The open educational resources movement is redefining the concept of online textbooks

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The movement is also aiming to reimagine and democratize learning technologies.

Professor Arthur Gill Green traces his conversion to using open educational resources, or OER, back to a specific day in his introductory geography class in 2010. That day, after the lecture, he noticed students taking photos at the back of the classroom and wondered why.
It turns out they were photographing the textbook. "Two of us every week get digital pictures of the textbook pages, and one of us gets to take it home," a nervous student confessed upon Dr. Green's approach. He reassured the students he wasn't upset, but the professor now sees the incident as a disruptive moment.

"It made me realize that I was putting students into a position that was untenable, that they basically could not afford the books that I was choosing," Dr. Green recalls. "I started to really think about my principles as a teacher. I came to the conclusion that I needed to find open education resources for my students, because if I was creating barriers to their learning, then I was violating my own core principles in my pedagogy."

Fast forward several years and Dr. Green, an affiliate assistant professor at the University of British Columbia and instructor at Okanagan College, not only uses open educational resources, broadly defined as openly licensed teaching tools, he's collaborating on two open geography textbooks and has developed a virtual field-trip app called Field Trip. Dr. Green has also become a research fellow for a working group on open educational resources at Utah's Brigham Young University. Like many converts, Dr. Green sees the OER phenomenon as more than a consumer choice, but as a movement – one that is redefining his pedagogical approach to make his teaching more collaborative, inclusive and creative.

It's no coincidence that Dr. Green teaches in British Columbia – if OER has an origin story in Canada, it's with an organization called BCcampus. Founded in 2003, BCcampus supports the province's postsecondary education institutions in the evaluation and development of educational technologies. In 2012, it took a big leap into OER when it became home to Canada's first government-funded open textbook project, tasked with creating free online textbooks for 40 of the highest-enrolled courses in the province.

Today, BCcampus not only houses over 170 open textbooks, it connects users with other resources, including tool kits for faculty and students, adaptation and adoption guides, access to the online publishing platform Pressbooks, a professional group for librarians and a research program. BCcampus has also exported its expertise, partnering with Campus Manitoba in an open textbook initiative called OpenEd Manitoba.

Another BCcampus export is its former long-time executive director, David Porter, who joined Ontario's online learning hub, eCampusOntario, in September 2016. (Prior to his move to Ontario, Dr. Porter was the associate vice-president of education support and innovation at the British Columbia Institute of Technology.) BCcampus also organizes a national OER collaborative that meets online every two months and includes members from almost every province.

If you're still wondering what open educational resources are, the definition is admittedly broad. If you're a teacher, you may already use some: TED Talks, YouTube videos, and some online articles, among other resources, fall into the category. Though OER could be generally recognized as content that lives online and is destined for sharing, supporters are now creating content more intentionally for pedagogical goals, everything from exam question banks to lesson plans.

Perhaps the most purpose-built pedagogical tools are open textbooks. Where a teacher may once have told her students, for example, to skip an irrelevant chapter two in the course textbook, OER allows her to fully remove it, or replace the American examples from chapter four with choices more suited to her Canadian or northern Indigenous student population. She can also integrate a chapter of her own research and add her creation to an open library for others to use.

This flexibility comes in part from Creative Commons licensing, which requires creators to select from one of six licenses informing users how their work can be used, from the more restrictive download-only to the more open remix and revise license. "Creative Commons licenses switch the default from closed to open, the opposite of copyright," explains Vancouver-based Paul Stacey, associate director of global learning at Creative Commons.

"We could not do our work with copyright-restricted content. That's a very important point for teachers, that you can do whatever you want with open educational resources. From a pedagogical point of view, that's what makes them far superior," says Rory McGreal, professor in the Centre for Distance Education at Athabasca University and holder of the UNESCO/Commonwealth of Learning Chair in Open Educational Resources.

For students, the main reason to cheer for OER is monetary. BCcampus estimates that, from the program's inception until February 2017, it has saved the 34,000 students who have used open textbooks at the province's postsecondary institutions between $3.3 million to $3.9 million. Dr. McGreal estimates the savings to students and institutions in Alberta, following a serious investment by the Alberta government in 2014, to be in the million-dollar range (a report scheduled for release this spring will share the results of these efforts). Similar savings are being realized at individual institutions: the University of Saskatchewan says its use of open textbooks has saved 2,750 students a collective $275,000 in the 2016-17 school year, and more than $400,000 since it launched in 2014.

Rajiv Jhangiani, a teaching fellow in open studies and member of the psychology faculty at Kwantlen Polytechnic University (he is also senior open education research and advocacy fellow for BCcampus), has written several papers on OER. He says the seemingly simple savings argument translates to a much deeper value, including improved student retention. "What is the impact if a student saves $500 or $600 in textbooks: are they enrolling in additional courses the next semester or even the same semester? We are finding that, yes, they are getting to graduation sooner, they are taking on less student loan debt, they are getting to industry sooner. So for students, it's an obvious win," Dr. Jhangiani says.

For teachers, the motivations to try out OER are more complex. Amanda Coolidge, senior manager of open education at BCcampus, says that faculty might not be as interested in the cost as they are in "the ability to change the learning experience in their classroom, and how they can impact their students in a way that allows them to access information in a different way, and allows them to participate in their education."
At the most practical level, easy alterations mean that materials can be updated more quickly to reflect new research. But faculty backers of OER are also excited about the possibilities to be more creative and student-centred. "I no longer teach to a text. My students and I decide what we need to learn," says Dr. Green, who has enlisted his students' help to build a repository of original geography case studies at UBC. His collaborative project is just one of many popping up around the world, like the Chemistry LibreTexts (formerly ChemWiki) at University of California, Davis, which invites students to edit open textbooks Wikipedia-style.

But OER hasn't unseated the commercial textbook industry. OER experts speculate a few reasons for its less-than-widespread adoption. First is the lingering worry about quality, that OER materials do not undergo the same rigorous peer review process as commercial textbooks. It's a concern that organizations like BCcampus are addressing by instituting their own processes. "When we do creations or adaptations, all of those are copy-edited very rigorously.

Once everything has been vetted, we open it up for peer review," says Ms. Coolidge. The organization pays $250 for text reviews and posts them publicly. "It's a much more transparent process," she adds.

A new breed of Canadian OER researchers have also started to test those concerns by comparing open texts to traditional ones (several American studies have already been published with results generally favourable to OER). Dr. Jhangiani and his colleagues in the Kwantlen psychology department carried out a study in 2015 with 178 psychology students, comparing a respectable, tenth-edition commercial introductory psychology textbook with an open textbook published by OpenStax (a major non-profit publishing platform based at Rice University in Texas). Looking at exam scores and other outcomes between course sections across an entire semester yielded an interesting result: no difference.

"I thought I would see that the commercial textbook would be a bit better, hopefully not dramatically better, but probably a bit better," says Farhad Dastur, a co-author on the study and an OER research fellow at Kwantlen. "That would stand to reason, right? It's got a huge marketing department, editorial teams, in its tenth iteration with over 20 years of feedback and refinement." While he acknowledges that the commercial textbook is superior in terms of graphics, he says the open resource was actually slightly preferred by students in their survey.

For Dr. Dastur, the results made him a convert to OER. He now uses a variety of open textbooks in courses and is authoring his own resources, including a text on critical thinking, a psychology wiki and a bank of exam questions. He also plans to undertake a new study to test faculty awareness of the differences between OER and traditional textbooks.

Beyond the quality control debate, many experts point to lack of awareness as a culprit for delayed OER uptake. "I think it has a lot to do with not enough common knowledge out there," says eCampusOntario's David Porter. He speculates that instructors may not be clear on the variety of licenses available through Creative Commons and that they can reserve some rights to their work. They also may not understand that there are ways of getting paid for their work through government and private grants. "It's not as if people are doing this solely out of the goodness of their hearts. There is an economic model afoot," says Dr. Porter.

The elephant in the room is the disruption to the traditional textbook publishing business model. However, Dr. Porter sees some publishers making moves to adapt. "I think the publishers have been proactive in trying to move in this direction, looking at the online and digital delivery of their resources, looking at the value-added services they can provide around hosting of resources or providing ancillary resources. I think they understand that the business is changing and their business models will have to change with it."

Some speculate that faculty, too, might fear the unknown, especially as OER has the potential to bring their teaching under public scrutiny. "Open education resources take all the teaching and learning content that faculty are using and make it open to anyone to see," says Mr. Stacey at Creative Commons. He points out that openness is already more established on the research side of academia (for example, with the recent mandate adopted by Canada's research granting councils to make publicly funded research available). He predicts that teaching will soon follow.

Indeed, the move towards openness is popping up at different institutions and even by department. In the UBC mathematics department, instructors in 16 courses moved to open texts and other resources in 2016, saving their students between $600,000 and a million dollars, according to the faculty. At the University of Toronto, the Zero-to-Low Cost Course Project started in 2014 to investigate duplication between course packs and what was already freely available to students through library databases. It found that over half the works requested for course pack printing were already available. The project reports a savings of over $100,000 in the program's first semester. Kwantlen is developing Canada's first "Z degree" program, which aims to reduce the cost of textbooks to zero. Meanwhile, an organization called OERu is creating OER-based courses for anyone in the world to access. Among its partners are BCcampus, Ontario's distance-learning network Contact North, Kwantlen, Athabasca and Thompson Rivers University.

In addition to organizations like BCcampus and eCampusOntario, many institutions are now developing OER working groups where faculty can connect on the topic. Librarians also have their OER groups, like the British Columbia Open Education Librarians, a group dedicated to sharing information and creating resources. Brenda Smith, open education librarian at Thompson Rivers – one of the first in Canada to hold that title – chairs the B.C. group and sees librarians as having a big role to play in developing OER. "I think effective adaptation of open educational resources is really a team thing – there are skills that librarians can bring, subject knowledge that faculty have, and the expertise of instructional designers."

There are also a number of conferences this spring in Canada for those interested in OER. The Ontario Open Education Summit was held in Toronto on March 27; the Creative Commons Global Summit is happening April 28-30, also in Toronto; and the Open Textbook Summit is being hosted by BCcampus in Vancouver, May 24-25.

Even the fiercest OER advocates seem to agree on the importance of letting the model develop organically rather than have it dictated by institutional policy. In the Kwantlen psychology department that conducted the OER textbook experiment, professors now have the option to choose either traditional or open texts. "It's important to raise awareness and to provide resources to support faculty. Not in a way that's top-down, but that respects academic freedom. OER means more agency, not less," says Dr. Jhangiani.

As a long-time OER user, UBC's Dr. Green notes that it's easy for newcomers to become overwhelmed by OER, so he advises baby steps. "I think a big fear for a lot of faculty is this is going to be a lot of extra work. I would say the first step is not that you have to sit down and write a textbook; it's that you take a textbook that's already out there and you just make some minor changes."

He adds that creators are willing to share their knowledge. "If you find an open education resource, talk to the person who made it. Speaking for creators of open education resources, we're generally more than happy to hear about people adopting our materials. Become part of the community."