Applying Universal Design for Learning to OER

Josie Gray (she/her)
BCcampus
jgray@bccampus.ca
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bit.ly/beyondaccessibility

Session Topics

- Review of first session
- Social model of disability
- Universal design for learning (UDL)
- Multimodality and multiple formats
- Accessible math
- Image descriptions

Review: Technical Accessibility

- Assistive technologies
- Web Content Accessibility Guidelines (WCAG)
- Specific accessibility guidelines for different types of content

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

Medical Model vs. Social Model of 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 the result of these different models?

Medical Model:

- Student must request accommodations
- Instructor does not make permanent changes to their teaching
- Only the student who made the request receives the accommodation

Social Model:

- The designer works to reduce/eliminate barriers from the beginning
- Assumption that students are diverse and have a variety of access needs and preferences

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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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).

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What else affects accessibility?

- **Day-to-day life**
- **Digital literacy**
- **Access to technology**

Universal Design for Learning (UDL)

Provide multiple means of

- Engagement (WHY)
- Representation (WHAT)
- Action and Expression (HOW)

Multiple Means of Representation

Guidelines:

1. Perception
2. Language and symbols
3. Comprehension

Guideline 1: Perception

Interact with flexible content that doesn't depend on a single sense like sight, hearing, movement, or touch.

1. Offer ways of customizing the display of information
2. Offer alternatives for auditory information
3. Offer alternatives for visual information

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

Provide Multiple Formals

Web, HTML, PDF, EPUB

Multimodality

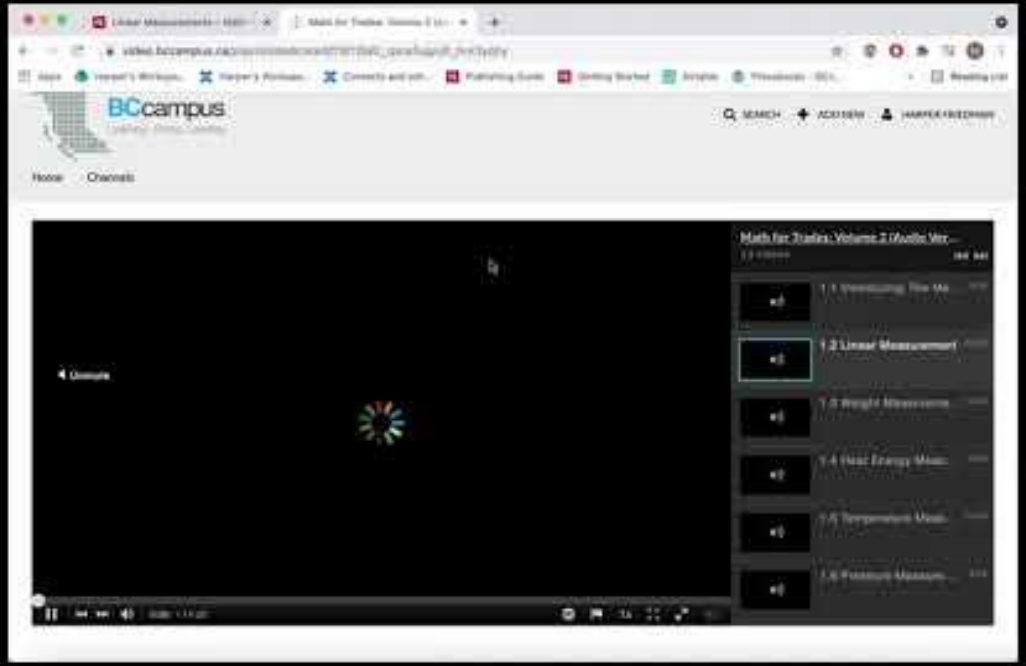
Combining text, images, video, audio, and interactivity to give students multiple ways to engage with content.

Examples:

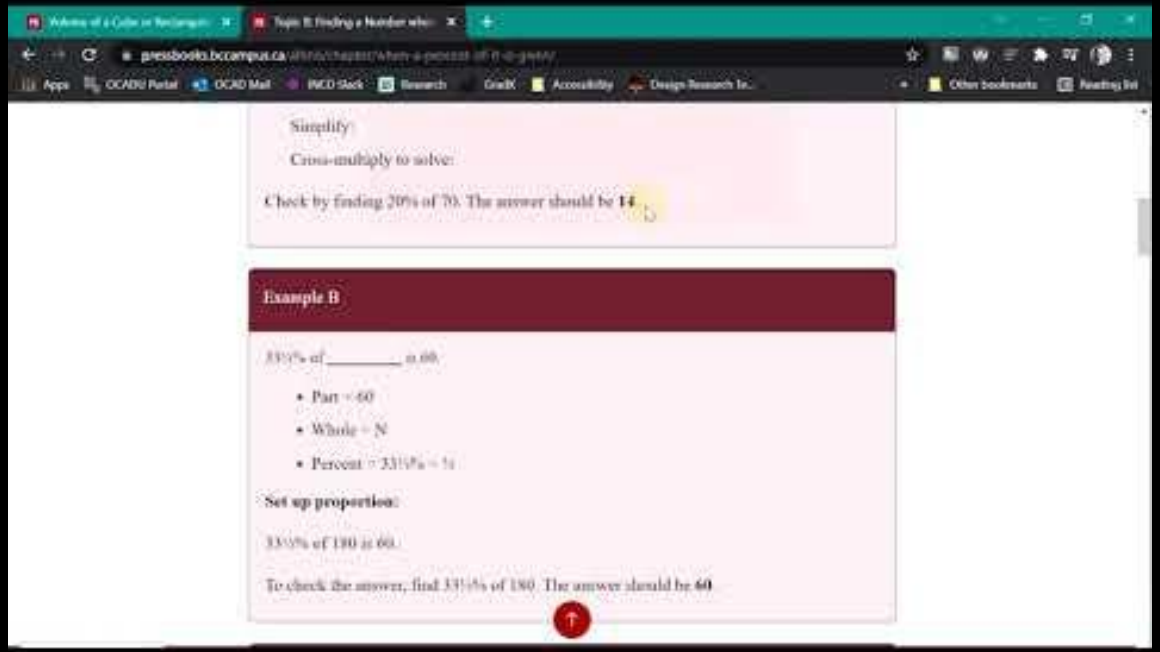
- Text-to-speech
- Audiobooks
- Videos
- H5P

Text-to-speech

Audio books



MathJax - Zoom



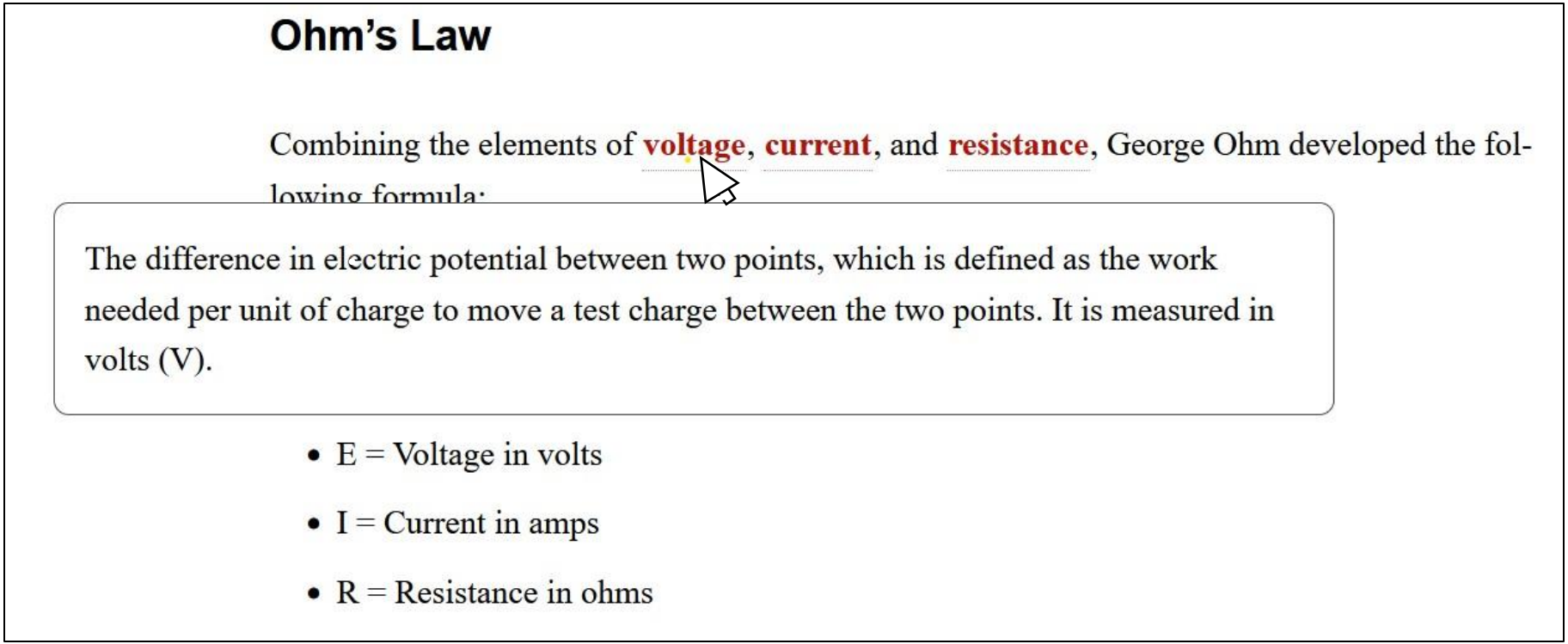
Guideline 2: Language and Symbols

Communicate through languages that create a shared understanding.

1. Clarify vocabulary and symbols
2. Clarify syntax and structure
3. Support decoding of text, mathematical notation, and symbols
4. Promote understanding across languages
5. Illustrate through multiple media

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

Glossary

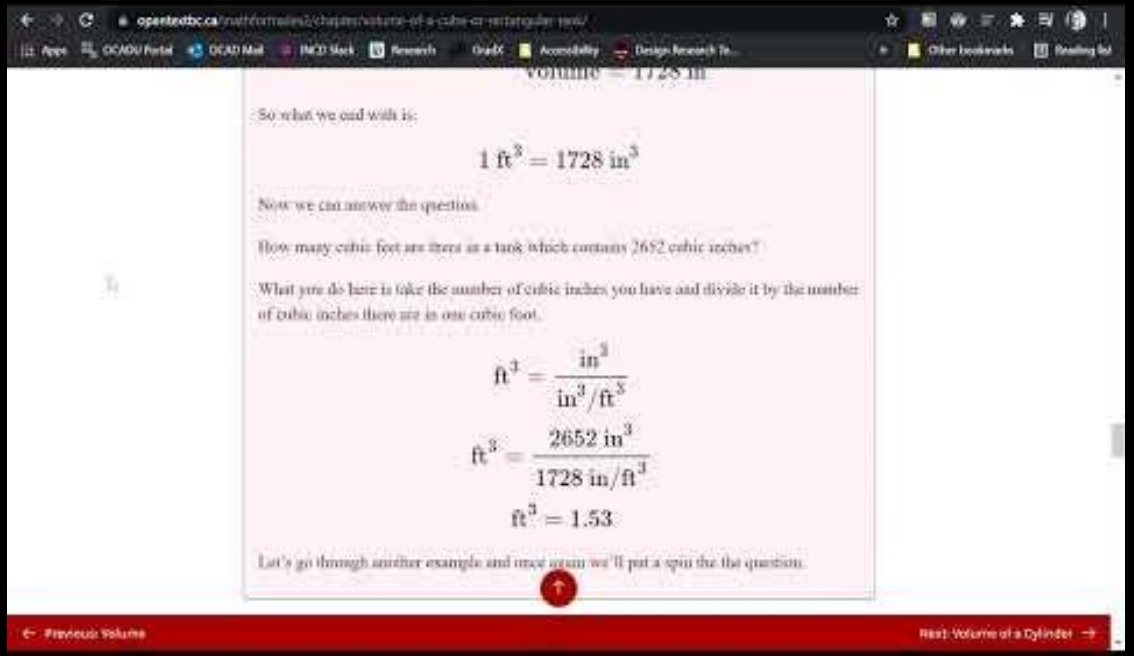


Video demonstrations

Video: Global Virgin Application – Oxidative Colour

Note: Video has no sound.

Screen reader reading math



Guideline 3: Comprehension

Construct meaning and generate new understandings.

1. Activate or supply background knowledge
2. Highlight patterns, critical features, big ideas, and relationships
3. Guide information processing and visualization
4. Maximize transfer and generalization

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

Structure of Information

- Scaffolding new knowledge
- Resource navigation options
- Chapter and heading titles
- Numbering systems (i.e., headings, figures, tables)
- Consistent chapter elements and structure

H5P

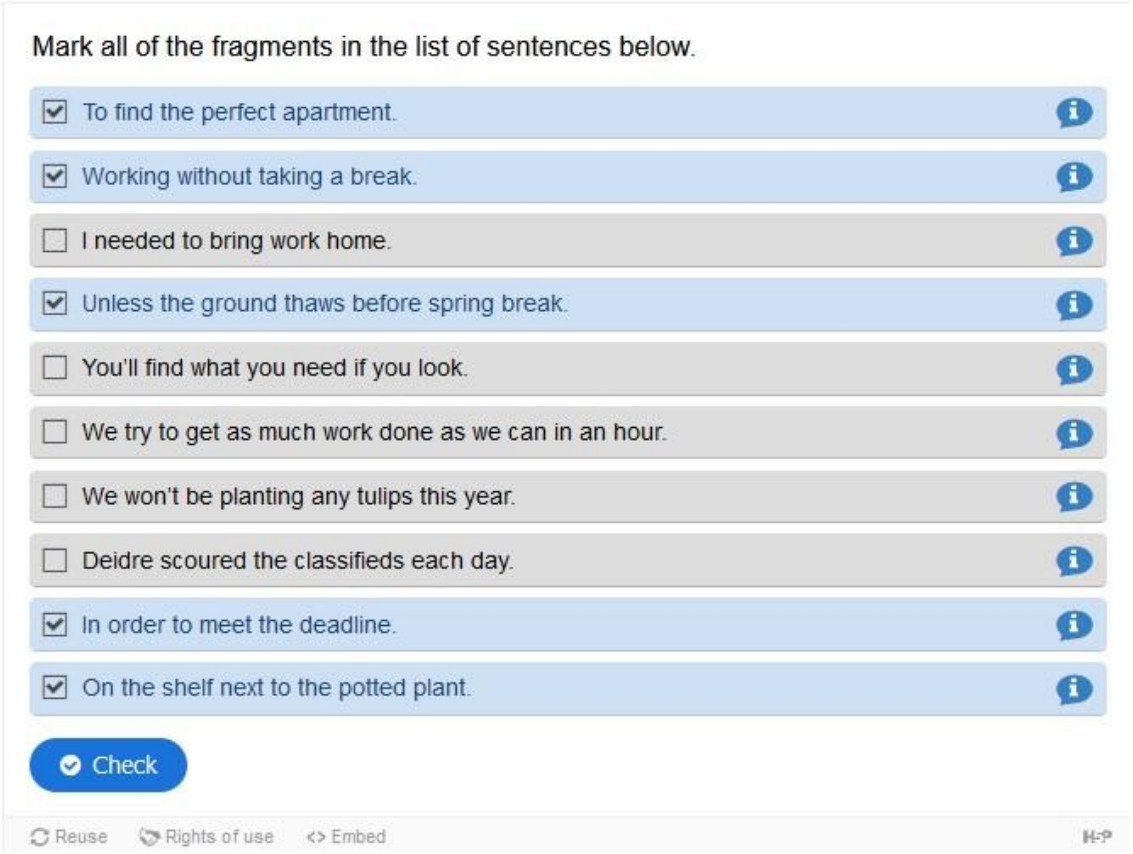
https://h5p.org/

and

https://kitchen.opened.ca/

- Interactive web-based activities and formative assessments
- Available in Pressbooks – activities can be embedded in the webbook
- Can build your own activities or reuse and remix activities created by others

H5P: Multiple Choice



"Fragments" activity by Brenna Clarke Gray was adapted from content from *Writing for Success - 1st Canadian Edition*, which is licensed under a CC BY-NC-SA 4.0 licence.

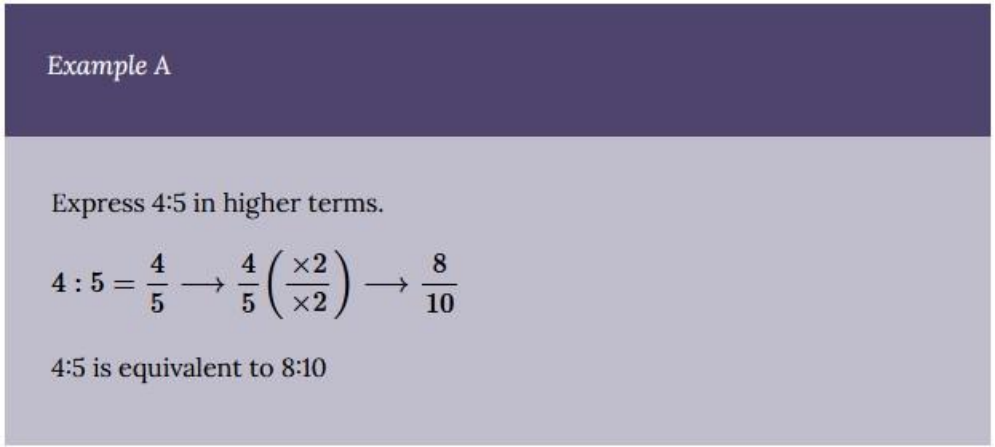
H5P: Interactive Video

H5P: Image Hotspots

Textboxes

Can be used to:

- Highlight the most important ideas of a section.
- Walkthrough key processes or procedures.
- Provide concrete examples or case studies to support main ideas.



More information on UDL

Universal Design for Learning Guidelines

- Explore all of the principles in more detail
- Read about the guidelines and checkpoints, which provide more detail about what each principle includes.
- Lots of concrete examples.

(https://udlguidelines.cast.org/)

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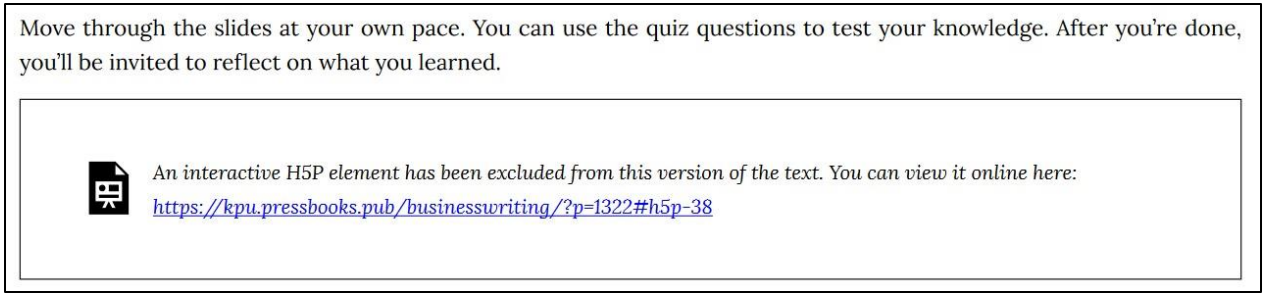
Designing for Print

ANNOTATE: Why might someone want a print copy?

Print Design Considerations

- Text size
- Links to additional resources
- Access to multimedia content

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Let's practice describing images!

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

Starry Night by Vincent van Gogh

“Starry Night” by Vincent van Gogh is in the public domain.

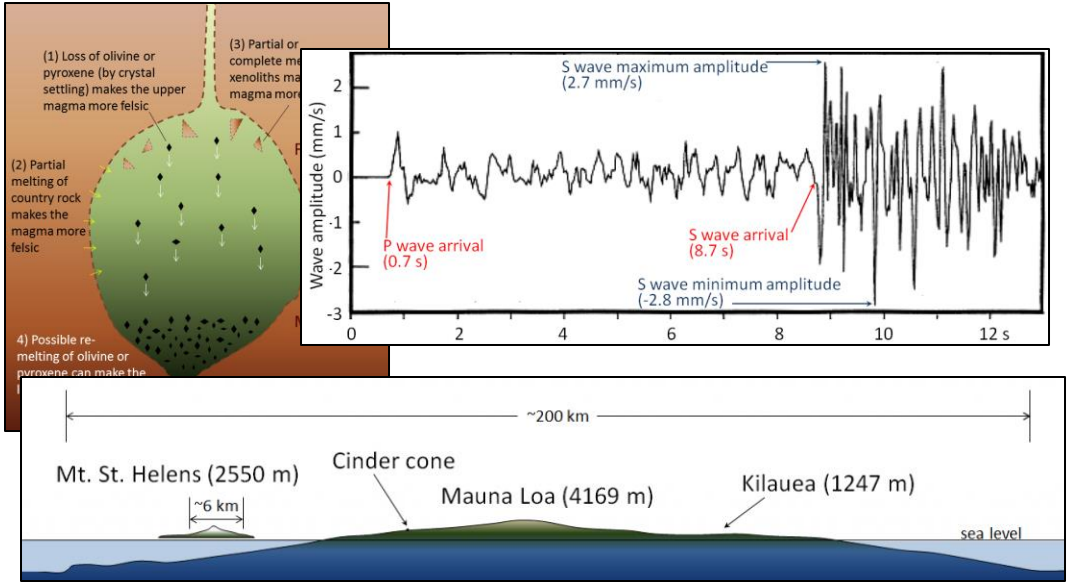
Where to describe an image

1. Alternative text field (ALT text).
2. Surrounding text or caption.
3. Long description linked somewhere else in the resource.

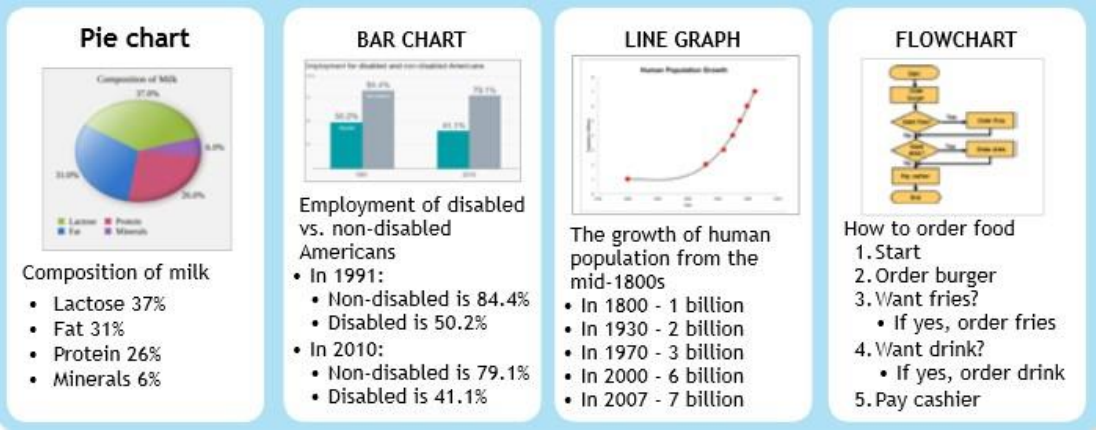
Long Descriptions for Complex Images

Examples

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



Lists



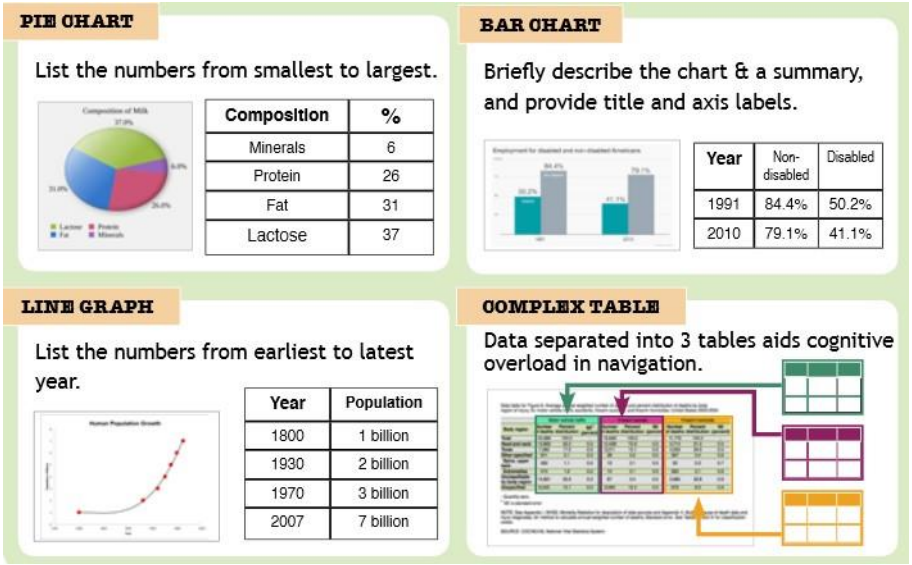
Bulleted and numbered lists can be used to present information found in

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

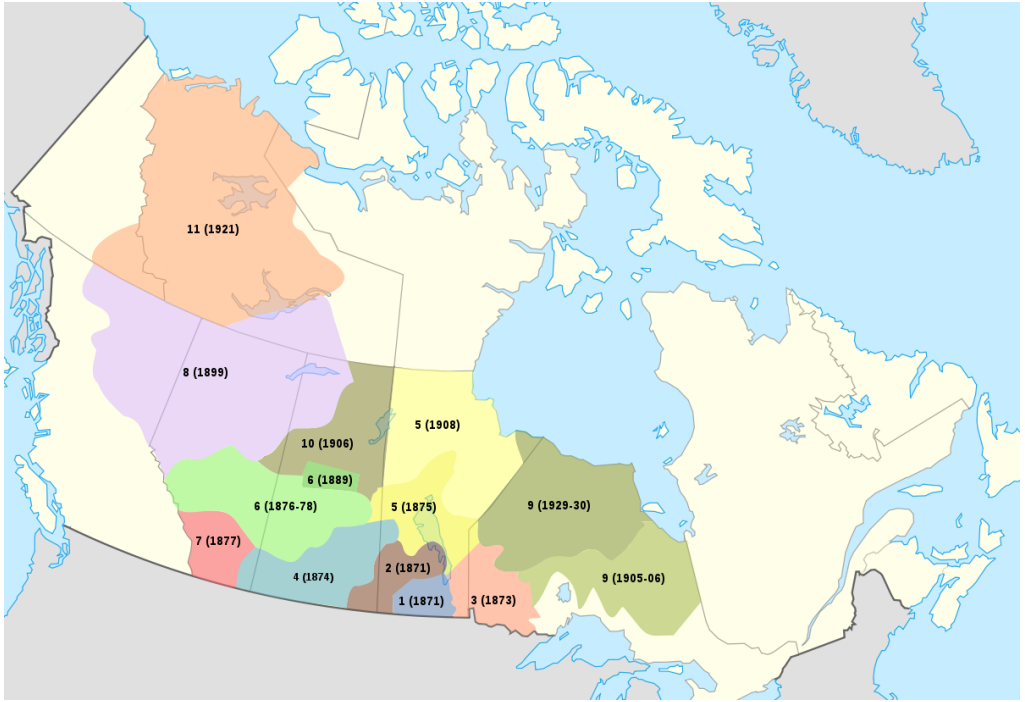
Data Tables

Data tables can be used to present information found in

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



How would you describe: Map of the Numbered Treaties



Things to consider:

- What information is already provided in the surrounding text? What information is only conveyed in the image? What do I want students to take away from this image?
- How to order the treaties
  - Based on date (i.e., old to new)
  - Based on location (i.e., south east to north west)
  - Based on size (i.e., big to small)
- How much detail to include
  - How much area is covered by each treaty
  - What borders each treaty

How would you describe this image?

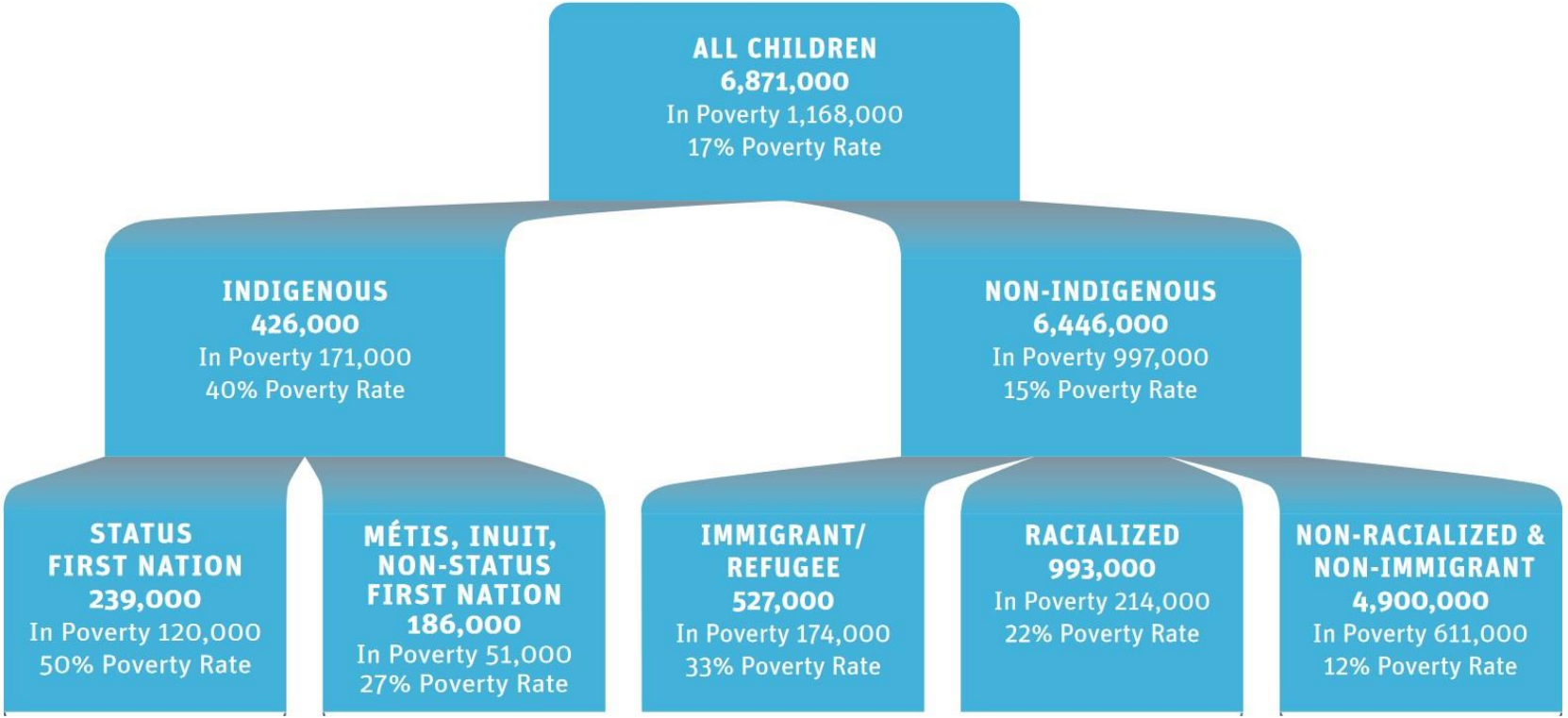


Image source: Macdonald, D., & Wilson, D. (2013). Poverty or Prosperity: Indigenous Children in Canada [PDF]. *Canadian Centre for Policy Alternatives*. Not openly licensed.

Option 1: Bulleted List

A flow chart describing the poverty rates of different groups of children in Canada based on 2006 census data.

- **6,871,000 total children:** 1,168,000 in poverty, 17% poverty rate.
- **426,000 Indigenous children:** 171,000 in poverty, 40% poverty rate.
  - 239,000 Status First Nation children: 120,000 in poverty, 50% poverty rate.
  - 186,000 Métis, Inuit, Non-Status First Nation children: 51,000 in poverty. 27% poverty rate.
- **6,446,000 Non-Indigenous children:** 997,000 in poverty, 15% poverty rate.
  - 527,000 Immigrant/refugee children: 174,000 in poverty, 33% poverty rate.
  - 993,000 Racialized children: 214,000 in poverty, 22% poverty rate.
  - 4,900,000 Non-racialized and non-immigrant children: 611,000 in poverty, 12% poverty rate.

Option 2: Table

A flow chart describing the poverty rates of different groups of children in Canada based on 2006 census data. The data is provided in the below table.

Group	Total Children	Total In Poverty	Poverty Rate
All children	6,871,000	1,168,000	17%
All Indigenous children	426,000	171,000	40%
Status First Nation children	239,000	120,000	50%
Métis, Inuit, and Non-Status First Nation children	186,000	51,000	27%
All Non-Indigenous children	6,446,00	997,000	15%
Immigrant/Refugee children	527,000	174,000	33%
Racialized children	993,000	214,000	22%
Non-racialized & Non-Immigrant children	4,900,000	611,000	12%

POET Training Tool

poet.diagramcenter.org/

- When to describe images
- How to describe images
- Practice describing images

Lots of examples.

Session Recap

- Social model of disability
- Universal design for learning (UDL)
- Principle of Multiple Means of Representation
  - Perception
  - Language and Symbols
  - Comprehension
- Image descriptions

OER Production Series Webinars

- Find, Use, and Share OER
- Introduction to Pressbooks
- Technical Accessibility
- Applying UDL to OER
- Advanced Pressbooks

Recordings at https://bccampus.ca/events/

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Questions?

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