BCcampus
Learning. Doing. Leading.

How to Create Inclusive and Accessible OER

Josie Gray
Advisor, Inclusive Design and OER Collections
BCcampus
josie.gray@bccampus.ca
Twitter: @josiea_g

Slides and additional resources: bit.ly/UBC-INCD

March 5, 2020

Unless otherwise noted, this work is released under a CC BY 4.0 Licence.
Feel free to use, modify, or distribute any or all of this presentation with attribution.

BCcampus
Learning. Doing. Leading.

Open educational resources are…

“Freely accessible online.”

Agenda

- Technical Accessibility
  - Web Content Accessibility Guidelines
  - WCAG in educational resources
- Beyond Technical Accessibility
  - UDL: Multiple modalities, multiple formats
  - Inclusive design
- Resources

BCcampus
Learning. Doing. Leading.

Technical Accessibility

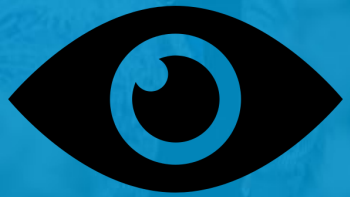
Web Content Accessibility Guidelines (WCAG)

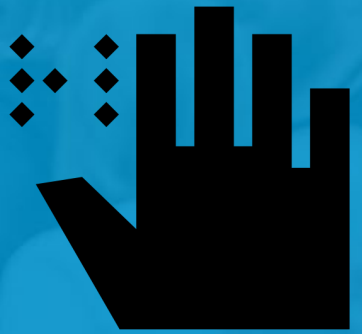
- Perceivable
- Operable
- Understandable
- Robust

BCcampus
Learning. Doing. Leading.

Principle 1: Perceivable

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





BCcampus
Learning. Doing. Leading.

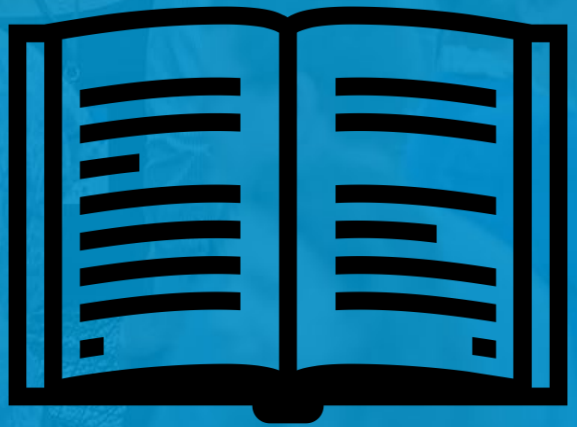
Principle 2: Operable

User interface components and navigation must be operable.

BCcampus
Learning. Doing. Leading.

Principle 3: Understandable

Information and the operation of user interface must be understandable.



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>

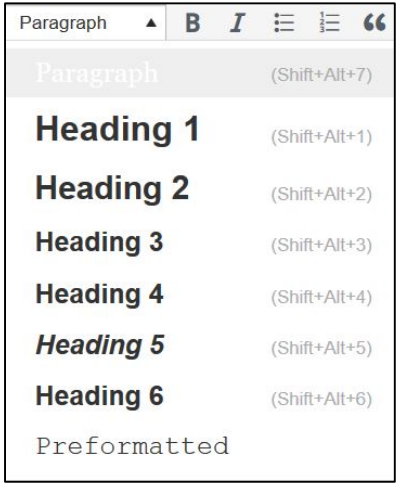
Concerts, sporting matches and games, and political rallies can have…

<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…



Links

- ❑ The link text makes sense out of context
- ❑ 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

Not accessible

For more information on web accessibility, click here.

Not accessible

For more information on web accessibility, go to https://opentextbc.ca/accessibilitytoolkit/.

Accessible

For more information on web accessibility, refer to the *Accessibility Toolkit*.

Accessible

For more information on web accessibility, refer to the *Accessibility Toolkit* [New Tab].

Accessible

The BC Open Textbook Review Template [Word File] provides guidelines for completing an open textbook review.

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.

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

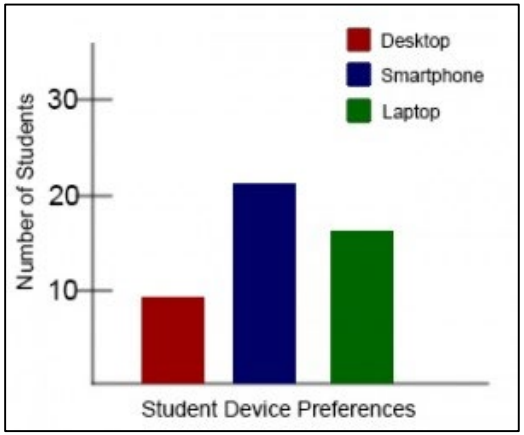
Captions: Text that is synchronized with audio in a video.

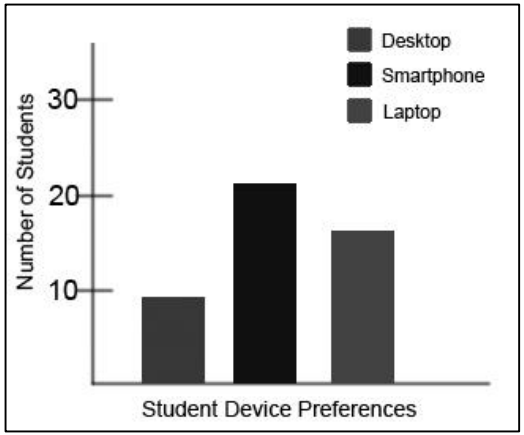
Audio descriptions: Audio descriptions of visual content shown in the video that isn't conveyed through audio

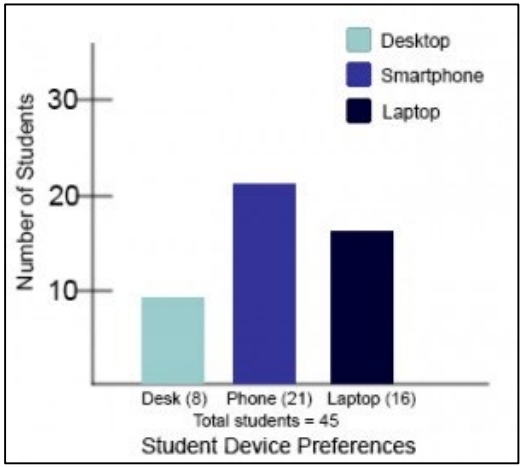
Transcript: Includes the same information as with audio transcripts, but may also include relevant description of visual content

Colour and Colour Contrast

- ❑ Information is not conveyed by colour alone
- ❑ There is sufficient colour contrast between foreground and background







"Student Device Preferences Graphs" by BCcampus. © CC BY

BCcampus
Learning. Doing. Leading.

Contrast Checker

https://contrastchecker.com/

Images

- ❑ Images that convey information include alternative text (alt text) descriptions of the image's content or function.
- ❑ Images that are purely decorative do not have alt text
- ❑ Graphs, charts, and maps include contextual or supporting details in the text surrounding the image.
- ❑ Images do not rely on colour to convey information.

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

Text Descriptions

What to describe

- Content/purpose of the image
- Main focus of the image
- May depend on audience/context

How to describe

- Clear, concise, and accurate
- Go from general to specific
- Use words rather than symbols when writing math or scientific expressions
- Who? What? Where? When? Why?

Adapted from © Supada Amornchat. Complex Images for All Learners [PDF]. CC BY-NC-SA.

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..”

“WFE003: Jacob” © Rosenfeld Media. CC BY

Surrounding Text or Caption

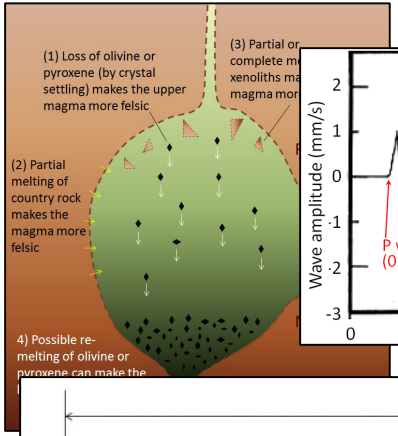
Figure 2.3 In 1871, the newcomer population in B.C. was still outnumbered by Aboriginal people who were, nevertheless, being hustled onto reserves and mostly without treaties. A Stó:lō woman, weaving baskets, n.d.

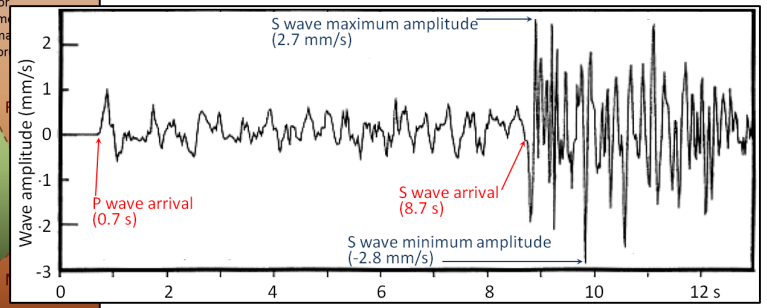
Stó:lō woman with a cedar basket by Royal British Columbia Museum (PN996). Public Domain. Image caption © John Belshaw. CC BY.

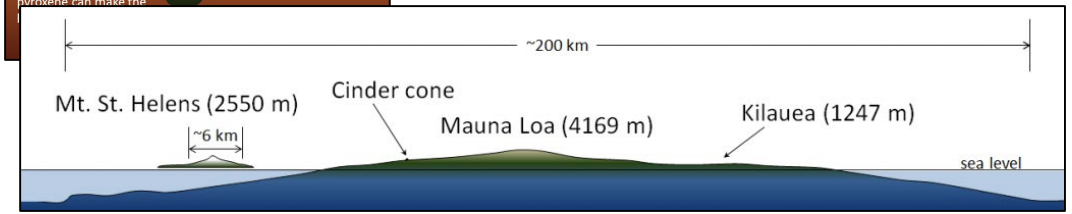
Long Descriptions for Complex Images

Examples

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

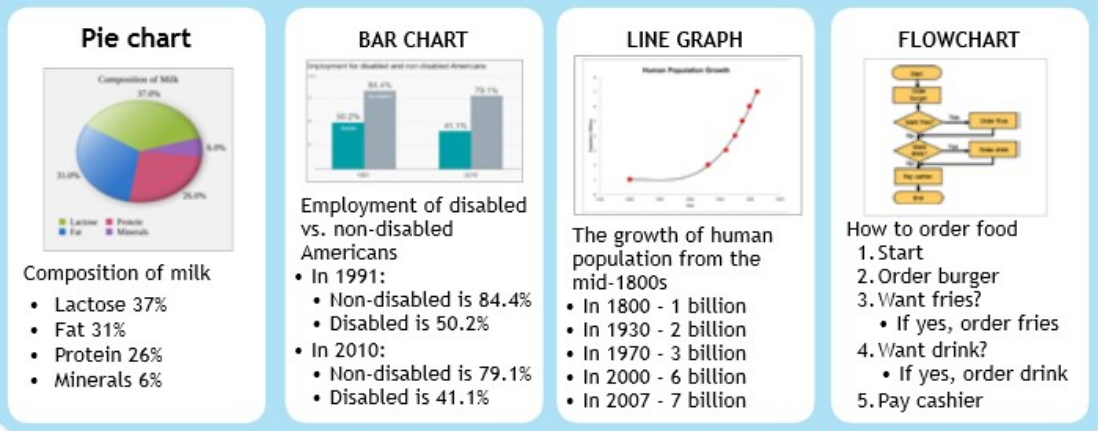






Magma Chambers, P and S Waves, and Volcano Size © Steven Earle. CC BY

Lists



Bulleted and numbered lists can be used to present information found in

- Pie charts
- Bar charts
- Line graphs
- Flow charts

Adapted from © Supada Amornchat. Complex Images for All Learners [PDF]. CC BY-NC-SA.

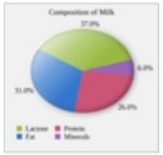
Data Tables

Data tables can be used to present information found in

- Complex tables
- Bar charts
- Line graphs
- Pie charts

PIE CHART

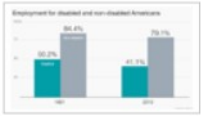
List the numbers from smallest to largest.



Composition	%
Minerals	6
Protein	26
Fat	31
Lactose	37

BAR CHART

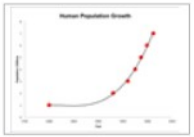
Briefly describe the chart & a summary, and provide title and axis labels.



Year	Non-disabled	Disabled
1991	84.4%	50.2%
2010	79.1%	41.1%

LINE GRAPH

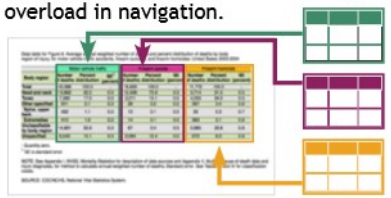
List the numbers from earliest to latest year.



Year	Population
1800	1 billion
1930	2 billion
1970	3 billion
2007	7 billion

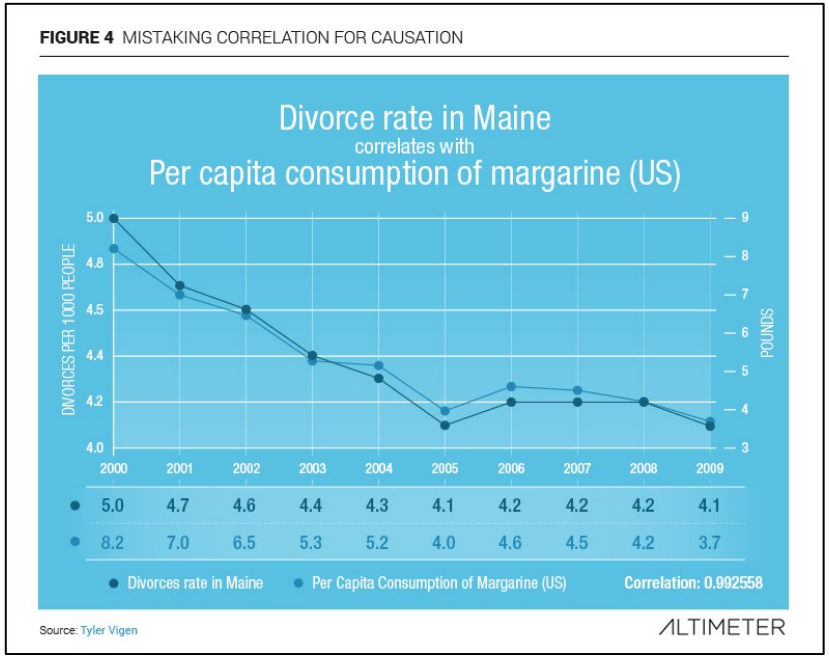
COMPLEX TABLE

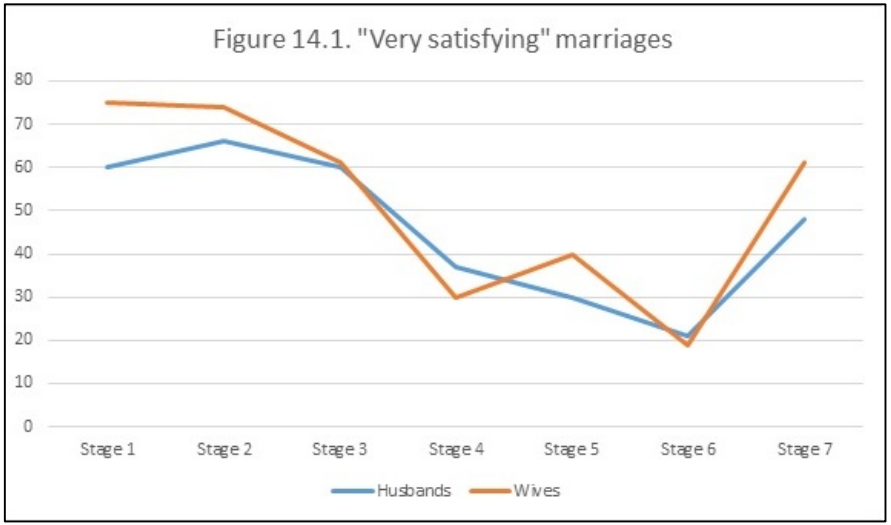
Data separated into 3 tables aids cognitive overload in navigation.



Adapted from © Supada Amornchat. Complex Images for All Learners [PDF]. CC BY-NC-SA.

How would you describe these images?





"Mistaking Correlation for Causation" by Altimeter. © CC BY-NC-SA
"Figure 14.1" © William Little. Based on data from Lupri and Frideres, 1981. CC BY.

Symbols

X or × or ·

- or − or —

÷ or /

½ or 1/2

Formulas: MathJax

- ❑ Formulas have been created using MathML.

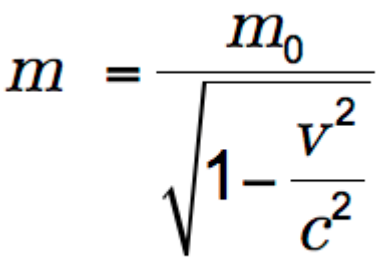
MathJax

This 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**.

Formulas: Images with Alt Text

- Formulas are images with alternative text descriptions if MathML is not an option.



Alternative Text:

m equals begin fraction m sub 0 over begin square root 1 minus begin fraction v sup 2 over c sup 2 end fraction end square root end fraction

WAVE
(Web Accessibility Evaluation Tool)

https://wave.webaim.org/

BCcampus
Learning. Doing. Leading.

Beyond Technical Accessibility

- Limitations of accessibility checklists
- Universal Design for Learning (UDL)
- Inclusive design
- Adopting accessible practices

Accessibility Checklists

Strengths

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

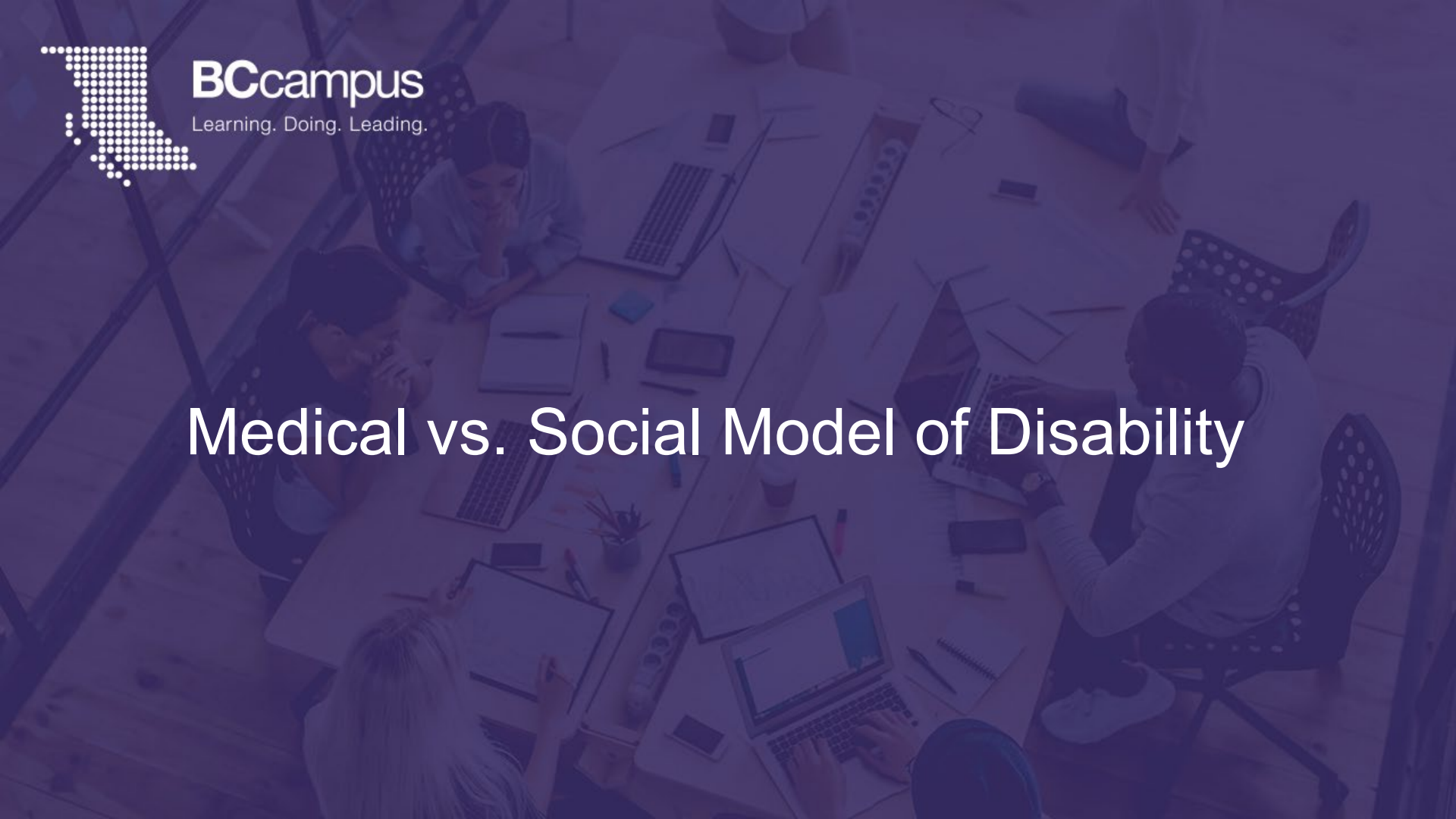
Weaknesses

- 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

BCcampus
Learning. Doing. Leading.

What is an average student?

The classroom, “far from neutral, is constructed for a mythical, “able-bodied,” neurotypical norm that neither reflects nor accommodates the wide range of diverse learners within it, regardless of whether these learners have been diagnosed with a disability” (Wilson, 2017).



Medical vs. Social Model of Disability

BCcampus
Learning. Doing. Leading.

What else affects accessibility?

- **Day-to-day life**
- **Digital literacy**
- **Access to technology**
- **Structure of information**
- **Presentation of information**

Universal Design for Learning (UDL)

http://udlguidelines.cast.org/

Provide multiple means of

- **Engagement**
- **Representation**
- **Action and Expression**

What might multiple means of representation look like in OER?

- Incorporating multiple modalities (video, audio, interactive activities)
- Making resources available in multiple formats (PDF, HTML, EPUB)

BCcampus
Learning. Doing. Leading.

Inclusive Design

"Design that considers the full range of human diversity with respect to ability, language, culture, gender, age, and other forms of human difference."

— Inclusive Design Research Centre

"Inclusive Design Dimensions" by the Inclusive Design Research Centre. CC BY.

BCcampus
Learning. Doing. Leading.

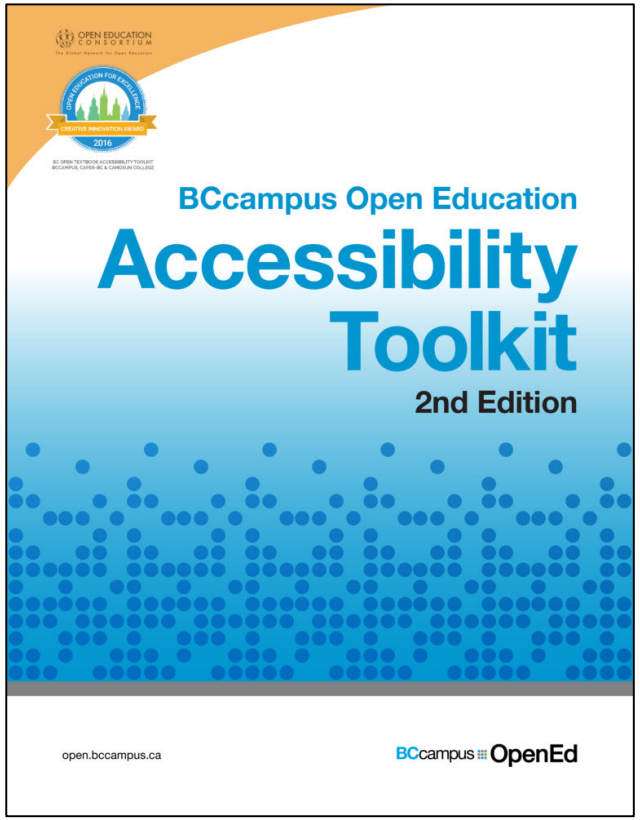
Adopting Accessible Practices

How can you build accessibility considerations into the creation process?

What are the different formats that you can make available?

How can you empower the students using the resource to take advantage of the features and options available?

How can you collect and encourage student feedback and leverage the diverse needs of students to design better?



Accessibility Toolkit

https://opentextbc.ca/accessibilitytoolkit

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

Accessibility Toolkit cover © BCcampus. CC BY

BCcampus
Learning. Doing. Leading.

Questions?

Download the slides and list of resources from the following link: bit.ly/UBC-INCD

Unless otherwise noted, this work is released under a CC BY 4.0 Licence.
Feel free to use, modify, or distribute any or all of this presentation with attribution.

References

Amornchat, S. (n.d.). Complex images for all learners: A guide to making visual content accessible [PDF]. Retrieved from https://www.lsu.edu/accessibility/training/complex-images.pdf

CAST. (2018). Universal Design for Learning Guidelines version 2.2. Retrieved from http://udlguidelines.cast.org

Coolidge, A., Doner, S., Robertson, T., Gray, J. (2018). *Accessibility Toolkit – 2nd Edition*. Victoria, B.C.: BCcampus. https://opentextbc.ca/accessibilitytoolkit/

Inclusive Design Research Centre. (n.d.). What is inclusive design? Retrieved from https://idrc.ocadu.ca/about-the-idrc

Kirkpatrick, A., O Connor, J., Campbell, A., & Cooper, M. (Eds.) (June 5, 2018). Web Content Accessibility Guidelines (WCAG) 2.1. *WC3*. https://www.w3.org/TR/WCAG21/

Wilson, J. D. (2017). Reimagining disability and inclusive education through universal design for learning. *Disability Studies Quarterly, 37*(2). http://dx.doi.org/10.18061/dsq.v37i2.5417