BCcampus' Accessibility Journey

By Josie Gray

Abstract

This case study describes the work BCcampus Open Education has done to support the creation of accessible open educational resources (OER) in the province of British Columbia, Canada, and beyond. It describes the research and collaboration that went into the creation of the *Accessibility Toolkit*, a guide designed to support authors in creating accessible OER. In addition, it discusses how BCcampus has supported accessible design more directly, including by remediating existing inaccessible open textbooks and providing professional development opportunities to support others in creating accessible OER from the very beginning. The case study concludes by discussing the challenges that have come up with accessibility, including creating accessible equations, balancing the design considerations of print and digital formats, and making accessible design scalable.

About BCcampus Open Education

BCcampus is a provincial organization that supports the public post-secondary institutions in British Columbia, Canada. We do work in the areas of learning and teaching, open education, educational technology, and other collaborative projects.

In October 2012, BCcampus started the B.C. Open Textbook Project. The goal of the project was to make education more accessible by reducing student cost through the use of open textbooks. The project was asked to create a collection of open textbooks. At first, we focused on textbooks aligned with the top forty highest-enrolled subject areas in the province. In spring 2014, that was expanded to include twenty more textbooks targeting trades, technology, and skills training. Many of these textbooks we pulled from open textbooks published elsewhere. However, there was a lack of Canadian content, so BCcampus funded the creation and adaptation of a variety of textbooks to better meet the needs of Canadian faculty.

Currently, the B.C. Open Textbook Collection includes over 300 open textbooks. As of August 2021, students in B.C. have saved over $26 million through the adoption of open textbooks.

In 2017, the B.C. Open Textbook Project was renamed BCcampus Open Education. This name change better reflects the work BCcampus does in open education beyond textbooks.

Building Our Expertise in Accessibility

Accessibility Toolkit

Early on the project recognized that making OER available for free online was not enough. Cost is not the only barrier students experience when it comes to learning materials. And if we care about equitable access, those barriers need to be addressed, too.


We realized we needed to learn more about designing OER for students with disabilities. As such, BCcampus partnered with CAPER-BC (Centre for Accessible Post-Secondary Education Resources) and Camosun College to address this challenge. This resulted in a three-person team including Amanda Coolidge at BCcampus, Tara Robertson from CAPER-BC, and Sue Doner, an instructional designer at Camosun College. In order to better understand what students with disabilities experience with open textbooks, they wanted to run user testing with disabled students.

At the end of 2014, they reached out to the disability services coordinators at different institutions to find student participants with print disabilities. Participants were asked to evaluate five chapters from different open textbooks and provide their evaluation on each chapter. The students were asked to access the OER in their preferred format (webbook, eBook, or PDF) and then provide written feedback about their experience.

After that, the participants were invited to a half-day focus group session. The goal of this session was to better understand the students' experiences and why they responded – or didn't respond – to certain questions. They wanted to see how the students were reading and accessing the materials on their different devices. That in-person session was crucial. It allowed Amanda, Tara, and Sue to work directly

with these students and better understand the challenges they were experiencing and how they were actually accessing and using these materials.
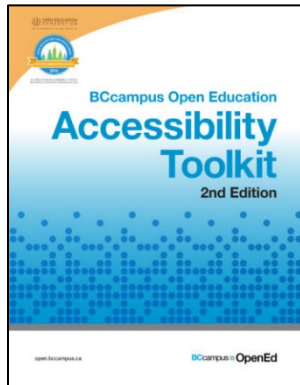
Based on the student feedback, BCcampus was able to begin to address the challenge of accessibility in open textbooks. In February 2015, Amanda, Tara, and Sue published the BCcampus Open Education *Accessibility Toolkit*. This toolkit was designed as an introduction to accessibility and specifically focuses on the context of open educational resources. The toolkit is broken up into two sections: Key Concepts and Best Practices. The Key Concepts section introduces universal design and provides several student personas with different disabilities to give context to the accessibility best practices. The Best Practices section then goes into detail about how to make different types of digital context accessible.

In 2016, the Open Education Consortium awarded the *Accessibility Toolkit* an award for Open Education Excellence in the category of Creative Innovation (Open Education Consortium, 2016), and in August 2018, BCcampus released a second edition of the *Accessibility Toolkit*. This second edition included updated examples, more specific information on using Pressbooks to create accessible OER, and a section on using Accessibility Statements. These updates were made based on our experiences with making the OER we publish accessible.

What our accessibility work has looked like

To date, a lot of the work we have done has been remediation, meaning taking published open textbooks and fixing them so they are accessible. In 2016, BCcampus hired Josie Gray as a co-op student to focus on remediating existing open textbooks published by BCcampus. Since then, Josie and two other then co-op students, Kaitlyn Zheng and Arianna Cheveldave, have edited twenty BCcampus-published textbooks to make them accessible. In addition, BCcampus is working hard to ensure that new books and resources we publish are accessible from the very beginning. We are not always successful and have experienced numerous challenges that we are still working though today, but we are always trying to do better.

We have also been working hard to share this knowledge in British Columbia and beyond. The _Accessibility Toolkit_ is an OER and has been adapted and reused by others all over. We also aim to provide training and other professional development opportunities for others creating OER. In February 2019, we hosted a weekly Inclusive Design webinar series, featuring Jess Mitchell, Senior Manager of the Inclusive Design Research Centre, who provided an introduction to inclusive design and how we can think beyond accessibility checklists. We have also hosted or participated in several other presentations or discussions on how to make OER accessible from the very beginning, including sessions specifically for faculty and staff in B.C. who have received funding from BCcampus to create OER. Here is a recording from a session titled: How to Create Inclusive and Accessible OER.

Challenges

Equations

In the last few years, there have been some challenges. One of the biggest ones is math accessibility. Part of the barrier here was that no one on the BCcampus team had experience with math markup languages. In addition, at the beginning of the project, it was not possible to create accessible math in Pressbooks.

But there have been improvements. In July 2019, Pressbooks announced support for MathJax, a tool that translates mathematical markup into high resolution, accessible equations. This makes it possible to create accessible equations in Pressbooks. Authors can write equations in LaTeX, MathML, or AsciiMath, and MathJax will display the equation as an SVG file, which ensures the size of the equation can be increased or decreased easily without reducing quality. In addition, regardless of the markup language, MathJax will translate the equation to MathML, which ensures that the equation is accessible to students using screen readers.

But just because creating accessible equations is possible doesn't make it easy. We have had to learn LaTeX, which is difficult when no resources exist yet for using LaTeX to create accessible equations in Pressbooks. In the fall of 2019, Arianna Cheveldave spent a lot of her time working with Caroline Daniels at Kwantlen Polytechnic University (KPU) to publish an Intermediate Algebra textbook in Pressbooks. This work has allowed us to begin building our experience working

with math content and making it accessible, and KPU is working on a LaTeX Guide to share that experience with the wider community.

In April 2020, BCcampus published our first accessible math textbook: _Math for Trades: Volume 1_, authored by Chad Flinn and Mark Overgaard. It uses both images with alternative text and LaTeX rendered with MathJax to create accessible math equations. These equations in this book are quite simple, but it marks a first step to being able to provide more accessible math content.

Digital vs. Print

Another challenge is balancing the features and design requirements of digital and print formats. OER are become increasingly multimodal and interactive, which ensures these resources are more engaging and useful for students. However, it also makes it harder to create offline and print formats that provide an equal learning experience. We know that students have preferences in how they access OER, and those preferences are often guided by accessibility needs, internet access, the technology they have access to, and their comfort with that technology. All these things are equity considerations, so we have also been working to ensure downloadable and printable copies offer as equal of a learning experience as possible.

For example, _Math for Trades_ also includes video answers and interactive quiz questions created in H5P. These features help make the book more engaging, but they only work in the webbook. As such, we created text versions of those answers and activities, which are in back matter of the book. If students want to watch the videos or complete the quiz questions online, they will be able to. But this way, we ensure that internet or computer access is not required to complete activities.

Another challenge we have been working through is how to provide external links to students using the print version. Web accessibility requires that link text describes the link destination. However, how then does a student using the print copy find the web address? We started with adding web addresses to footnotes, and then moved to creating a list of links organized by chapter to the end of the book. However, both of these methods require a lot of work, are hard to maintain, and are not that user-friendly for students using the print copy. Then, in January 2020, Christina Hendricks, the managing editor of a series of philosophy open

textbooks published through the Rebus Community, published a blog post titled "Some things I'm learning about accessibility & open textbooks," where she describes a CSS change that will cause Pressbooks to insert the URL after the link text in the Print PDF only. This solution works very well, and it is something we are working on applying to books published by BCcampus.

Scalability

One of the biggest challenges we are wrestling with is how to make accessibility scalable. Open education has taken off in B.C., and BCcampus is not able to help with every project. We provide lots of resources on accessibility, but authors writing OER are often already overcommitted.

And OER publishing is hard work. Someone writing an open textbook for the first time is likely using a new technology and learning about open licences, copyright, publishing, digital accessibility, and more. And then there is all the pedagogical elements that go into an effective learning resource. In the long list of things to keep in mind, accessibility often gets overlooked, and there is not always resources for accessibility remediation.

So as OER creation in B.C. becomes more decentralized, how do we make sure accessibility is still prioritized? How can we empower creators to design OER that meet the diverse needs of their students? What support systems need to be in place to make this possible?

One potential area to be looking into is how we can reduce the time and cognitive load that goes into creating an accessible OER, specifically though the design of OER publishing tools. OER publishing tools can both support and impede accessible authoring. These tools can prompt authors to provide text descriptions for images, or they can hide alternative text boxes in a large menu. They can generate printable versions of H5P activities, or they can rely on manual labour. They can provide an accessibility checker that identifies potential problems, or they can leave that to external tools that authors may not know about. All of these things are design decisions, and one decision over another has the potential to really improve the overall accessibility of OER.

Conclusion

The more we do this work, the more we recognize that accessibility is not only about web content accessibility guidelines. It is also about digital literacy, access to technology and internet, and the different formats made available. It is about equitable representation of the stories, names, people, and examples included in the text. It is about designing for flexibility and providing multiple modalities to support diverse learning preferences and needs. It is about continually being open to learning and listening and revising our practices. We are very much still learning and looking forward to supporting and working towards a more accessible and inclusive future for education.

About Josie

Josie is the Manager of Production & Publishing at BCcampus on the Open Education team. She has worked for BCcampus in various roles since September 2016. She is a white settler and currently lives and works uninvited on the territories of the Ləkʷəŋən Peoples, now known as the Esquimalt and Songhees Nations, and the territories of the W̱SÁNEĆ Peoples. She moved to these territories in 2013 to complete her undergraduate degree at the University of Victoria. Before that, she lived on the territories of the Tsimshian Nation, which is where she grew up. In 2021, Josie completed her Master's of Design in Inclusive Design at OCAD University, with a specific focus on equity in OER publishing. Her major project was a limited-series podcast titled Open Knowledge Spectrums, which explores epistemic justice in open education.

Attributions

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