# Digital Transformation in Canada

## Non-centralized and Diverse

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## 1. Introduction

Canada is a vast country in every way – geographically, socially, politically, and economically. It comprises 10 provinces, each joining the Confederation at different times; and two enormous territories in the north. It should come as no surprise, then, that Canada does not have, nor has ever had, a single, unifying educational system or policy at national level. Education was deemed the purview of provincial and territorial governments at the time of the signing of the British North American Act, which brought Canada into existence in 1867.

There is, therefore, no concept of national or federal entity, understanding, or agreement on the nature of higher education in Canada. Whereas the British North American Act assigned educational responsibility to the provinces, another challenge for Canada with regard to developing a national education or training system is the country's wide and diverse range of participants and stakeholders, all of whom are perceived to have their own views on educational issues.

In this chapter, we explore the relationship between open educational resources (OER) and digital infrastructure/transformation in the context of Canada's lack of national education systems or policy, situated at micro, meso, and macro levels. In Canada, as in much of the world, OER have been a fast-growing phenomenon and resource. In much of the work done in Canada, and for the purposes of this chapter, we use the OER definition from the William and Flora Hewlett Foundation:

> OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, open textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge. (2019)

The definition above situates Canadian OER use in global theory and practice. That said, Canada's implementation of OER is hindered, on a national level, by the jurisdiction issue outlined above and the inability of any one powerful body to champion the OER cause. As we will see, OER and digitization are thriving in pockets – largely academic and library-based pockets – across the country, spearheaded and maintained by their avid stakeholders and proponents at institutions of higher learning.

Given Canada's lack of a national education agency or policy, this report will focus on two key provinces within the country as they represent the macro level within the context of a lack of federal oversight. Further, there is a lack of

national data on digital transformation in Canada even though two years ago a non-profit organization called the Canadian Digital Learning Research Association (CDLRA) began surveying the state of digital learning in Canada, following a related initiative by Tony Bates. The organization works in a similar way to the Babson surveys in the U.S.

The writers of this report deem the provinces of British Columbia and Ontario key for several reasons: digital transformation initiatives, population, geographical location, and familiarity. The state of digital transformation of each province is examined below according to four criteria: infrastructure, quality, policy, and change.

# 2. Digital Transformation at the Macro Level

## 2.1 OER Infrastructure in Ontario and British Columbia (BC)

The Province of Ontario is the most populous province in Ontario with a population of 15 million and 274 designated postsecondary institutions.

In this section, we will discuss known facts as they exist at the time of writing as well as some future projections, which are, of course, connected to the government in power, as education is a provincial matter. Following are Ontario's facts relevant to digital transformation:

- Ontario leads Canada in digital transformation (Bates, 2019).
- e-Campus Ontario reports that 90% of its institutions offer elearning.
- Most institutions have an elearning strategy already implemented or being implemented (Bates, 2019).
- Government funding to date has made these initiatives possible.
- Ontario has 41% of all digital post secondary registrations (Bates, 2019).
- There are no open institutions in Ontario.

### Future projections

Unfortunately, infrastructure and its necessary funding are always connected politically to the government in power. Ontario has recently (2017) elected a conservative government whose aim, it appears, is to conduct major cuts to many services. The previous government, however, outlined its intended infrastructure for these digital transformation outcomes: to boost scientific discovery and innovation through advanced research computing and big data; and to invest $75 million to help Ontario's leading researchers solve real world problems using sophisticated computers with massive data storage capabilities and computing power.

Implementation would include these four major thrusts:

1. Install two new hardware platforms at major universities with a $20.5 million investment through the Ontario Research Fund. This will be the first major upgrade to Ontario's advanced research computing infrastructure since 2007.
2. Support the operating costs of advanced research computing across the province with a $34 million investment to provide Ontario's advanced research computing centres with the steady funding for efficient multi-year planning.
3. Invest in projects that bring together groups of researchers to develop tailored, shared and integrated data resources capable of data analytics and large-scale computational modelling with a $12 million investment through the Ontario Research Fund-Research Data Infrastructure initiative.
4. Support Compute Ontario in coordinating advanced research computing with an $8.5 million-investment.

Interestingly, although the government's report was published in 2017, it was updated in April 2019, under the aegis of the recently elected Conservative government. The revision contains commitment to these initiatives recognizing that "expertise in areas such as health informatics, neuroscience, genomics, energy, clean water and astrophysics" (Government of Ontario, 2019) is essential for global competition.

A suggested five-year strategic investment in Ontario's digital ecosystem of researchers, start-ups, and entrepreneurs is envisioned to include these benefits: helping researchers address key social challenges related to health, the environment, an aging society, poverty, and other pressing concerns; educating, training, and nurturing the next generation of talented people who will make research discoveries and develop innovative products; and giving Ontario companies the opportunity for advanced technology partnerships and collaborations to increase their share in global markets. The province's smart, highly skilled workforce is well-positioned to support Ontario companies in these endeavours.

A current problem for Ontario is that most of Ontario's population resides along the Canada-U.S. corridor and in Southeast and Southwest Ontario. Northern Ontario, a large and underpopulated area, suffers poor access and infrastructure. ORION, a provincial self-labeled "only provincial research and education network" (ORION, 2018) might offer a solution. ORION states that its "fibre optic network covers 6,000 km, connecting regions all over the province and more than a hundred institutions including universities, colleges, libraries, hospitals and research centres, as well as most of Ontario's school boards."

The recent ORION report has identified four recommendations to move toward the goal of ensuring greater access to connectivity across Northern Ontario. These include:

- An assessment of the shared technology service requirements in Northern Ontario that would likely reveal overlapping requirements. This will present a unique opportunity to reduce costs and share expertise.
- Collaboration with a range of partners at the local, regional, and national level.
- Boosting capacity and resilience across the research and education network. Northern innovation institutions should be able to access improved connectivity through an extended research and education network that would future-proof the North's ability to support economic development.
- Produce a comprehensive plan for shared technology services. Northern Ontario institutions should benefit from shared, hosted Canadian-based cloud and other shared technology services.

In conclusion, we suggest that Ontario has both centralized and non-centralized systems: the government offers assistance to centralized efforts while the large universities (there are 10) continue to chart their own progress. As outlined above, the government is currently most concerned about Ontario's remote northern learners.

The Province of British Columbia on Canada's West Coast has a population of approximately five million, with 256 designated post-secondary institutions.

At the time of writing, these are the known facts about digitization in BC:

- British Columbia established the Open Learning Agency, Thompson Rivers Open University, Royal Roads University and BCcampus over the last 30 years, leading Canada in open, distance, and online learning.
- Most institutions have an elearning strategy already implemented or being implemented (Bates, 2019).
- Open Textbooks have recently received much interest and funding in BC.
- Numerous indigenization and decolonization efforts are underway, resulting from recommendations put forth by the Truth and Reconciliation Commission Calls to Action.
- Significant organizations in BC include BCCampus, which supports numerous educational technology and open learning initiatives and innovations; and BCNET, which facilitates use of shared services across the post-secondary education sector (e.g., access to Kaltura, Moodle, etc).

Similar to Ontario, British Columbia has both centralized and decentralized systems. The government offers support, funding, and strategic direction, directing efforts and resources. Universities and other agencies (e.g., BCNet, BCCampus) lead efforts on the ground and engage in back-and-forth discussions with the government pertaining to that work. For instance, universities are sent mandate letters by the Provincial government on an annual basis, highlighting government commitments and obligations (e.g., Government of BC, 2019a).

## 2.2 The Quality of OER

Bates points out that the first step in discussing the large and complex topic of quality is to define it. He suggests that "quality" in digital learning refers to teaching methods that successfully help learners develop the knowledge and skills they will require in a digital age (Bates, 2015). Within this broad definition, Bates acknowledges these items: institutional/program accreditation; academic quality assurance processes; differences in quality assurance between traditional classrooms and online and distance education; the relationship between quality assurance processes and learning outcomes; "quality assurance fit for purpose:": meeting educational goals in a digital age.

The province of Ontario has long worked within the parameters of a quality council that operates at arm's distance from its institutions. The most recent iteration of the council is the Ontario Universities Council on Quality Assurance (the Quality Council). The Quality Council was established by OCAV in 2010 and its work is supported by an Appraisal Committee and Audit Committee. The OCAV "fully acknowledges that academic standards, quality assurance and program improvement are, in the first instance, the responsibility of universities themselves."

Quality assurance as described by Bates (2015) works at micro, meso, and macro levels in the province of British Columbia. At the macro level, universities are invited to submit Institutional Accountability Plans and Reports to the Ministry of Advanced Education on an annual basis. These include "the institution's goals, objectives and performance measure results along with contextual information to describe the institution's role in providing service to their students and communities" (Government of BC, 2019b). Further, the government developed the Education Quality Assurance designation which, for institutions to receive, requires an institution to meet or exceed certain quality assurance standards as described in the EQA Policy and Procedures Manual (2018).

## 2.3 OER Policy

Keeping in mind that Canada does not have a national education agency to guide policy development, guiding parameters and direction must come from elsewhere, if at all. The recently elected Conservative government envisions Ontario at the forefront of digital fluency. However, the Information Technology Association of Canada (ITAC), a national business-technology association with the ear of the government, does not mention OER or higher education in its literature.

In Ontario, the Law Commission of Ontario is another association closely concerned with digital progress and transformation. Both these associations, while keenly interested in the effects of digital change on the economy, do not mention education.

At a public forum where the results of the Ontario Digital Inclusion Summit were presented, diverse stakeholders presented their concerns about digital inclusion. Regarding the academic realm, these concerns were recorded:

- Impact on the workforce and society through education and research;
- Incentive structures do not necessarily encourage or enable digital inclusion;
- A lack of time, money, and educational resources to provide digital capacity to educators, academics and institutions;
- Create learning opportunities and curriculum for educators, academics, and institutions so they can be more effective at digital inclusion;
- Encourage stronger cross-sector and cross-institution collaboration that goes beyond academic silos;
- Make fuller use of the technologies available to support education's role in digital inclusion, with an eye to addressing barriers to participation.

The province of British Columbia includes education as a major focus in its 2018/19 - 2021/22 strategic plan, describing "investment in education" as "investment in our future." With regard to post K-12 education, the government of BC notes that students should be provided with "the tools and information they need to find the right career path." Important to this endeavor is the effort to make education more affordable; this has led the government to eliminate tuition fees for Adult Basic Education and English language Learning programs as of September 2017. While the earlier

government heavily emphasized trades training, the current government is still supportive of that endeavor but has directed resources other areas as well. These broad goals are more clearly delineated in the 2018/19 - 2021/22 service plan produced by the BC Ministry of Advanced Education, Skills and Training (which is the ministry responsible for higher education). The service plan includes the following relevant goals and objectives:

- To support learners to achieve their full potential with accessible, affordable, and equitable education and training opportunities.
  - Objective 1: Ensure affordable access to post-secondary education and skills training.
  - Objective 2: Respond and adapt to the diverse and changing needs of learners.
- To ensure a high quality and relevant post-secondary education and skills training system that provides the services people count on for good-paying jobs and opportunities to reach their full potential.
  - Objective 1: Build on current strengths to enhance the quality and relevance of the post-secondary education and training system.
  - Objective 2: Empower learners, educators, industry, and government to make informed decisions.

Relevant strategies within these objectives include the following:

- Ensure access to post-secondary education by providing operating funding to support public post-secondary education delivery throughout the province.
- Provide tuition-free Adult Basic Education and English Language Learning programs for domestic learners.
- Continue to advance the development of free digital open textbooks and open education resources.
- Provide learners hands-on experience to explore a variety of careers, as well as valuable information on high-demand jobs offered by employers in specific regions and throughout B.C. through the Find Your Fit Tour.
- Leverage digital technology options to cost-effectively expand the ability for post-secondary institutions to deliver education and training programs to more rural and remote communities.
- Support BC's comprehensive transfer system that enables students to easily transfer courses and credits across the public post-secondary system.
- Continue to ensure a seamless transition of students from the K-12 system into post-secondary education and training.
- Maintain a two per cent annual cap on tuition and mandatory fee increases at all public post-secondary institutions.
- Provide programs, services, tools, and resources for those who are struggling to gain a foothold in the job market through targeted programs for youth, Indigenous persons, persons with disabilities and women in the trades to help them to gain needed skills and secure sustainable employment.
- Under a new Canada-BC Workforce Development Agreement, ensure vulnerable, unemployed, and under-employed people can access skills training needed for high- paying jobs.
- Develop, in partnership with the post-secondary system, a single, unified application system to make it easier for students to plan, search and apply to public post-secondary institutions in BC.
- Partner with employers and economic sectors to deliver skills upgrading to employees.
- Work with other provincial ministries and partners to ensure BC students have the skills, experience, and creativity that they need for careers that support the tech industry.
- Ensure the best available labour market information is used to align skills training priorities with labour market needs.
- Continue to share labour market information on WorkBC.ca using innovative platforms and social media to help all British Columbians make informed education, training, and career decisions and to promote entrepreneurship.

These strategies and objectives reflect the broader concerns of the current government in British Columbia, which is currently a minority government led by the BC New Democrats in coalition with the Green Party member elected in May 2017. In this landscape, an area of concern in BC is climate emergency and its impact on the people and natural resources of the province. This is significant in analyzing the digital transformation in the province because it means considering how climate emergency may impact educational institutions, not just in terms of the content they teach but also in terms of delivery models and preparing for a future that may be radically different in terms of access, equity, and migration.

## 2.4 OER Change

What change will be coming to Ontario in terms of national issues such as infrastructure and funding? As noted, we cannot expect anything to trickle down from the national platform. Our recently elected government has appointed a Deputy Minister Responsible for Digital Government. This Chief Digital Officer (CDO) recently issued a statement that assured Ontarians that we are at the cutting edge of change given the centrality of technology in our daily lives. The advances listed by the CDO are changes to access and services for the public.

At the same time, the new budget contains devastating cuts for many important sectors, including education. Higher education sees no joy in the coming years – with no increased funding, in fact severe decreases will occur across the province. Any change to digital structure will remain the purview of individual institutions without any expectation of large-scale help from the province.

However, federal support that is available for university research, some student assistance, and miscellaneous other programs, such as Canadian studies, literacy training, and international education might enable change and growth in the digital sector.

There is much to celebrate in the current BC government's efforts to support higher education in the province, including its expanded support of adult basic skills, open educational resources, and efforts at expanding affordability. Nonetheless, Bates (2019b) sees an imminent crisis in Canadian post-secondary education due to a confluence of factors including the rise of networked learning providers that aren't facing the obstacles to innovation that universities face. One of the solutions he proposes to address the crisis involves the federal government launching five new digital universities. He describes this proposal in the following way:

The proposition is simple: establish five new regional universities-colleges that are designed from scratch as possible prototypes for the higher education institution of the future, but also designed to maximise the impact they have on existing institutions…This would be a joint venture between the federal government and the provinces, with the feds responsible for funding the physical and technological infrastructure and the provinces responsible for the operational costs of the new institutions.

# 3. The State of Digital Transformation at the Meso Level

Given Canada's lack of a national education agency or policy, this report focuses on two key provinces within the country, chosen to represent the macro, meso, and micro levels: Ontario and British Columbia. The rationale for these choices has been explained earlier. The lack of national data on digital transformation in Canada makes it even more reasonable to examine these two key provinces.

The state of digital transformation of each province is examined below according to four criteria: infrastructure, quality, policy, and change.

## 3.1 OER Infrastructure in Ontario and British Columbia (BC)

In this section, we answer the question: "What is the current state of higher education institutions' digitization strategies?"

Statistical known facts at the time of writing regarding infrastructure were presented at the beginning of this chapter.

There are approximately 50 post-secondary institutions in Ontario. The approximation is due to the division of some universities into various colleges. Universities acknowledge the need for digitization in statements such as this: "Universities are embarking on initiatives to seek productivity improvements through technology and partnerships. From creating safer campuses to collaborating with local partners to save money in the procurement process, universities are committed to transforming the way they do business."

At the institutional level in Ontario, digitization is occurring in the following systems and activities:

## Research libraries

Many digitization projects are based in institutional libraries, for example, the University of Waterloo's Historical Air Photo Digitization Project (http://www.lib.uwaterloo.ca / locations /umd/project). As Machovec (2018) points out, "academic libraries and consortia are spending the vast majority of their material budgets on digital content, including ebooks." Some universities are connected to the Canadian Association of Research Libraries (CARL) which is working toward strengthening capacity and advancing a network of research opportunities across Canada. CARL understands the benefits of digitization as important for "the long-term preservation of our documentary heritage. It also affords greater accessibility to these invaluable materials. Certainly, digital access to our national heritage has a positive impact on research and education, and furthers our cultural production, national pride and unity."

It is important to note that CARL is listed as a charitable institution. Ontario members at the time of writing include these universities: Brock, Carleton, Guelph, McMaster, Ottawa, Queen's, Ryerson, Toronto, Waterloo, Western, Windsor, and York. These are all large, research-intensive universities.

The Ontario Council of University Libraries' (OCUL) Open Educational Resources White Paper (2017) asked why libraries are so well situated to play such a central role in the development of OER, and concluded that:

Advocacy work around OER/ACC can build on existing foundations of librarian expertise (copyright, content, etc.) in parallel with established channels of outreach to faculty and other campus partners. In other words, libraries can play a vital role in helping faculty find and identify open content, and connect them with additional services. (Walz, Jensen, & Salem, 2016, p.4, cited in OCUL, 2017)).

Throughout Ontario, aside from the collaborative eCampusOntario consortium, libraries have been, and are, the most dynamic players in OER advancement.

## Resource collaboration

The most inclusive collaboration in Ontario is eCampusOntario which includes in its mandate the following:implementing and maintaining digital access projects the following: developing and implementing metadata strategies; digital curation and OER development and promotion; training staff on use and workflows; and recommending changes for continuous quality improvement.

ECampus Ontario is the largest, most over-arching and ambitious OER resource in Ontario, managed by a government-appointed board, and providing educators and learners access to over 250 free and openly-licensed education resources by hosting its Open Library, launched in 2017 in collaboration with BCCampus. Via an ongoing effort between eCampusOntario and Ryerson University in Toronto, the Open Library is integrated with the publishing infrastructure. eCampusOntario also supports "enhancements to the PressbooksEDU platform, including the integration of H5P interactive content, version tracking, and cloning support" (Open Library, n.d.). ECampusOntario has a partnership agreement with PressbooksEDU for the creation of digital resources. Access is free to eCampusOntario members.

Two more consortium efforts include the Ontario Digital Libraries Research Cloud (OLRC) and the Ontario Council of University Libraries (OCUL). Members of these groups close resemble the universities listed above; that is, most of the major institutions in Ontario. Administratively, universities are collaborating on IT initiatives to save money. As well, certain core university functions such as safety, admission procedures, space management and procurement are centralizing in order to provide more cost-effective and effective service to stakeholders.

Libraries, as indicated above, have been leaders in Ontario in OER. A portal site contains another source of all relevant information for OER users.

## Institutional repositories

Many institutions in Ontario, especially at college level, promote OER accessibility through their websites. Georgian College lists 15 open sources at national and international levels. Algonquin College has an extensive website that provides a full suite of information and resources around OER use in a learning portal toolkit, including about OER, teaching, curating, creating, licensing, collaborating, advocacy, and sustainability (Algonquin College, 2019).

## Individual institutional projects

Notwithstanding the collaborations outlined above, many (or most) digitization efforts appear as one-off projects. The following are some examples in Ontario's smaller universities:

- Brock University: Digitization of photos and archival materials.
- Lakehead University: Digitalization of 50 years of yearbooks.
- Laurentian University: Digitalization of old exams. Further efforts are connected to the library initiatives through Ontario Council of University Libraries.

While Brock University features a link to eLearningOntario's OER open textbook resources, it is a tie-in to library-sponsored site. Similarly, Queen's University, one of the larger and more prestigious Ontario universities, features a repository list from its "Commons." Lakehead University's Teaching Commons features a long list of repositories, at national and international locations. And the University of Toronto, arguably the most prestigious university, and the largest, in Ontario, addresses OER in this way, followed by a long list of materials:

Open Education Resources (OERs) are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. We have many digital collections that are developed here at the University of Toronto. (n.d.)

At the college level, Durham College provides a good example. Needing to replace a course, a professor who had had previous good experiences with OER searched around to find suitable materials. On [Mozilla](), the free software community site, he found course content that met all of his requirements. Its content was up-to-date, developed and constantly updated by industry leaders. It included formative exercises with feedback are integrated into all material and could be copied and pasted for storage within the Durham College learning management system (LMS) (TeachOnLine, 2019).

An interesting challenge arose from the professor's use of OER. A student who did not understand OER accused him of stealing material. The situation was resolved positively, but these lessons were learned:

- Provide clear and detailed information for students on the purpose and benefits of OER;
- Provide information on OER to all those involved in the development process, including management and administrative staff;
- Develop an institutional policy on use of OER; and
- Develop a network of OER users, inside and outside the institution. (2019)

In conclusion, most Ontario universities have statements that recognize the value of digitalization but, apart from several library-networks, it is hard to find examples of their progress. University libraries, far and away, have accomplished the most progress in this regard, on the academic side of things. Administrative practices continue to advance with the introduction of new software and technologies.

In British Columbia, there are 25 post-secondary institutions and this number includes both colleges and universities. Digitization strategies and efforts differ markedly across BC's institutions. For example, while the University of British Columbia (a pre-eminent research university) has had a flexible and digital learning strategy since 2014, another university in the province has recently approached one of us to ask for assistance in developing a similar institutional strategy. This example is illustrative of the fact that not only some institutions are much ahead of others in this respect, but that some are able to engage in these efforts in-house, while others require external support for a wide variety of

reasons (e.g., lack of time, lack of capacity, etc). These efforts often focus on a wide variety of reasons having to do with enrolments, modernizing educational approaches, responding to market needs, responding to national and international competition, or responding to government guidance.

At the institutional level in BC, digitization is occurring in a variety of ways. As in Ontario, many efforts are occurring in research libraries, resource collaboration, institutional repositories, and individual projects. The following examples of importance are highlighted.

## Research libraries

The UBC library, for instance, recently published digital colouring books, which provide a fun and approachable way to explore maps, landscapes, and art history using rare collections. Digital books are provided at UBC and a dedicated hashtag invites individuals to take photos of their colored drawings and share them on social media, including Instagram. Such efforts position the library in efforts of not just making digital content accessible to researchers, but also in enabling it to reach broader audiences through different modalities.

## Resource collaboration

The collaborative organization BCNet supports shared services across universities in the province (e.g., shared access to BlueJeans – a videoconferencing application) and BCcampus supports institutions in the province to advance their teaching and learning practices. While BCcampus works in a wide variety of areas, it has received wide recognition and attention around its OER and open textbook efforts, some of which has been replicated by eCampusOntario. However, there is no infrastructure collaboration happening between BCCampus and eCampusOntario. Instead, processes seem to be shared between the two (e.g., open textbook review processes).

One recent project worth mentioning is the open homework system that is currently under development. In particular, BCcampus is evaluating open source options for hosting and developing an open source system for use in the province. Project details

Lalonde (2019) defines homework systems as follows:

Homework systems are a class of education technology that supports student practice, self-reflection, and self-assessment in order to reinforce concepts they have learned in class. Homework systems may also be known as adaptive learning platforms, personalized learning platforms, or digital tutoring systems, and contain interactive elements, self-quizzes, prompts for student reflection, simulations, and offer hints and suggestions. Homework systems may also include adaptive engines that can respond to learners as they work their way through problem sets and assess their performance as the work through the sets, changing and adapting new questions based on a student's input. While a homework system can be a stand-alone application installed on a single computer or mobile device for a single user, they are more commonly developed and deployed as web-enabled, network applications. Homework systems can be seen as a compliment technology to Learning Management Systems, Digital Courseware, and Open Textbook platforms, although LMS, Digital Courseware and Open Textbook platforms are not required to use a Homework System…. An *open homework system* (emphasis mine) is a homework system that is released with an open source licence that allows anyone to host their own instance of the system, and to modify and/or reuse the application with no software licensing fees.

## Institutional repositories

Many institutions in BC offer institutional repositories and promote OER content and search functionality. Of significant note here is impending policy in Canada around open data. The CanadianTri-council (Canada's three funding bodies) will soon require researchers who receive funding from the Tri-council to make their data openly available for others to use. While the policy hasn't been finalized yet, it's become clear that many university libraries will take on the responsibility of supporting these efforts. For instance, at Royal Roads University, the library will help develop a policy around open data, provide advice to researchers applying for funding, and provide a repository for digital data storage. Since the Libraries of Royal Roads University and Vancouver Island University collaboratively offer VIURRSpace as a digital repository of

scholarly and creative works of the universities, we anticipate that the open data repository will also be a shared endeavour. Significantly, this is also an example of a collaborative infrastructure between two institutions at the province.

## Individual institutional projects

As is the case in Ontario, many digitization efforts are one-off projects. Two of the bigger and worthwhile examples to mention are Simon Fraser University's digitization and revitalization [First Nations languages](#) and the [College of Registered Nurses of BC's digitization of historical archives](#).

Some BC institutions provide faculty with small grants focused specifically on implementing digital learning or open education efforts. For example, the university of British Columbia recently announced an OER fund to "support affordable and inclusive access to learning materials through the adaption, adoption, development, and integration of OER within UBC credit courses."

The majority of education institutions, if not all, provide guides and resources to support faculty and staff towards digitization efforts. Some institutions provide guides and resources to support openness. These efforts are often supported by centers for teaching and learning.

Some institutions provide faculty awards to recognize excellence in openness digitization efforts.

Significantly, efforts surrounding openness have been encouraged by advocates at the institutional level. These individuals are often faculty, but a vibrant student advocacy body also exists that has launched public advocacy campaigns (e.g., University of Victoria's student society efforts centering around a social media campaign called #textbookBroke).

However, there are no official open education or digitization policies in BC, even at the institutions that provide extensive support and advocacy for open education. In comparison, open access appears more widely supported, especially at large research-intensive universities. The Tri-council requires scholarly products arising from research grants be made available in open access formats, and as mentioned, open data will soon also be required.

## 3.2 OER Policy and Change

Although there is a lack of national data on digital transformation in Canada, there is, at the national level, a variety of organizations and consortia that support open education efforts. These organizations, working across provinces and operating outside federal and provincial legislation, include organizations such as Creative Commons Canada, Canada OER (a working group that shares information and promotes open education), and the Canadian Alliance of Student Associations. Ontario-specific and BC-specific associations include ad hoc groups set up to pursue open and digital education initiatives as well as established groups that have expressed interest in OER and open education. In BC, these include BCCampus, the BC Open Education Librarians (a group which advocates for open practices), the Educational Technology Users Group (a group of post-secondary educators and practitioners interested in enhancing learning and teaching with technology), and OpenETC (a group of educators and educational technologists developing and supporting open and educational technology infrastructure for post-secondary institutions in British Columbia.

A random selection of university leaders, speaking about the future of higher education in Canada, all envision a progressive future for education, for graduating students with appropriate skills, for adapting to technological innovation and change, for maintaining "excellence," and, more specifically and regionally, coming to terms with social issues such as those concerning the Indigenous population, the French population, and people with disabilities. None spoke specifically about policies in place.

In 2015, a policy forum held at Queen's University, one of Ontario's (and Canada's) top and most highly regarded universities, listed digitization on the agenda; however, their discussion focused instead on these three areas:

- Security and Privacy Policy: How do we ensure the privacy and the security of individuals given the increased collection of data and surveillance by so many of so many? Are there trade-offs that must be made and by whom?
- Innovations in Health: What are the benefits and risks of innovations such as e-health records, computerized assistance to health care workers in diagnostics and treatment, or robotics/remote delivery in health care?
- Culture Policy: Do we need to rethink our current approach to Canadian broadcasting, publishing, film, and music industries? How do we ensure that the Canadian story continues to be told and that Canadian identity continues to survive and thrive?

However, in 2017-2018, Queen's developed a vision and strategy for digitization that produced a "digital planning framework" designed to carry forward to 2020. Its goals are stated thus:

- Building the vision by engaging the community in developing a shared understanding of digital opportunities, and by developing an integrated view of needs and developments across portfolios.
- Building the foundation by Implementing key IT enablers and by establishing digital strategy governance.
- Building momentum by continuing to gather input on digital needs and priorities through existing pathways and by establishing interim decision-making authority for Digital Planning funds. (Digital Planning Framework, 2018)

Finding distinct innovation or presentation of higher education policy on digitization was extremely difficult, even when researched through individual universities.

Ontario's Ryerson University approached a digitization study through a workplace lens but concluded that "despite efforts at Ryerson University to expand wireless access, in the end, much of it still depends upon individual professors and departments" (n.d.). The striking learning here is the admission that digitization is still very much an individual undertaking, especially notable since Ryerson has been regarded as a technical institution until recently when it received university status.

Digitization at McMaster University, another major research university in Ontario, seems to be relegated to its library services. As will be seen in the report on infrastructure, this is not an unusual occurrence.

Another large Ontario university, Western University, did not have a digitization item in their most recent list of policies. Likewise, no digitization policies were located at major Ontario universities either in teaching and learning-oriented policies nor in IT policies. Waterloo University, in 2019, addressed the question "What can institutions of higher learning do structurally to improve the uptake of open educational resources and practices?" The result was the document "A Place for Policy: The Role of Policy in Supporting Open Educational Resources and Practices at Ontario's Colleges and Universities."

In it, they itemized a list of OER policies in place and identified Ontario's University of Windsor as the most progressive noting these developments there:

- The university's tenure and promotion guidelines allow departments some freedom to establish department-level guidelines, allowing at least one unit at the university to include the use and development of open educational resources.
- The university's Senate passed a motion in 2016 advocating the use of free and open course materials in order to reduce costs to students.
- The university has established an Office of Open Learning that supports the development and use of OER/P (uwindsor.ca/openlearning/).

Other Ontario institutions – Cambrian College, Queen's University, and Ryerson University – are mentioned as being "active" in the "OER/P space, though often without formal, governance-driven policies in place to guide their work" (Skidmore, 2019). This lack is explained as mentioned earlier – most OER in Ontario institutions arises from single, individually-driven projects rather than from institutional mandate or mission.

Skidmore's report advocates for the creation of institution-wide policy, stating that policy must be "embedded within a broader academic vision for the institution, [and] seen as just one part of a larger strategy to foster OER/P" (2019).

Recognizing, however, that many institutions may not be able to enact a stand-alone policy, the report suggests a policy model in modular fashion so that portions of interest can be adopted and adapted according to individual need and context. Contained within the policy model are these items: strategic academic plan, tenure and promotion, intellectual property rights, online assessment packages, textbooks and required materials, steering committee (in which representation across campus is outlined), OER coordinator (in which responsibilities are outlined), funding, contract instructors, and repositories.

There are two pan-provincial organizations in Ontario that address, with a broad scope, OER issues. Serving Ontario, the consortium eCampusOntario has created The Open Library, which hosts Ontario's OER repository that has extensive post-secondary membership. Members include, at the college level:

- Algonquin College
- Collège Boréal
- Cambrian College
- Canadore College
- Centennial College
- Conestoga College
- Confederation College
- Durham College
- Fanshawe College
- Fleming College
- George Brown College
- Georgian College
- Humber College
- La Cité Collégiale
- Lambton College
- Loyalist College
- Mohawk College
- Niagara College
- Northern College
- St. Clair College
- St. Lawrence College
- Sault College
- Seneca College
- Sheridan College

At university level:

- Algoma University
- Brock University
- Carleton University
- University of Guelph
- Lakehead University
- Laurentian University
- McMaster University
- Nipissing University
- OCAD University
- Ontario Tech University
- University of Ottawa
- Queen's University
- Royal Military College of Canada
- Ryerson University
- University of Toronto
- Trent University
- University of Waterloo
- Western University
- Wilfrid Laurier University
- University of Windsor
- York University

eCampusOntario includes as its core values for the OER repository the following: quality, research, innovation, accountability, collaboration, and relevance. The repository is also connected to several other national (CNIE) and international organizations that are designed to promote collaboration and sharing of resources. These include The Canadian Network for Innovation in Education (CNIE); The Society for Teaching and Learning in Higher Education; EDUCAUSE; The OERu; and WCET (wcet.wiche.edu).

ContactNorth/ContactNord, another long-standing collaborative distance organization serving Ontario, has also created a repository of resources that are openly available. TeachOnline offers the latest trends, best practices, training opportunities, teaching resources and blogs to highlight online and distance learning.

There are 25 public post-secondary institutions in BC. These are listed below in alphabetical order:

1. British Columbia Institute of Technology (BCIT)
2. Camosun College
3. Capilano University
4. Coast Mountain College (CMTN)
5. College of New Caledonia (CNC)
6. College of the Rockies (CotR)
7. Douglas College
8. Emily Carr University of Art + Design (ECUAD)
9. Justice Institute of British Columbia (JIBC)
10. Kwantlen Polytechnic University (KPU)
11. Langara College
12. Nicola Valley Institute of Technology (NVIT)
13. North Island College (NIC)
14. Northern Lights College (NLC)
15. Okanagan College
16. Royal Roads University (RRU)
17. Selkirk College
18. Simon Fraser University (SFU)
19. Thompson Rivers University (TRU)
20. University of British Columbia (UBC)
21. University of Northern British Columbia (UNBC)
22. University of the Fraser Valley (UFV)
23. University of Victoria (UVic)
24. Vancouver Community College (VCC)
25. Vancouver Island University (VIU)

At the institutional level, digitization in BC is occurring in ways that are similar to those in Ontario, but in the process of compiling this report we identified a number of additional ways that digitization and openness are supported and implemented. These are present in Ontario as well, but for the purposes of the report, here we highlight some BC efforts. In particular, beyond digitization through research libraries, resource collaboration, individual projects, and energy and service, we identified the following efforts:

- Some institutions provide faculty with small grants focused specifically on implementing digital learning or open education efforts. For example, the university of British Columbia recently announced an OER fund to "support affordable and inclusive access to learning materials through the adaption, adoption, development, and integration of OER within UBC credit courses."

- The majority of education institutions, if not all, provide guides and resources to support faculty and staff towards digitization efforts. Some institutions provide guides and resources to support openness. These efforts are often supported by centers for teaching and learning.

- Some institutions provide faculty awards to recognize excellence in openness digitization efforts.

- Significantly, efforts surrounding openness have been encouraged by advocates at the institutional level. These individuals are often faculty, but a vibrant student advocacy body also exists that has launched public advocacy campaigns (e.g., University of Victoria's student society efforts centering around a social media campaign called #textbookBroke).

We conducted an environmental scan of BC institutions and were unable to identify any official open education policies, even at the institutions that provide extensive support and advocacy for open education. In comparison, open access appears more widely supported, especially at large research-intensive universities. As in Ontario, libraries throughout the province provide support and assistance with open access efforts.

Libraries often include mention of open access, and this area seems more developed than open education. For example, Simon Fraser University (SFU) adopted an Open access policy in 2017 to acknowledge

the commitment of SFU faculty, students, and postdoctoral fellows to share the products of their SFU research with the broadest possible audience. [inviting] SFU researchers [to] provide an electronic copy of the finalized text of their published articles to the Simon Fraser University Library. The Library will make the articles available to the public, taking into consideration requirements for access delay.

Even though a federal Tri-Agency Open Access Policy is beginning to require researchers to make research outputs available in OA formats, policies like the one developed by SFU seek to expand the reach of OA to researchers who aren't necessarily receiving federal grants. Other institutions, encourage researchers to make their work available in open access manners, though have stopped shy of creating official policies. For instance, UBC offers the following Open Access Position Statement: Whereas:

1. One of the enduring goals of the University of British Columbia is to create and disseminate knowledge;
2. UBC is committed to disseminating the research performed at the university in ways that make it widely accessible, while protecting the intellectual property rights of its authors;
3. Changes in technology offer opportunities for new forms of both creation and dissemination of scholarship through Open Access; which is broadly defined as free availability and unrestricted use of scholarly works;
4. Open Access also offers opportunities for UBC to fulfill its mission of creating and preserving knowledge in a way that opens disciplinary boundaries and facilitates sharing knowledge more freely with the world; and
5. UBC has operated an Open Access repository since 2007 in cIRcle which is operated and maintained by the University Library.

The Senates of the Okanagan and of the Vancouver Campus endorse the following statements:

1. Faculty members are encouraged to deposit an electronic copy of their refereed and non-refereed research output and creative work in cIRcle in accordance with applicable copyright arrangements which may be in place for that work.
2. Where a faculty member has deposited a work with cIRcle, cIRcle shall be granted a non-exclusive licence to preserve and make publicly available the research contained therein.
3. The authors of works deposited with cIRcle will maintain ownership of their rights in the works.

We were unable to find any OA policies in BC that mentioned explicit mention of OER. Guidelines for publishing OER in repositories are largely absent – and even in the cases of posting pre-print copyrighted materials in OA repositories – faculty are often supported by staff members in placing materials in repositories. Typically, offices for supporting teaching (e.g., Centers for Teaching and Learning) share information to support individuals in sharing OER (example).

While efforts at encouraging and fostering openness are not as widespread as one would hope, digitization efforts and policies are more pronounced. These efforts vary by institution depending on institutions' aims and goals. Nonetheless, such efforts highlight institutional needs to strengthen and diversity educational programming, enhance quality, and overall improve institutional standing.

For instance, since 2013, the University of British Columbia has invested in providing institutional support for faculty to enhance their courses with technology. At the institutional level, UBC formed a partnership with edX, hoping to leverage the partnership to implement and enhance learning analytics and learning research on the ground. In describing its flexible learning strategy to stakeholders, a UBC report highlights that the higher education landscape is fraught with uncertainty, and the strategy and efforts may be refined over time.

At Simon Fraser University, two initiatives are worth mentioning. First, the Big Data Initiative aims to bring tools and resources to campus stakeholders to make use of big data to address their needs. Second, SFU's innovation strategy, SFU Innovates – aims to help faculty, staff, and students solve societal challenges through innovation and entrepreneurship. Though not specifically focused on digitization, innovation often entails technology and as part of this

strategy, SFU hosts a variety of events that may be considered to facilitate educational innovation. For instance, as part of a series, SFU hosted a variety of [talks](#) and discussions on the future of [learning](#), education, and scaling [innovation](#).

Kwantlen Polytechnic University (KPU), on the other hand, has been a forerunner in the development of Zero-Textbook Cost degrees in the country, launching more than four degrees that do not require students to purchase textbooks, and whose studies instead rely on a combination of open textbooks and library resources. KPU launched its new strategic plan – Vision 2023 – in 2018 and in it includes goals specifically tied to innovation in education. Specifically, the new strategic plans notes that KPU will "expand innovation in teaching, learning, and curriculum" as a specific goal, hoping to support educators in their classroom innovation efforts.

Such efforts are emblematic of the landscape in BC. Rather than digitization per se, institutions seem to focus on entrepreneurship, innovation, addressing global challenges, and solving local problems, while using technology as a vehicle toward those goals. A recent visioning exercise at Royal Roads University, for example, (completed in the summer of 2019) denoted institutions pillars as being entrepreneurship and innovation and sought to use those as a differentiator.

Put differently, while efforts at using technology in BC institutions are ongoing and recognized to be necessary, digitization is sought as a means to various ends, and not as an end in and of itself. While this makes it difficult to discover internal documents pertaining to digitization efforts, it is prudent to assume that institutions are not only implementing new systems for teaching and learning (e.g., Royal Roads University's adoption of Wordpress as a complementary system to its Moodle LMS; UBC's partnership with edX), but that they are also evaluating and upgrading existing systems to pursue further efficiencies.

## Changes in Digitization in Ontario and British Columbia

The Canadian university sector is facing multiple pressures which vary by province. As post-secondary direction and governance is tied to funded which is a provincial jurisdiction, universities and college undergo change as dictated by politics. Alberta, for example, is undergoing severe budget cuts at the time of writing. Ontario faced similar cuts last year, with the election of a new conservative government. Mandates resulting from political change are demanding new performance outcomes and measures to try to ensure this. Digitization is not mentioned in post-secondary documents as a vehicle for achieving these performance measures, which leads us to believe that the rate and type of change within institutions will largely continue to be one-off, localized initiatives. However, some organizations are initiating collaborative mechanisms that should encourage change.

In his recent reports examining the digital learning landscape in Canada, Bates (2019) notes that the majority of institutions have an online learning strategy and most of them see online learning as a strategic priority. This is certainly true in both Ontario and British Columbia (and the rest of the country). To support such efforts, faculty are often provided opportunities for professional development through centers of teaching and learning. Professional learning also frequently occurs on an ad hoc basis as well, with faculty seeking professional development as needed and on-demand, either through institutional resources or through resources outside the institution (e.g., Twitter chats, offerings through eCampus Ontario, etc).

However, the circumstances noted above speak to the issue of determining change at institutional level. Change is not institution-mandated; it is not large-scale or policy-driven. When it occurs in the area of digitization, it is individually initiated or, at best, program-initiated, usually led by an onboard faculty member. One exception is in the library sector, as has been mentioned.

The OER Toolkit has been developed by [Colleges Libraries Ontario (CLO)](#) and the [Ontario Colleges Library Service (OCLS)](#) in collaboration with the [Institute for the Study of Knowledge Management in Education (ISKME)](#). Hosted by Ontario TechLibrary, this resource allows searching various pages for OER.

Previously, in 2017, the Ontario Council of University Libraries (OCUL) released a White Paper that called for change and innovation not only for libraries but for institutions, listing collaboration and research among its goals. However, the

document focused mainly on libraries' role with OER and in moving that agenda forward.

More institutionally-focused, however, and province-wide, a 2019 report, alluded to above, calls for an environment scan to determine the efficacy of created institutional policy for OER. "Such a scan not only allows an institution to assess where it is, where it wants to go, and how it's going to get there, it also gives the institution the opportunity to reflect on its goals for OER/P generally" (Skidmore, 2019).

Following on this initiative, as part of eCampusOntario's "Open at Scale" project, a preliminary environmental scan of Trades and Apprenticeship OER was conducted. The first stage of the project included an environmental scan of existing OER repositories and programs. Next steps were outlined to continue this work.

Similarly, while in BC a variety of macro agents engage in efforts at promoting change, much of the activity is happening at the institutional level. Most notably, BCcampus is engaging in a variety of changemaking initiatives. For instance, this organizations engages in open education changemaking efforts that involve the Open Homework Systems project and the Open Textbooks project; and Learning and Teaching changemaking efforts which involve a set of courses designed to help instructors facilitate powerful learning experiences.

These efforts are also supported by a variety of events that BCCampus hosts, such as an annual Festival of Learning and Teaching (which supports community-building and sharing), as well as open education fellowships (e.g., 2017-2018) and research and practice grants (e.g., CFP removing barriers to online learning).

At the institutional level, changemaking is often guided by institution's strategic plans, which lay out priorities for a set period of years. These plans have a variety of foci as well as signaling goals but are often highlighting priorities that are instructive. For instance, at the University of the Fraser Valley, the strategic plan clearly indicates a local focus, aiming to foster the socioeconomic and sociocultural development of the region, while at the University of British Columbia, the institution aims to be a global leader in research and teaching.

Beyond this diversity though, institutional changemaking efforts tend to focus on a variety of measures which predominantly include:

- Professional development delivered through workshops, talks, newsletters, and in some cases through a variety of media such as podcasts. Professional development is most often offered through Centers that support teaching, learning, and innovation (e.g., at Thompson Rivers University and at the University of Victoria)

- Awards for a variety of changemaking activities. In relation to our interests, such awards often highlight teaching and learning excellence (e.g., Royal Roads university) or focus on OER grants (e.g., University of Victoria). In BC, the former are more typical than the latter. Recently, a generous OER fund was established at the University of British Columbia to support OER efforts. This is significant because UBC is a large research-focused institution, and its support of OER signals to others the value and worth of OER.

- Finally, a variety of bottom-up initiatives invariably exist across BC institutions, driven by faculty members, individual programs, and students. These are difficult to capture in any systematic fashion. However, Contact North/ Contact Nord features a Pockets of Innovation project which aims to highlight innovative projects in the country. The organization highlights projects across Ontario and across the country (e.g., a project at the Justice Institute of British Columbia).

## 3.3 The Quality of OER in Ontario and British Columbia

Canada's prime researcher on digital issues in higher education, Tony Bates, makes three points about quality assurance in the transition to digitization: 1) there is indeed a body of literature on the topic; 2) outlining procedures and processes is not the same as implementation of same; and 3) measuring the success of implementation of quality assurance strategies is yet another issue. The quality of OER is discussed here as it pertains to the provinces of Ontario and British Columbia. But we begin with a discussion, below, "what is quality?"

## What is quality?

To define quality. Bates (2010) cites Jean-Louis's discussion of quality, presenting several ways in which to define the elusive term:

- Quality as "excellence"– a definition that sets abstract goals for institutions and academic communities to always striving to be the best, mainly taken as having elitist undertones. In post-secondary education this could mean winning Nobel prizes, attraction of research dollars or the "best" faculty as measured by research output and teaching evaluations.

- Quality as "meeting a pre-determined standard"– a definition that requires only a given standard to be met, e.g. a minimum grade, basic competency, the ability to read, write, use a computer, etc. The drawback of this is that setting and measuring this "standard" is difficult at best and idealistic at worst.

- Quality as "fitness for purpose" – in this construction of quality, we have to decide the extent to which the service or product meets the goals set – does this course or program do what it says it was going to do? Such a construction of quality allows institutions/sectors to define goals themselves according to their mandate and concentrates on meeting the needs of their customers (whether this be upgrading learners, graduate researchers, industry, etc.).

The ambiguity in definition is important in that it prevents a uniform acceptance of what quality is and therefore of how to go about accomplishing it. As Bates (2010) points out, "most institutions … [depend] heavily on conventional formal degree quality assurance processes (both internally and at a state or provincial level) to ensure that teaching with technology met the necessary standards: adding that "Fully online programs often received particular scrutiny."

The novelty (in many institutions) of online learning has created both pushback and resistance among academics. For this reason, levels of scrutiny are often high but trend to focus on administration and process rather than on in-course pedagogy. Additionally worrisome is the tendency of adopters and adapters to mistakenly measure online quality against what has existed in traditional face-to-face situations.

## Quality Concerns in Ontario

Working toward the issue of quality assurance in Ontario, Maxim Jean-Louis, Director of Contact North and appointed as Special Advisor to Ministry of Training, Colleges and Universities, issued a report in 2011 that called for the creation of an Ontario Online Institute OOI) with the following principles:

- The OOI will be a not-for-profit corporation whose members will be publicly assisted universities, colleges of applied arts and technology and other Ontario online learning networks.
- The Board of Directors and Board Chair would be selected by the members of the corporation in accordance with normal corporate legal requirements. The board would select and employ a Chief Executive Officer.
- The OOI will not be a degree-granting institution that would compete with the existing institutions.
- The OOI will not directly deliver courses, assess students, grant credentials nor provide instructional guidance on course content for students.

As far as can be ascertained, OOI was never implemented. Given the conditions described earlier regarding the provincial mandate for education and government change, this is not surprising.

However, in 2011-2012, OntarioLearn was implemented by seven Ontario colleges seeking to provide high quality online learning. Today, OntarioLearn has grown to include all 24 of Ontario's publicly-funded colleges with almost 1,200 shared online courses, over 550 online programs and more than 73,000 student registrations each year.

OntarioLearn named Quality Matters™ as their indication of providing internationally recognized quality assurance tools and processes to evaluate design of online courses. Quality Matters is popular in Canada and the U.S., providing quality assurance processes.

Also in Ontario, the Postsecondary Education Quality Assessment Board (PEQAB) provides oversight to postsecondary institutions' digitization and has developed standards to assess institutional capacity to offer blended and online courses. PEQAB is governed by an appointed ministerial board that consists of a Chair, a Vice-Chair, and up to nine members of the public, also appointed by ministerial decree. The appointees are high-profile members of the public with extensive experience in various fields, for example, law, health, and education.

An interview with the Executive Director of PEQAB indicates that the board does not distinguish between OER and other course materials/resources as concerns quality. That is to say, they review both rigorously according to their standards to assess "fit" and use. These standards indicate a quality process at a high-level. Closer to the product (and subsequent use), colleges and the universities each have their own individual quality services.

"Quality is fundamentally about design and intention with respect to achieving learner outcomes: quality is designed into programs and courses; not inspected in once they are available to the public" (PEQAB). Key quality issues include program and curriculum design; the delivery system (including the learning management system); related pedagogy preparation; and skills of faculty member assessment and authentication; student engagement; and the use of Open Education Resources.

## Ontario's Quality Council

More broadly, The Ontario Universities Council on Quality Assurance (in short, the Quality Council), was established in July 2010 and is responsible for oversight of the [Quality Assurance Framework](#) processes for Ontario universities. This council operates independently and at arm's length from Ontario's universities and colleges, each of which have an internal quality process and administration. While the Quality Council does not directly oversee OER, OER – as well as all other processes involved in the creation and granting of credentials – falls into its jurisdiction. The Quality Council conducts regular audits and reviews of all university processes.

## The Importance of Metadata in Quality

Peter Király, in undertaking a European 2015 study of the status of existing OER metadata, explained the importance of precise and correct metadata, and concluded that a lack of study scope prevented the investigation of relevant metrics such that the quality of metadata and their contributing factors could be determined (2015). He suggested a framework that would permit this study to be continued: set up a framework to test incoming and existing records, check them against quality requirements, and "give the European community a dashboard about metrics, showing the historical changes of those metrics, and provid[ing] tips and suggestions to data creators, aggregator institutions and different European teams" (2015).

Desktop research did not uncover any similar metadata research taking place in Ontario, although a December 2018 job posting for a "Digital Access and OER Lead" specified these responsibilities:

- Coordinate and maintain the Open Library through the optimized use of the various technologies involved (DSpace, Pressbooks, Wordpress, LimeSurvey, etc.).
- Develop and maintain an active research program focused on the role, impact, dynamics and trends of OER and digital resources in higher education and academic libraries in Ontario.
- Provide OER content advocacy, outreach, and education across all eCampusOntario programs and service areas.
- Determine and implement metadata schemas, crosswalks, and workflows for ingesting and maintaining data in DSpace, using Dublin Core and eCO OER subsets, as well as making interface recommendations for related systems.
- Develop data strategies facilitating the exchange of information within the Open Library and beyond.
- Build relationships with Librarians at Ontario colleges and universities to ensure success of the Open Library and other OER initiatives.
- Guide faculty in the creation, dissemination, identification, adoption, and assessment of OER.
- Create OER training resources and deliver educational workshops.
- Document OER use through the consortium, calculate student savings, and communicate benefits and impact to the broader community.
- Contribute to the overall scholarly communications program of eCampusOntario which includes open access, open scholarship and CC licensing.
- Keep abreast of, research, and report out on, current and emerging developments in OER.
- Identify opportunities to highlight OER initiatives and work with eCampusOntario communications team to showcase those initiatives and institutions.
- Establish and maintain effective working relationships with clients, colleagues, institutional administrators and Ministry staff.
- Contribute to a positive, supportive and strong team culture at eCampusOntario.
- Continually expand and update professional knowledge.

## Meta-data data from a University Library Director

The insight below, shared in an interview with a university director, is indicative of the type of governance (or lack of) that exists through much of Canada's higher education system. In other words, individual institutions – and within them, individual projects, perhaps – create resources in their own fashion, often governed by funding or convenience.

Unfortunately, there is not a single metadata standard that is actually the standard. There are many different metadata schema in existence, and I suspect that for all the formal schema there is even more informal schema that are used. Library catalogues tend to use standard schema, such as the Library of Congress Subject Headings, and while some institutional repositories might use a variation on that, the headings aren't necessarily consistent from one institutional repository to another. The person who creates the metadata for a given repository might vary quite a bit from a librarian who is trained in cataloguing (and therefore presumably familiar with the importance of consistency for findability) to a person with considerably less background in that. In addition to there being differences in the terms that are assigned to a particular item, you may also find that some repositories take indexing seriously and assign multiple metadata terms to describe each item, whereas others will only have one or two terms assigned to each entry. This difference can impact the findability of resources. (E. Fabbro, personal conversation, 2020)

## Commonwealth of Learning (CoL)

The CoL is not unique to Ontario (or British Columbia) but it is an umbrella organization that embraces all of Canada as well as other Commonwealth countries. Its mission is to

"promote the development and sharing of open learning and distance education knowledge, resources and technologies." As a part of its promotion of all aspects of distance education, CoL is also heavily invested in OER.

In CoL's 2014 document Quality Assurance Guidelines for Open Educational Resources: TIPS Framework, author Paul Kawachi presented this meta-data information, explaining that current data (at the time of writing) report on only two

levels of quality perceived: the level of OER experts (level 1) and of teachers (level 2). Level 3 data (students) had not yet been gathered.

In our earlier version 1.0 of this TIPS Framework, there were three levels of localisation each with their own specific quality criteria: (i) the upper-most level-1 of the repository containing the internationalised OER that have been standardised by OER experts and like a textbook are almost context-free, (ii) the intermediate level-2 of readily adaptable OER, and then (iii) the ground level-3 of the fully localised OER used by actual students. There has been feedback to version 1.0 that suggests our combined criteria covering these three levels should be disentangled and presented separately. Briefly, the upper-most level-1 is the most restrictive interpretation of quality by OER experts and institutions, the intermediate level-2 is complex involving ease of adapting through re-contextualising OER by teachers, and the ground level-3 is quality in the hearts and minds of the students learning with the fully localised OER version. (Kawachi, 2014)

Quality assurance at the provincial level for post-secondary institutions falls under the responsibility of the Ministry of Advanced Education. Internal academic program reviews are conducted annually by institutions, and quality assurance activities are reported to the ministry. External reviews of university quality assurance processes are also conducted by an independent body appointed by the Minister of Advanced Education. Accreditation at the program level is conducted by various provincial, national, and international accreditation agencies.

There does not appear to be a specific body or process to evaluate the quality of institutional open or digital efforts at the meso level. At the institutional level, there are likely processes and instruments used for evaluating quality. These include internal checklists, but also checklists provided by external organizations like Quality Course Teaching and Instructional Practice from the OLC Quality Scorecard Suite.

One area of digitization and collaboration that is new to eCampus Ontario is its micro-credentialing efforts. eCampus Ontario hopes to develop a shared infrastructure and ecosystem for micro-credentials in the province and has involved a number of universities and industry partners in this effort.

# 4. The State of Digital Transformation at the Micro Level

The Canadian report on digital adaptation in Canada at the micro level focuses on two provinces, given the Canadian decentralized education structure where education falls under provincial jurisdiction. For these data, we have reported on British Columbia and Ontario which as the most populated English-speaking provinces in Canada, Ontario with over 14 million residents and BC with over four million.

## 4.1 Micro level adaptation to digital resources in Ontario 2020

There is abundant information available in Ontario at the meso level with several organizations promoting OER through their online presence. Guidelines have been issued and repositories created. These initiatives have been reported on previously.

Determining micro level use is more challenging; however, the experiences that many OER users related to me in personal interviews resonated and reflected with the broader and more theoretical issues that emerged from meso level examination of OER use in Ontario. The following section will present these users' – all post-secondary professionals at both college and university level – responses to some or all of questions pertaining to personal use – creation or curation; types of materials preferred and used; the integration of materials into their own materials; challenges to adoption and adaptation; potential supports and assistance; and the cultures of sharing materials and ideas.

Their individual responses are followed by an analysis and by supports from the literature.

## Respondent A

Respondent is an OER leader at her institution. She has a deep and intelligent commitment to the OER cause. Although she searches various repositories for the "right stuff," she is often frustrated that the material she wants lacks the appropriate licencing or that it is just not the right fit for a niche course. That said, she does use OER material and especially likes to avoid textbooks for her students due to their high cost.

A has been a pioneer at her institution. She championed OER's foothold there and organized an "Open Day" in 2018 which served as a catalyst for raising interest among her colleagues. Now, two years later, there are 12 courses offered with open texts. Some instructors are using OER in an ad hoc fashion per course or module, as needed. One day, each semester there is an OER information session at the institution's teaching and learning centre.

A part of the challenge, A explained, is that at her institution, created material belongs to the institution, thus inhibiting some instructors from creating their own OER. Their contracts prevent them from seeking a CC licence for their products. While frustrating, A and her colleagues are trying to make changes to their administration's position on this issue.

## Respondent B

Respondent B echoes many of A's concerns. She can't find what she wants; either the material doesn't meet her standards or the "fit" to her course is not right. However, she tried to incorporate OER whenever she can. She has been unable to find a textbook for her courses. She, too, is an OER pioneer in Ontario and in Canada. About her institution and colleagues, she says: "We're not there yet." However, she has found eCampus Ontario a fairly good source of resources.

She has found faculty at her institution to be resistant to OER and feels that policy changes must occur so that teachers have easy access to free material. Management has so far resisted, citing their bottom line. A recent management change has swayed to pro-open somewhat but the contractual issue is still there: the institution owns instructors' products and OER use is determined by administration.

B creates some of her own OER, "little stuff," as she calls it – some slides, some rubrics, when it is possible to openly licence them. However, she doesn't have the time to focus on creating materials and there are currently staff shortages at her institution, which increases her workload. Additionally, there is no compensation for her "extra" work and she must complete it as volunteer labour.

She finds it difficult to be innovative in her environment, but she watches social media for evidence of new and relevant materials. She laments that the older, traditional models of education still hold; and that publishers have their feet firmly in the educational door. She notes that even research and researchers have conflicting interests dependent on funding sources and that licencing restricts the use of some resources. All of us who are researchers know this is true.

B mentioned that some OER resistors use accreditation as an excuse not to adopt newer approaches. In disciplines where there are regulatory bodies governing professional licences, curriculum developers are always wary of stepping out of/over the line set by the governing body. B suggests, however, that a process ensuring quality, a process of review and assessment, could and should nullify these concerns and restrictions. "They're just not there yet."

## Respondent C

Respondent C has been an avid OER creator for several years, including during her several years spent at the K-12 level. With her students, she has co-created a textbook with eCampus Ontario, then published via PressBooks. Working with students, she collects their blog entries for public viewing. Initially, she reports, students were reluctant to go public. They needed information and clarity on aspects of OER – why, how, where, etc. Once reassured and with some CC info, they were much happier to participate. She understands that it's important to help students understand that they own their own work.

As did Respondents A and B, C has difficulty finding what she needs. While there is a lot available in some fields, there is not a lot available in her field. It's a lot of work, and time-intensive, for C to find what she needs. However, she would

rather invest the time in adapting materials to her own needs than re-invent the wheel.

C receives no consideration for creating or searching for OER. There is no funding. With a supportive team, she is able to adapt relevant materials from American-centricism. She also experienced technical issues in making adaptations from various platforms and suggesting that some standardization of platforms would make the process much easier.

She and her colleagues share relevant material, "the good stuff," in its original format, often by email. So far, their networking is casual and unofficial, led by "unofficial" figureheads. C hopes that a new strategic plan at her institution will include a designated person to head up the OER initiative.

## Respondent D

Respondent D, a university teacher, initially didn't think that she had much connection to OER. She doesn't know anyone who uses OER but knows that some of her colleagues balk at the idea and are suspicious of open resources. Meanwhile, her department is negotiating with a publisher to create open, digital texts.

D does use open materials, however, in the form of presentation slides and videos. She just hadn't identified them as such. She has searched for materials on SlideShare but only found about one-third of materials useful. She feels her need is too "particular" to use OER. This is a common theme, heard in the words of most of the people I spoke to.

She has also used a video that she retrieved once. She told an interesting story: several years ago, while working as a teaching assistance in a university setting, she tried to share a downloaded cartoon with her class. The supervising professor, however, emphatically stated that he would not permit any materials from the Internet to be used with his student!

## Respondent E

Respondent E is a university librarian who is considered the point person for OER at her institution. She is very involved in her institution's OER process. She "curates," assisting in search processes so that other faculty can review the OER materials.

E advises on copyright and licencing issues and has built a guide to OER repositories. She is involved with her institution's teaching and learning hub which offers professional development.

As with several other respondents, E belongs to a provincial working group on OER. She pushes her institution for change and for policy development. She laments that there is currently no policy in place nor any institutional direction.

Faculty at her institution are looking for open materials to replace textbooks so they can build a course around the open resource. While initially not keep on adapting OER for their own use, faculty become more comfortable with this idea as they get used to it. A lack of technical skills impedes some.

Especially in the trades, open content must match exactly the need at hand, given faculty's lack of skills. They are hesitant, as others have been, to create their because they don't own it. It appears that the notion of "open" applies to them as receivers but not as givers!

E reports the same wariness about OER as did others. The old ideas maintain, and OER supporters must challenge the "myths" about their use and quality. And of course they don't want to release their intellectual property, although they will share within limited parameters – within their own department, for example, or with close colleagues. Their "openness" is limited. They are reluctant to use or trust repositories.

Another issue involves precarious employment situations. Faculty don't want to lose what they see as "leverage" as regards their own materials. A sense of possessiveness and insecurity exists.

E feels that strong champions are needed to push OER acceptance forward.

## Respondent F

Respondent F is a strong believer in OER and an advocate within her large university. In response to student demand, she has developed online programs in her field and various OER resources that respect the diversity in voice. She is committed to keeping available resources up to date.

She has created mobile OER resources that are currently being widely used in her field. These resources have been revised, adapted, and translated for international use as both an app and in web-based format. F is committed to providing easy-to-access resources, recognizing that many corners of her field are marginalized and work as non-profits.

Her institution is set up for cross-collaboration among areas. Quality assurance experts, technical experts, and the teaching and learning centre all unite to create OER and encourage its development. As always, there are enthusiastic champions in this group that push to "get things done."

Policy and guidelines are coming. In their absence, meanwhile, practice is not consistent. Integration is not consistent. F would like to see CC licensing used as a guide and is aware of copyright issues. As such, she feels the library should be involved in OER work.

At her institution, she has support from the teaching and learning centre and from their librarians. The province-wide eCampusOntario (discussed in the meso report) has been useful and has provided funding. However, more infrastructure is needed and, as always, more champions.

## Respondent G

Respondent G was a very avid OER practitioners. He "gets it," and is aware of the scope of the issues involved. He strongly supports the move away from textbooks and looks to media for good resources. Several years ago, he started to pay attention to how he could curate materials to fulfil his teaching needs.

G became involved in eCampusOntario's OER programs that involved other interested professionals from all walks of educational life. He was excited and energetic but found that while institutional policy could be both a challenge and a solution, it did not contribute to increased OER use.

G creates some of his own materials for use within his courses and would like to adapt them to Pressbooks as textbooks. Lately, though, he was done more curating than creating and more wraparound to existing resources. He is hoping to develop an open textbook.

G is an experienced educator in his field and that helps him to "know where stuff is." Being able to find resources aids him in his pursuit of OER: it's so much more difficult for new faculty who are not as familiar with what's "out there."

His experience at his institution has shown him that younger graduate students who assist him in teaching are more receptive to creating and sharing materials, although they could be shared more widely. Older professors, he finds, are not as open to sharing. (This has been a theme.)

## Respondent H

As with so many others, H advocates for open resources, but finds them difficult to access. He has developed ways to "slip around" paywalls in his pursuit of resources. In his scientific field, the cost for researchers to publish can be high; and he is opposed to that.

H uses search engines when looking for fast access to resources. Libraries are thorough but often the search takes too long. He revises material to suit his needs, looking for ways to effectively present the "found" resources. He also creates his own repositories of found resources for future use. He uses audio and video resources and curates them based on their technical quality and also length. Shorter is better!

H finds that sharing resources is dependent on personalities and collegiality. There is, at present, no guiding policy at his institution.

His challenge, as with so many others, is time…time to locate the right resources. He is sensitive to legality and copyright, and wants to "stay within the rules," but wishes the rules featured more openness and access.

## Commonality among responses

A communications professor at an Ontario institution has been written up as a creative creator of OER. She could not find an appropriate textbook for her learners and wanted to engage them in forming community: "textbooks simply don't facilitate the kind of meaningful experience" (#OERThankU). As a long-time online teacher who does not use textbooks, I concur with her statement. She is also concerned with the cost to students of textbooks.

As did most of my respondents, above, she credits librarians with being "rockstars" in the OER world. She attended workshops that were hosted by librarians. That said, she admitted that creating OER was labour-intensive. She already knew how to use Wordpress and admits that that skill was a great help in the creation of OER.

Another professor in a different faculty at the same institution (worth noting that this institution is technology-focused) has moved away from "licensed, subscription-based homework/assessment" (#OERThankU, n.d.) systems to open source. His reasons are many: the cost of resources, frustration with online cheating via readily available online platforms; the understanding that there was a "better way" to engage students in their learning; and government pressure to keep student costs down.

This professor was an early adopter, again, a quality that many of my respondents shared. He believed in what he was doing. His field was also receptive to openness as a base concept.

This university, however, strongly encourages the OER movement and has in place designated OER website as well as a "steward" program. In 2019-2020, the steward program had 19 members. Championing is necessary in the movement toward acceptance, as my respondents indicated.

## Data from a relevant doctoral dissertation

A 2018 doctoral dissertation was a good source of information on Ontario post secondary teachers' adoption and awareness of OER. The author considered OER advocates as "change agents" and used Rogers' diffusion of innovation theory as a research framework. She found that OER adoption followed on educators' belief system as regards pedagogy: "Advanced OER practitioners (who are often OER advocates) have embraced the use of OER in their teaching and have moved on to explore the ways they can leverage the pedagogic advantages of OER" (Hayman, 2018a). She also found that her study participants were willing to take risks, were excellent curators of open content and happy to share their intellectual property, including via social media.

The writer's study used pre- and post-surveys to examine the shift in attitude toward OER after workshop and resource attendance. However,

An important finding in the quantitative analysis for Attitude Toward OER (and an indicator that not everything was positive for participants) was that there was almost no improvement in means from pre- to post-intervention related to supply and search options for OER. Both cohorts of participants … were persistent in their attitudes that there was an insufficient supply of OER for their disciplines and that OER were difficult to find. These findings were indicators that better professional development was needed around these issues, and that there needed to be better repository designs and an increased supply of high-quality OER developed. These findings were consistent with concerns described in the global literature on OER. (Clements & Pawlowski, 2012; Lund Goodwin, 2011; Mtebe & Raisamo, 2014, as cited in Hayman, 2018a).

Given that, participants sought and valued professional development for OER use. Copyright issues – notably, a clear understanding of them – were also important.

Interestingly but perhaps not surprisingly, the study, which included both face-to-face teachers and online teachers, found that f2f teachers had less time to devote to learning how to use OER.

The discussion of OER and open education often/usually contains material on defining what open education really is. This dissertation also contained such a definitional section, and the word cloud that was generated as a part of this research is reproduced here:



*(Hayman, 2018a, p. 139. CC-by-NC 4.0 International License.)*

Other important themes included the importance of costly textbooks as a driver for OER; the necessity for quality assurance for OER; the need for educators to be better educated in OER-related skills, such as finding appropriate materials.

Hayman's research revealed disagreement about the quality of OER and about the lack of standards for OER. Combined with teachers' inability to locate appropriate materials, the lack of support resources (staff) to help them, and a lack of time to use them (revise, adapt), her study indicated a general confusion about OER in potential users. Given the issues just mentioned here, it's not surprising that summary questions from the study included: How can we ensure quality for OER? How can we learn more about the skills needed to find and use OER? How might educators collaborate with peers and learners to adapt and create OER? (p. 145)

Hayman offered some observations from her study that fell outside the parameters of her research questions. One of these involved a difference between college educators and university educators. (In Canada, colleges typically offer two or three-year diploma programs; universities offer three and four-year undergraduate degrees, and several graduate degrees.) Her conclusion was that college educators has less autonomy with respect to course decisions.

Hayman began her concluding chapter in her dissertation with a reiteration the problem statement: "The use of open educational resources (OER) is not widespread among Ontario college and university educators" (p. 150). Having explored the reasons for this – reasons which complement the responses from this report's data, above, she concludes

that this is, in part, a result of centralized leadership – a fact also corroborated by the data presented above, gathered from both college and university teachers.

Included here are recommendations derived from Hayman's study findings. We present them all as they are relevant to this chapter:

- Use of OER is best framed as an invitation for educators to explore and not as a requirement of practice.
- Effective advocacy for use of OER requires advocates to have technical competence. Some examples of this competence include the following:
- experience of multi-modal learning theory and pedagogic practice, knowledge for finding and use OER repositories and understanding of technical content file formats,
- familiarity with the adaptation tools that are needed to adapt and share content, and a good grasp of the issues of copyright and open licensing. This competence requires compensated time for ongoing professional development.
- Advocates and interested educators may benefit from social (rather than isolated) professional development experiences where they can communicate and support each other.
- Institutional support and professional development are critical factors in expanding the use of OER among educators. Educators in this study expressed the desire for additional professional development and exploration of OER, and indicated their OER practice would benefit from access to knowledgeable supporters.
- When OER advocates and educators from a variety of institutional roles are given encouragement and opportunities to share their knowledge, use of OER increases. (Hayman, 2018a, pp. 152-53)

## An eCampus Ontario Study*

A large college and university study was conducted in 2018 on OER at Ontario's PSEs. Of 17 000 university educators and 12 000 college educators, the response rate was low, only 1.9% or 383 responses. Although the report states that the responses covered a diverse population with respect to experience, mode of delivery, and balance between types of institutions, our interpretation of the low response rate is that the level of interest or knowledge of the OER topic is correspondingly low. We have uncovered no data in this research, including the f2f interviews, to indicate otherwise.

The study's findings are summarized here. In most cases, data indicated distinct differences between college teachers' situations and university teachers' situations, with university teachers having more control over their choices.

- Journals, textbooks, and internet resources were most highly used as resources
- College instructors were more likely to use educator-originated resources
- Only 14% of participants were very familiar with OER; 28% familiar; 15% somewhat familiar
- Only 11% were very familiar with open textbook; 39% familiar or somewhat familiar
- Most OER used: YouTube 79%, Web links 83%, OER articles 55%
- Opinions of OER: reduced cost to learner and quality. (Hayman, 2018b)

The implications derived from the study are these:

- Support adaptation and creation of open textbooks through funding and professional development opportunities in partnership with Ontario institutions.
- Ensure programming and support activities include all modes of teaching (face-to face, blended, and fully online).
- Consult about differences in decision-making power about the resources used in courses when determining how to design professional development sessions.
- Ensure that conversations about OER with interested stakeholders include how to use them as supplemental resources.
- Determine steps needed to increase awareness among post-secondary administrators (in addition to individual educators) about the benefits and the challenges of using OER.
- Emphasize the key criteria for course resource selection: quality (trust), accessibility, and comprehensiveness (alignment with a spectrum of learner needs) when discussing OER.
- Include definitions of OER and explanations of licensing types in presentations and conversations.
- Address the need for professional development around OER repositories (where to find OER), and discipline specific lists of curated resources to increase overall use of OER. (Hayman, 2018b)

## 4.2 Micro level adaptation of digital resources in British Columbia 2020

As is the case for Ontario, numerous organizations support OER through numerous efforts. Guidelines, repositories, communities of practice, and so on, all exist to support such efforts, and such initiatives were already described in the meso and macro reports for BC. To investigate micro level use in BC, we focused on desk research and supplemented this with informal interviews/emails with colleagues focused on digital and open education. In this analysis, we include a qualitative exploration of pan-Canadian data generated by the Canadian Canadian Digital Learning Research Association / Association Canadienne de Recherche sur la Formation en Ligne (CDLRA). This organisation studies issues pertaining to digital education in Canadian post-secondary education and has produced three reports informed by an annual survey (Bates et al., 2017; Donovan et al., 2018; Johnson, 2019).

While the reports include the quantitative results, as part of a set of research papers, George's research team has been analyzing the qualitative data from 2017 to 2019. Below, we include analyses that related to micro issues of digital and open education adoption arising from that original data. The biggest takeaway from this is that a deeper, more granular, and more systematic investigation is necessary to fully understand micro adoption issues. Nonetheless, there are some important lessons and issues here – many of which are also captured in the Ontario section of this report – that should be helpful. Importantly, the categorization created above – creation or curation; types of materials preferred and used; the integration of materials into their own materials; challenges to adoption and adaptation; potential supports and assistance; and the cultures of sharing materials and ideas – may be helpful in future work.

In an effort to expand upon Dianne's work – everything that she writes above is applicable to BC, and the broader Canadian environment – George sought to highlight areas in which he could make a strong contribution by grouping them into themes as presented below:

## Theme 1: As Canadian institutions offer an extensive menu of professional development options, individuals learn about and learn OER/digital through various means.

The 2017-2019 CDLRA survey data show that institutions offer an extensive variety of practices to provide instructors with professional development and support. These include training that can be undertaken independently by faculty members, one-to-one interactions with others such as instructional design professionals or peers, and group PD opportunities. Many faculty prefer and ask for flexible designs of such training such that it can fit into their busy lives. In the table below, we present a synopsis of practices that George's research team identified in the CDLRA data.

**Table 1**

*Digital Education Professional Development and Training Practices Employed by Canadian Post-Secondary Institutions*

| Practice | Description |
|---|---|
| Educational workshops & meetings | Workshops in a variety of formats such as train the trainer, brown bag lunches, hands-on workshops in re-conceptualizing course design, external/internal teaching showcases, symposia, etc. with training targeted for specific digital modalities (online /blended /hybrid /hyflex) or highlighting different pedagogical strategies for digital education. |
| Personalized individual 1-to-1 training & support | Individual PD focused on instructional design/ technical training accompanied by just in time support throughout implementation. |
| Exploratory practice | Opportunities for faculty to experiment and practice with unfamiliar technology tools or teaching strategies that best address the type of learning experience they are trying to create prior to implementation in classes. |
| Participation in exemplar online courses | Provide online courses for faculty to experience digital education from the viewpoint of a student; model courses for faculty to explore before teaching in online settings. |
| Intensive course redesign | Redesign of course activities with wrap around instructional design and technologist supports. |
| Champions & mentors | Experienced faculty champions with digital education knowledge and skills who provide support and mentorship to colleagues and promote various digital education initiatives on campus. |
| Community of practice | Small groups of faculty which form together as a community of practice to learn as a group, facilitate peer-to-peer networking, or raise the profile of digital education; may include faculty peers, staff from teaching and learning centre, and a facilitator. |
| Reflective practice | Encouraging faculty to think about what went well/ not so well with digital learning activities and what/where they could improve. Could be an individual practice, a component of the activities for a community of practice or discussion within a mentoring partnership. |
| Incentives (e.g., financial, recognition, release time) | Various incentives available to faculty to attend training or develop digital learning activities include release time, financial incentives, compensation for attending training, recognition of excellence in digital education through tenure and promotion processes, awards. |
| Investment in scholarship of teaching & learning initiatives & research | Systematic study of teaching and learning in digital education with public sharing and review of such work to share innovations in curriculum development and content delivery strategies. |

## Theme 2: Individual support for OER seems necessary.

The pandemic – in addition to causing a rapid shift to digital education – has led to increased calls for the use of OER in Canada. To give a sense of the magnitude and interest in OER, consider the following three initiatives:

Initiative #1

# CAUL to lead cost-saving textbook initiative

July 21, 2020

The Council of Atlantic University Libraries (CAUL) is leading a new pilot project that will put student resources, such as textbooks and teaching materials, online for free, accessible use. Executive Director of Students Nova Scotia Clancy McDaniel states that with students in the province spending between $800-$1,000 on textbooks each year, there is hope that the project will expand in coming years. "If we're able to save folks some money by making this widely available, that's a top priority for us," said McDaniel. The article states that a similar initiative was introduced in British Columbia in 2012 and has since saved students almost $19M. *Halifax Today* (National)

URL

Initiative #2

A pan-Canadian effort to advance digital education (and use OER).

Initiative #3

In exploring what the future of higher education in Canada looks like, recommendations for policymakers highlight the value of openness, and suggest "open" becoming a requirement.

In conversations with colleagues, and in our analysis of the CDLRA data, it seems that for OER use to be more effective, it may be worthwhile investing in individual supports, such as one-on-one professional development and similar education efforts for individuals to understand OER as a value/license and not just as a free resource. While institutions can OER use through a variety of means instructional design support, library services, funding, policy-making, training and workshops, and work-release from duties to free up time for adoption and creation of OER, individual supports are necessary. Interestingly, despite some institutions having OER policies and offering faculty support, OER use often appears to come out of individual efforts and from a ground-up approach. In other words, the micro level appears to be a significant propeller and factor in adoption, even when meso and macro supports exists, but we would argue that activity at the micro level is insufficient for large-scale transformation to occur. Institutions should consider more supports to foster and encourage the activity at the micro level.

## What does the process of adoption and diffusion look like?

In a recent publication focusing on the ways faculty adopt pen textbooks in BC, we identified eight methods of open textbook adoption: stealth adoption, adoption by infection, committee adoption, sanctioned exceptional adoption, course developer adoption, infection by inter-institutional carrier, creation and adoption, and lone adoption (Barker, Jeffery, Jhangiani, & Veletsianos, 2018). What this paper reveals is the many ways that individuals come to adopt open textbooks. At times, they might be introduced to them by instructional designers; other times, they may be engaging in

open practice without necessarily knowing that a community of open educators exists; and, at other times, it may be that a local champion convinces others to adopt and expand use of such OER. This analysis suggests that pathways to OER can be multiple and that it may be worthwhile exploring what the local context looks like in in order to inform local strategies for broad OER adoptions.

# 5. Concluding Remarks on Digitization in Two Canadian Provinces

In Canada, at the micro level, as described above, the adoption of digital resources follows the pattern that has been demonstrated at both the macro and meso levels. The tone is set, at a foundational level, by the Canadian tradition of decentralization as regards education policy and practice. Each of Canada's 10 provinces and two territories manages its own educational process. With no overarching or unifying direction, each contingency has approached digitalization and OER in its own way and at its own pace.

In reality, this has meant, in the provinces of Ontario and British Columbia, the two largest in English-speaking population, a fragmented and often individualized adoption of progressive measures. While some province-wide agencies and organizations have been formed to "group" adopters and provide a type of umbrella-home for their activities, these have been often dependent on one-time funding or by the political persuasion at the time, keeping in mind that educational policies in Canada may (and do) change with government changes every four years.

Overall, the major initiatives and thrust for OER have emanated from library organizations. They and their members – both individual and organizational – have been at the forefront of digitalization. Some universities, often led by their libraries, have created repositories of artifacts and maintain useful websites. Colleges and universities differ as to their take-up of OER, based on the fact that college teachers have less authority over their content and less academic "heft" than do their university colleagues.

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# End Note

*Report was prepared by J. Hayman, perhaps as research for her doctoral thesis, already cited.



### Dianne Conrad

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Dr. Dianne Conrad is a long-time adult and Distance Educator with expertise in prior learning, assessment, and all aspects of open and online learning. Now retired from Athabasca University, she continues to research, publish, and take on projects of interest.

## George Veletsianos

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Dr. George Veletsianos is Professor of Learning Technologies at the University of Minnesota-Twin Cities, where he holds the Bonnie Westby Huebner Chair in Education and Technology. His research focuses on three strands: (1) design, development, and evaluation of online and blended learning environments , (2) the study of learning experiences and participation in emerging online environments, and (3) learning futures.