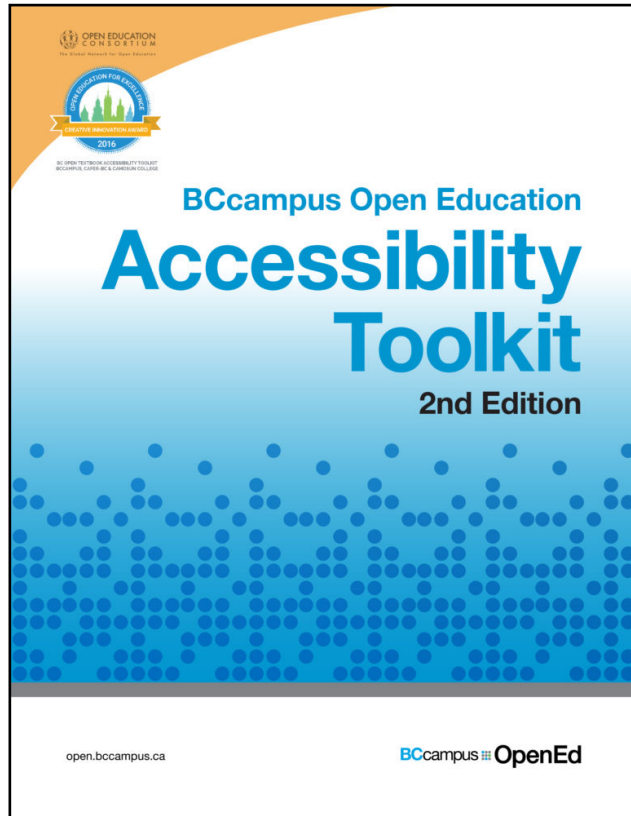
Accessibility Checklists

Strengths

- Easy to understand and follow
- Highlight the most important technical considerations to make sure students with disabilities can access the material

Weaknesses

- Accessibility as something that we can go back and fix later
- Do not ensure good design
- Do not account for the multiple formats of OER
- Students face challenges not addressed in standard accessibility checklists
- Does not ensure equal access to learning outcomes



Accessibility Toolkit

<https://opentextbc.ca/accessibilitytoolkit>

- Information about how to create accessible educational resources
- Accessibility checklists
- Activities
- Webinars on Inclusive Design

OER Production Series Webinars

- Find, Use, and Share – May 3
- Technical Accessibility – May 10
- Introduction to Pressbooks – May 17
- Advanced Pressbooks – May 26
- UDL and Open Educational Resources – May 31

Register at <https://bccampus.ca/events/>



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Questions?

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