

# DIGITAL TRENDS AND INITIATIVES IN EDUCATION:

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## THE CHANGING LANDSCAPE FOR CANADIAN CONTENT

PREPARED FOR  
THE ASSOCIATION OF CANADIAN PUBLISHERS (ACP)



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MARCH 2017

We acknowledge the support of  
the Government of Canada.

Canada

Made possible with the support of the Ontario Media Development Corporation.



Funding for this study was provided by the Government of Canada and Ontario Media Development Corporation. Any opinions, findings, conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the Government of Canada, the Ontario Media Development Corporation or the Government of Ontario. The Government of Canada, Government of Ontario and its agencies are in no way bound by the recommendations contained in this document.

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# INTRODUCTION

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Emerging technologies have provided K–12 schools and post-secondary institutions with tools that allow students and teachers to access information and content from an array of sources never before available in Canada. This transformation is facilitated by the use of multiple education technology solutions and tools that include Learning Management Systems (LMS).

The Association of Canadian Publishers has commissioned this report to better understand the digital trends and initiatives in education and how these trends and initiatives are impacting the acquisition and use of Canadian content in the K–12 and post-secondary sectors.

Over a period of ten months, the principal researchers Susan Howell and Brian O'Donnell used their knowledge of the national K–12 and Higher Education markets to conduct an evaluation and review of the current use of educational technology and in particular, the acquisition and use of digital content.

How educational technology is being received and implemented into the fabric of the Canadian educational system and how the Canadian publishing industry can tailor their resources to meet these new challenges will require a thorough understanding of resource usage in today's educational environment. This report should act as a snapshot in time and inform the industry as to how these digital trends and initiatives are shaping the market for instructional content.

This report will highlight that the proliferation of educational technology, multiple and open databases, and new teaching and learning methodologies continue to change the landscape for Canadian educational content. Understanding these fundamental changes in the educational community will help the publishing industry make reasoned and knowledgeable choices and decisions when developing and distributing Canadian content to schools and educational institutions.

## Research Strategies and Methodology

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The research for this project was conducted using a variety of methods, including the following.

- **Review of current literature and information relating to:** education in the 21<sup>st</sup> Century; educational technology; provincial education initiatives, frameworks, and policy papers; and education and technology newsletters, articles, blogs, and published surveys. See the *References* section of this report for a complete list of these sources of information.
- **Confidential face-to-face and telephone interviews** were held with numerous education officials at the provincial and district levels as well as with teachers and instructors. We also held discussions with personnel working for a variety of technology firms and with educational publishers, including medium to small Canadian firms. In K–12, the nature of our inquiries regarding the acquisition of digital content by teachers and students proved to be problematic for most educators due to the fragmented nature of approval processes and a lack of clear policy or protocols for recommending or purchasing digital content.

In post-secondary, decisions on recommending or requiring students to purchase content in any format is, for the most part, the responsibility of individual instructors or professors. Library personnel continue to have responsibility for the purchase of both print and digital materials for institutional collections, but rarely did we find any institutions where recommended or required materials for students were purchased by institutions in digital format. An exception to this statement can be found in section *B.2.3: Systems and Platforms*, but it is limited to a small number of institutions. The fragmented nature of the K–12 system and the politically charged atmosphere in K–12 and post-secondary regarding content and copyright also meant that most individuals would only speak to us on the assurance of anonymity.

- **Attendance at provincial conferences** on the use and implementation of digital technologies for education in the K–12 system. Information was collected by attending several sessions and keynotes as well as speaking with presenters and attendees.

## Key Findings

The following themes and key findings emerged throughout the development of this report.

### **Learning Management Systems (LMS) as only one component of a complex digital learning landscape**

The acquisition and deployment of content through Learning Management Systems (LMS) was originally intended to be a key component of this report. An LMS is generally defined as an online system or platform that provides a centralized place to create, deliver, and manage a course or a learning module. The software can be hosted locally or institutionally, by the province or district, or it can be made available through web-based technology. LMS contain a standard set of tools that can be accessed by students anytime, anywhere, and via multiple devices.

We set out to gather information and data on how LMS are being used to deliver content to schools in Canada, how the marketplace functions, and the technology requirements for publishers to participate in this activity.

However, key findings confirmed that the LMS is only one component of a complex and rapidly changing digital landscape in K–12 and post-secondary education and cannot be considered in isolation. The following report will describe the role of LMS as one of the education technology tools used in the education sector to distribute and access content.

At the present time, LMS do not offer a direct marketplace for the content developed and published by ACP members. In section *A.3.2: Learning Management Systems*, there is information on how full resources traditionally acquired by students in print format are being delivered through LMS. The marketplace for these resources tends to be through the usual distribution channels and the purchase by students through bookstores.

This report also highlights how digital resources are being acquired, whether through the traditional supply chain or through Open Access and new Fair Dealing Guidelines adopted by the Canadian educational sector.

Key findings also confirm that in cases where digital content is being acquired by schools and post-secondary institutions, it is not on the strength of being pre-loaded or pre-integrated into an LMS.

## **Fragmentation in the availability and use of educational technology across Canada**

In K–12, the deployment and use of educational technology systems and tools varies greatly from district-to-district and school-to-school, highlighting the degree of fragmentation in the availability and use of educational technology across Canada.

Although provincial ministries license software solutions such as Student Information Systems, Learning Management Systems, and Library Management Systems for use in their jurisdictions, it is up to the individual districts to choose the purpose and degree of their use. For example, Ontario has licensed Brightspace by D2L as their provincial LMS. Some districts choose to deploy it primarily for online learning, while others encourage their schools and classroom teachers to use it more fully as a means to deliver and administer their courses. Within each district and school, teachers who are more knowledgeable and comfortable with the technology incorporate it into the delivery of instruction, while others who are not as comfortable use it to varying degrees. It is expected that the use of technology to enhance instruction and learning will continue to increase as “digital natives” become teachers themselves and practising teachers become more knowledgeable and confident in incorporating technology into their practice.

## **Fragmentation in the acquisition and use of digital content across Canada**

The K–12 educational sector is also fragmented when it comes to the degree to which the use of print-based resources is shifting to digital content. There are a number of variables that come into play such as access to the appropriate technology to be able to use digital content, infrastructure, and teacher knowledge and comfort level. However, the main barrier is cited as the lack of financial resources and funding dedicated to the purchase of digital content developed specifically and intentionally for use in the classroom.

Meanwhile, teachers and students have access to more free and open content than ever before given the ubiquity of content via the Internet, as well as the proliferation of content repositories, databases, portals, and applications.

Some jurisdictions and schools continue to purchase print-based supplementary resources and some are acquiring core curriculum resources that include digital components. Others are shifting from print-based textbooks to eTextbooks. Some are purchasing very few resources, making do with what they have until funding for new resources is available or the technology and the technical infrastructure is in place. Given this scenario, some are supplementing existing resources with multi-media learning objects (videos, simulations, etc.) until they are able to make a full change. This practice varies from province-to-province, district-to-district, school-to-school, and classroom-to-classroom, highlighting the degree of fragmentation in the acquisition and use of digital content.

## Inconsistency in the evaluation and licensing of free or open digital content

Throughout the research phase of this report, it was challenging to find policies or guidelines relating to the evaluation and licensing of free or open digital content.

In some provinces, there are no published policy guidelines regarding the evaluation and acquisition of digital-only content for instruction. Where policies do exist, they tend to be vague or holdovers from print acquisition protocols. Guidelines such as those used in the approval of resources for Ontario's Trillium List may include criteria for evaluating curriculum-based materials that combine digital and print-based components.

A number of educators who engaged in discussions for this report expressed concern that the lack of policies or guidelines for the evaluation and licensing of free or open digital content may negatively impact the quality and efficacy of educational resources used in many Canadian classrooms for years to come. These educators believe that without clear direction, teachers may continue to use material that has not been appropriately vetted for use in an educational setting. This belief is not intended to diminish the role teachers play in selecting the right content for their students, but rather serves to highlight the fact that teachers do not all have the time nor the expertise to thoroughly evaluate or authenticate every piece of content accessed by themselves or their students.

## The need for policy to ensure access to quality Canadian content

The ubiquity of low cost, free, or open educational resources continues to negatively impact Canadian-owned publishing companies and their publishing programs.

According to People for Education in their 2014 report entitled *Digital Learning in Ontario Schools: The New Normal*, "36% of elementary teachers and 25% of secondary teachers are more likely to use free online resources when they need new learning resources."<sup>1</sup> They ask, "Is cost-cutting affecting quality and access to Canadian resources?"<sup>2</sup>

During our interviews, the significance of Canadian content was discussed at length. Most interviewees feel strongly that this issue needs to be addressed quickly. They believe there should be policies to ensure access to quality Canadian educational materials of all types. To this point, People for Education (2014) make the following recommendation in their report:



### **DEVELOP POLICY TO ENSURE QUALITY LEARNING RESOURCES**

**The increasing use of free online materials by teachers in schools requires active policy work to ensure students have access to materials that support the curriculum, reflect a Canadian perspective and are responsive to the Ontario context.<sup>3</sup>**

People for Education, 2014



## Limited opportunities to sell digital content via LMS into the post-secondary market

Post-secondary uses of digital content continue to increase and how materials and resources are acquired and deployed are subject to constant innovation. There are numerous new initiatives for the acquisition of content that are highlighted in *Part B: Post-Secondary* of the report. These include but are not limited to Open Access, new copyright interpretations, new business models from software developers, and new business models from publishers.

It was clear that although LMS are used extensively throughout all post-secondary institutions, there is no marketplace for publishers to engage with the providers of the LMS software. Sporadic initiatives are in place to deploy content purchased or licensed from publishers through an institutional LMS and these are documented in the report.

# A.1 DIGITAL TRENDS AND INITIATIVES

## A.1.1 Education for the 21<sup>st</sup> Century

The ongoing effort to implement a new vision for education in the 21<sup>st</sup> century prevails across the entire educational sector in Canada and around the world. Based on a wide body of research,<sup>4</sup> it has become the primary focus of ministry, school district, and school-based initiatives and has provided the foundation for discussion papers, curriculum renewal, as well as district education and school improvement plans.<sup>4</sup>

As the subject of 21<sup>st</sup> century teaching and learning is complex and multi-faceted, this report will provide a brief overview of this vision in order to support a better understanding of its impact on the current and future landscape of educational resources.<sup>5</sup>

### What is 21<sup>st</sup> Century Learning?

The goal of education in the 21<sup>st</sup> century is to prepare all learners to succeed in an ever-changing, technology-driven, and globally connected world by providing the means to develop the skills, competencies, and knowledge they need to succeed today and into the future.

This goal is facilitated by initiatives to improve the quality of instruction, personalize and deepen learning, provide flexible learning environments, and use technology tools and digital resources to engage and empower students to navigate their own learning pathways with confidence and success.<sup>6</sup>

Numerous frameworks developed to address education in the 21<sup>st</sup> century place an emphasis on the process of learning and the development of the following skills, attributes, and competencies:<sup>7</sup>

- Literacy and numeracy;
- Critical thinking, inquiry, and problem-solving;
- Innovation, creativity, and entrepreneurship;
- Communication and collaboration;
- Metacognition (learning to learn, self-directed learning);
- Local, global, and digital citizenship.

The entire movement to achieve this vision for education in the 21<sup>st</sup> century is increasingly changing the way teachers teach, students learn, and how learning is demonstrated and assessed. It also impacts the types of resources used in K–12 classrooms, and how those resources are delivered and accessed by students and teachers.

### Evolving Practice in the 21<sup>st</sup> Century Classroom

In order to set the context for the new ecosystem of educational resources, it is helpful to explore some of the ways in which learning and teaching practice is increasingly evolving.

From	Toward
<p><b>A focus on covering all curriculum content...</b></p> <p><b>“One size fits all” instruction...</b></p>	<p><b>An emphasis on the learning process and enabling students to “learn how to learn”.</b></p> <p>Teachers know that their students have different goals, strengths, gaps, interests, and ways to learn. They accommodate their students’ diverse needs through differentiated instruction and opportunities to personalize learning. Technology more efficiently facilitates this practice.</p> <p>Students work at their own pace, learn anytime and anywhere, and use technology to be more productive and better engaged in their learning. Students pursue their interests and use creativity to learn in multiple ways.</p>
<p><b>Teacher as the source of information and knowledge...</b></p> <p><b>Lecture-style instruction...</b></p>	<p><b>A teacher who facilitates, guides, and activates learning.</b></p> <p>Teachers are designing lessons in which students are engaged through inquiry and project-based learning, allowing them to dive deeper into their learning.</p> <p>Teachers and students use content and information that gives them <i>what</i> they need to know, <i>when</i> they need to know it, and in a <i>format</i> that is accessible to them.</p>
<p><b>Teacher as sole director of learning...</b></p>	<p><b>Teachers are guiding students to lead and take ownership of their own learning.</b></p> <p>Teachers guide students to plan and follow their own learning “pathways” designed to promote personal growth, success and life-long learning.</p> <p>Students have some choice in what they learn, how they learn, and how they demonstrate that they have achieved their learning goals.</p>
<p><b>Teacher who integrates little or no technology...</b></p> <p><b>Learning in a physical space...</b></p>	<p>The classroom is only one place for learning to take place. <b>Flexible learning models and environments are enabled by technology and extend outside the classroom</b> (blended and online learning, Learning Commons, field trips, etc.).</p> <p>Students learn through multiple approaches such as intentional instruction, cooperative activities, and problem-solving/inquiry tasks. They use technology (computers, mobile devices, digital cameras, etc.) as well as print and digital resources (books, eBooks, videos, audio, simulations, etc.) as tools to support them. An increasing number of students use their own mobile devices to learn anytime, anywhere.</p>
<p><b>Teacher who uses limited approaches and technology to access professional learning...</b></p>	<p><b>Teachers are a diverse group of life-long learners.</b> They engage in continuous self-directed and collaborative or community-based professional learning through digital content and multiple technology-enabled approaches.</p> <p>Teachers are exploring emerging pedagogies and learning how to effectively use technology by engaging in action research, professional learning communities, reflective practice, and online learning. They have access to eBooks, websites, webinars, webcasts, articles, blogs, videos, wikis, discussion boards, etc. to support their individual professional learning goals.</p>

# A.1 DIGITAL TRENDS AND INITIATIVES

## A.1.2 Educational Technology Tools



Technology is playing more of a role in society as well as in the classroom and can be a powerful tool in enabling deeper learning. However, technology is only effective when used to provide access to richer content, develop stronger teaching practices, make links between classrooms and life, and enable assessments that align with learning expectations and outcomes.<sup>8</sup>

Ontario Ministry of Education, 2016, p.9



Just as technology has changed everything we do and how we do it in our daily lives, so it is increasingly impacting how teachers teach and how students learn. Teachers are learning how to effectively integrate technology tools (computers, tablets, interactive whiteboards, digital cameras, 3D printers, etc.) into their daily instruction, while students are using these tools to engage in and shape their learning.

There are a growing number of technology tools that allow teachers to more easily implement emerging pedagogies and enhance student engagement and learning. The use of WiFi-enabled devices allows schools to harness the power of educational software and take full advantage of the Internet.

Although the use of specific technology tools varies greatly from district-to-district and even school-to-school, many classrooms have access to an LMS, as well as a suite of administrative tools that allow teachers to manage student learning and assessment.

Today, school technology tools are typically provided by the province or individual school districts and are expected to meet the following criteria:

- Protect student safety, data, and privacy;
- Enhance instruction and learning;
- Work on all devices and browsers and be reliable;
- Assist with student and teacher productivity and efficiency;
- Be data driven; and
- Be intuitive and user-friendly.

### Access to School-based Technology

Survey results shared by People for Education (2014) provide good insight into where elementary students access technology while at school. Not surprisingly, the vast majority of access is in the classroom (96%), followed by the Library Learning Commons (85%).<sup>9</sup>

## Mobile Learning and Bring Your Own Device (BYOD)

**The success of BYOD aligns with global trends toward mobility as more people, from children to adults, own mobile devices and are accessing the Internet in increasingly different environments for learning.<sup>10</sup>**

Johnson, L., et.al., 2015, p. 36

Mobile learning is enabled by BYOD programs, which allow students to use their own personal electronic devices (tablets, laptops, eReaders, smartphones, etc.) at school. These programs are proliferating in Canadian schools.

People for Education (2014) report that students are using their own devices in 58% of schools in Ontario and that “this trend is spreading” according to a scan of districts across the province.<sup>11</sup>

Many school districts have developed a BYOD policy that outlines the specific requirements for use of personal devices and a plan to address issues pertaining to equitable access to technology for *all* students.

**We have purchased iPads for the school to address the inequities of access. We also have classes who use the BYOD model so everyone has a device to use, between school and student-owned devices (iPods, iPads, DS’s).<sup>12</sup>**

People for Education, 2014, p. 3

Publishers, technology companies, multi-media developers, and professional education associations are among those who continue to develop a wide array of resources and mobile applications (apps), including interactive textbooks, eBooks, eMagazines, games, and videos optimized for use on mobile devices. Tech giants Apple and Google, for example, are producing some of the most popular apps for use at home and in K–12 classrooms.

## Commonly Used Educational Technology Tools

### Interactive Whiteboard (IWB)

An interactive whiteboard (IWB) is “a large interactive display in the form factor of a whiteboard. It can either be a standalone touchscreen computer used independently to perform tasks and operations, or a connectable apparatus used as a touchpad to control computers from a projector.”<sup>13</sup>

Two of most popular IWB systems are SMART Board® and ActivBoard from Promethean. Digital content is projected onto the whiteboard screen and teachers and students interact with the content by collaborating, commenting, and manipulating it. Digital tools (i.e., digital pens and erasers) facilitate this interaction.

Students use an interactive whiteboard for multiple purposes, such as exploring online maps and imagery, working with manipulatives or simulations, taking a virtual tour or field trip, or using it to present and share their work.

## **Tablets and Chromebooks**

Although there are numerous laptops and tablets on the market today, two of the most popular devices deployed in K–12 are the Apple iPad and Google Chromebook. There are many ways in which these portable technology devices are used, including:

- Individual or group learning and collaboration (i.e., instant messaging);
- Games and simulations;
- e-Portfolios (i.e., taking and uploading photos/videos);
- Note-taking and highlighting;
- Accessing digital content or virtual libraries; and
- Doing homework, assignments, and projects.

## **eReaders**

In the classroom, eReader technology is often used to facilitate book clubs, novel study, independent reading, research, and reading programs by allowing students access to eBooks and other content. Typically, eReader technology offers features such as text-to-speech, adaptable font size, built-in dictionaries, and reference tools that can help students build vocabulary, develop phonemic awareness, add notes, and highlight passages of text while reading.

## **Assistive/Adaptive Technology**

Assistive or adaptive technology tools make it possible for individual students with disabilities to access knowledge and information by adapting content into a medium that will best support them. The tools include, but are not limited to the following:

- Personal Reading Machines that scan and read a passage of text out loud;
- Speech or Voice Recognition that allows students to give voice commands to their computer;
- Screen Readers that allow printed text to be converted into oral text;
- Video Description which provides narrative text to describe on-screen action in videos;
- Large Print/Screen Magnification which provides the means to enlarge passages of text;
- Closed Captioning or Transcription that provides written text of the spoken words in a video or film. Transcribed text usually runs at the bottom of a video or film.

# A.1 DIGITAL TRENDS AND INITIATIVES

## A.1.3. Learning Models and Environments

Canadians for 21<sup>st</sup> Century Learning and Innovation (C21 Canada) is a national, non-profit organization that advocates for 21<sup>st</sup> century models of learning in education through initiatives dedicated to creating “a 21<sup>st</sup> century learning vision and framework that inspires Canadians, reflects Canadian values, and provides leadership in achieving the goal of accelerating the pace of the changes required.”<sup>14</sup>

Education leaders, such as those participating in C21 Canada initiatives, see digital learning environments as key to delivering effective education in the 21<sup>st</sup> century.

“... Digital learning environments are prerequisites to 21<sup>st</sup> century models of learning. For example, we must be able to personalize the learning experience and information and communication technologies make this possible. In fact, on-line learning, blended learning and virtual schools offer viable learning options for many learners, increase communication and collaboration and close the gap between learning opportunities available to students in urban areas versus rural and remote areas of Canada.”<sup>15</sup>

C21 Canada, 2012, p. 6

This section of the report provides an overview of the various learning environments that are key to delivering effective education in the 21<sup>st</sup> century at the present time.

## Personalized Learning

Personalized learning is seen as a cornerstone of education for the 21<sup>st</sup> century. It recognizes that students learn in unique ways, at different rates, times, and through multiple approaches. Technology systems and platforms such as an LMS and technology tools such as mobile devices more efficiently enable personalized learning.

According to Katrina Schwartz (2014), curriculum design can address personalized learning by combining the *how*, *what*, *when*, *where* and *why* of learning.<sup>16</sup> She describes this as follows:

- How?** Allow for lots of ways to learn the same content.
- What?** Provide a variety of knowledge base levels to allow learners to go deeper at their own pace.
- When?** Facilitate learning that can take place anytime.
- Where?** Promote learning that can take place anywhere.
- Why?** Offer multiple perspectives to address the needs of different learners.

## Adaptive Learning

Adaptive learning technologies facilitate a student-centred approach by allowing for the adjustment of learning pathways that are created to meet an individual learner's needs. For example, the technology allows adaptations to be made on pacing, how content is displayed to students, as well as the sequencing and level of difficulty of topics and learning tasks.

Adaptive technologies capture student data on an ongoing basis, and use the results to advance the learner's progress by providing tasks, content, and assessments that match the skills, knowledge, and concepts they have yet to grasp. In this way, adaptive learning technologies help inform the learner's pathway and support their growth over a period of time.<sup>17</sup>

## Blended Learning



**Blended Learning uses digital learning tools within a classroom setting where students are face-to-face with each other and their teacher. Blended Learning can use just a few digital tools or it may use a wide array of tools, courses, and resources.<sup>18</sup>**

Ontario Ministry of Education.  
<http://www.edu.gov.on.ca/elearning/blend.html>



The use of a blended learning model is on the rise across Canada and internationally. By its very definition, some degree of blended learning is evident in most K–12 classrooms in Canada today.

As stated in their eLearning Strategy, one of the goals of the Ontario Ministry of Education is to “make blended learning available for all Ontario students from kindergarten to grade 12”.<sup>19</sup>

Blended Learning looks different from district-to-district, school-to-school, and classroom-to-classroom. The following contexts may help to describe the varying degrees to which it is implemented in K–12 classrooms.

### Less Access to Technology

In classrooms where the availability of technology is limited, teachers deliver face-to-face instruction and students may use computers or other technology devices to access, complete, present, or submit their work. They may access digital learning resources such as eBooks, videos, and reference materials to gather information and knowledge.

### More Access to Technology

In schools where technology is less limited, teachers may enhance their instruction with the use of technology tools such as interactive whiteboards, tablets, and mobile devices. Students continue to participate in in-class lessons, but they use technology to do more, such as access digital materials, communicate with their teacher, collaborate with others, and complete, share, and submit their assignments.

## Access to a Learning Management System

If the school has access to an LMS for example, technology facilitates more aspects of learning. LMS tools such as discussion boards, blogs, announcements, ePortfolios, Dropbox, quizzes, and grade books allow for a higher degree of digital learning within the classroom setting. Teachers are able to more efficiently administer the course while students are able to access course content, communicate, complete and submit quizzes and assignments, and track their progress in a secure, online environment.

## Virtual/Online Learning

Virtual or online learning is also known as distributed or distance education.



Online learning has steadily become a more integral strategy for schools and districts in their efforts to offer students greater access to the courses they need... more and more schools are exercising greater control over their online and digital learning programs as affordable options are now more available, schools' expertise grows, curriculum and technology products improve, and teachers become more skilled at integrating online courses and techniques into their instruction.<sup>20</sup>

Evergreen Education Group, 2015, p. 4



The following are a few examples of provincial online learning initiatives in Canada.

### LearnNowBC (LNBC)<sup>21</sup>

To support distributed learning across British Columbia, LNBC provides free online services for K–12 students, adult learners, educators, and parents through their web-based portal. Blackboard Collaborate, an online web conferencing platform, is licensed for use until June 2017.

LNBC services include:

- An online learning environment where educators deliver synchronous instruction and assessment to learners;
- An online meeting space for professional development where administrators and other educational leaders share and develop emerging pedagogies;
- Access to district-subscribed digital resources;
- Post-secondary, trades, and career advice.

Under an agreement with the BC Ministry of Education, LNBC is managed by School District #73, Kamloops/Thompson.

## **Alberta Distance Learning Centre (ADLC)<sup>22</sup>**

With campuses located in Barrhead, Edmonton, Calgary, and Lethbridge, the ADLC has a long, successful history as a leading distance education provider in Canada.

At the time of this report, over 600 schools and 40,000 students in Alberta use the ADLC. The centre offers dozens of courses as well as the option to take them via three different delivery models—online, print, or blended learning. Both Brightspace by D2L and Moodle are deployed as LMS.

Students are able to learn at their own pace and at times and locations convenient to them. They communicate online with their teachers and complete course work using a wide variety of print and/or digital content.

Information Technology Services manages all technical infrastructure at ADLC, including their two LMS.

## **eLearning Ontario<sup>23</sup>**

The Ontario Ministry of Education manages all distance education programs offered across the province. Although each school district manages enrolment, online courses are delivered by the province through eLearning Ontario. The LMS platform for delivering all courses is Brightspace by D2L.

## **New Brunswick Distance Education<sup>24</sup>**

In New Brunswick, secondary school online courses are locally developed and conform to the curriculum guidelines developed by the Program Development Department. Print textbooks are available to students taking the online courses across the province. Instruction is delivered through Brightspace by D2L and the courses consist of lessons and assessments developed by teachers.

The province prides itself on their high school courses and actively promotes the sale of the courses to districts outside the province. In order to ensure the courses do not contain any third party material that may have territorial licensing issues, the courses are all developed locally and do not contain any purchased or licensed content.

## **Newfoundland and Labrador Distance Education<sup>25</sup>**

The Centre for Distance Learning and Innovation (CDLI) is responsible for developing and delivering senior high school distance education and online teacher professional development, as well as leading K–12 technology integration initiatives in the province. CDLI offers thirty-eight courses to students attending 103 schools, which are located in rural, remote, and isolated communities.

All of the CDLI courses delivered to students are through LMS Brightspace by D2L.

CDLI offers educators and students access to web-based learning resource content and multimedia learning objects that support provincial curricular learning outcomes. CDLI also provides free access to exam review materials in selected public exam courses, plus free, “live” online tutoring to students throughout the school year.

The courses are developed locally and conform to the curriculum guidelines developed by the Department of Education and Early Childhood Development. Print textbooks are available to students taking online courses across the province.

## Library Learning Commons

**Today, with the digitization of content and the ubiquity of the internet, information is no longer confined to printed materials accessible only in a single, physical location.<sup>26</sup>**

Holland, B., 2015, <https://www.edutopia.org/blog/21st-century-libraries-learning-commons-beth-holland>

The movement to transform School Libraries to Library Learning Commons is gaining ground in most Canadian jurisdictions. The traditional role of the Library is evolving to one that provides a “hub” for learning both *within* and *beyond* the physical space. Library Learning Commons are described as collaborative, technology-enabled, physical and virtual spaces where students work on their own and with others to co-construct knowledge and actively use, evaluate, co-create, and share information. There, individuals or groups of learners engage in project work and assignments, research, and a variety of creative activities that may involve the use of digital tools, devices, 3D printers, robotics, craft and hardware supplies, etc.

In addition to print-based materials, students and teachers have unlimited access to vast collections of diverse and differentiated digital content such as multi-media, eBooks, audiobooks, videos, and online reference material through a variety of searchable databases and subscriptions. These databases and subscriptions vary from province-to-province, district-to-district, and school-to-school across Canada.

**Printed books still play a critical role in supporting learners, but digital technologies offer additional pathways to learning and content acquisition. Students and teachers no longer need a library simply for access. Instead, they require a place that encourages participatory learning and allows for the co-construction of understanding from a variety of sources.<sup>27</sup>**

Holland, B., 2015, <https://www.edutopia.org/blog/21st-century-libraries-learning-commons-beth-holland>

The Library Learning Commons is considered a flexible school and community-based learning environment that contributes to student engagement and achievement by aligning with the way teaching and learning takes place in the 21<sup>st</sup> century.

It is also viewed as an ideal learning environment to provide access to Canadian content that reflects our country’s unique perspectives, cultures, and identities.

Alberta is the first province in Canada to issue a policy statement acknowledging the important role of the Learning Commons in teaching and learning.<sup>28</sup>

As it applies to educational resources, key elements of Alberta's guidelines focus on providing learners with access to quality Canadian and international content that is delivered in multiple formats (print and digital), and in multiple languages (English, French, and others).

A number of school districts in Alberta including Rocky View, Chinook's Edge, and the Calgary Board of Education are actively designing and implementing Learning Commons initiatives.<sup>29</sup> These districts have published their own frameworks and policy documents as follows:<sup>30</sup>

- Rocky View Schools: *Transformation to Learning Commons Rocky View Schools: Planning Framework*
- Calgary Board of Education: *Library to Learning Commons: Implementation Guide. Calgary Board of Education*
- Chinook's Edge: *Implementing Library Transformation: Creating a Learning Commons A Guide for Chinook's Edge Schools.*

# A.2 DIGITAL CONTENT

## A.2.1 The Landscape of Digital Content and Resources

Teachers and students want content and information that gives them *what* they need to know, *when* they need to know it, and in a *format* that is accessible to them.

### The Shift from Print-Based to Digital Resources

“Digital content includes everything from snippets of video to full-year textbooks in a digital format along with all the video, audio, text, animation, simulations, and assessments in between. Thus digital content can consist of smaller “chunks”, such as individual chapters or lessons, allowing for flexibility in creation, purchasing, and usage. It is blurring the traditional division between adopted or core content and supplemental content.”<sup>31</sup>

Fletcher, G., et.al., 2012, p. 6

Although the shift from print to digital resources may be the ultimate goal of provincial, district, and school-based initiatives across Canada, the K–12 sector is fragmented as to the pace and degree to which this shift is taking place.

While the use of digital content is increasing, print-based resources continue to be widely used in Canadian classrooms to support and enhance learning. The shift from print to digital resource use varies from province-to-province, district-to-district, school-to-school, and classroom-to-classroom.

Some jurisdictions and schools continue to purchase print-based supplementary resources and some are acquiring core curriculum resources that include digital components. Others are shifting from print-based textbooks to eTextbooks. Some are purchasing very few resources, making do with what they have until funding for new resources is available and/or the technology and technical infrastructure is in place.

Meanwhile, teachers and students have access to more free and open content than ever before given the ubiquity of content via the Internet, as well as the proliferation of content repositories, databases, portals, and applications. The trend in many classrooms is to supplement existing resources with multi-media learning objects (videos, simulations, etc.) until they are able to make a full change.

The vast majority of educators state that there are numerous barriers to the full implementation of digital resources, such as:

- Budget/funding dedicated to the purchase of digital content specifically and intentionally developed for use in the Canadian classroom;
- Availability and reliability of technology tools;

- Infrastructure (i.e., access to technology or broadband);
- Price point of licensed digital resources; and
- Teachers' lack of confidence and knowledge relating to the use of technology for instruction.

## Content to Personalize Learning and Differentiate Instruction

One of the most compelling uses of digital content is to personalize learning and differentiate instruction. Teachers pick and choose materials in different formats and modes, at different levels, and from a variety of sources to meet the diverse needs and interests of their students.

Even though teachers have access to a vast amount of free or open content, it is challenging and time-consuming for them to find materials that match the curriculum learning goals, are provided in the right format and at the appropriate level to meet the diverse needs of students in their class.

There are a growing number of students who benefit from assistive technologies (i.e., screen readers and captioning) as well as visual content (i.e., videos, images) to support and scaffold their learning. Online video databases such as *Discovery Education Streaming* offer one solution by providing authentic content for a range of topics and levels.<sup>32</sup>

Meanwhile, “digital natives” expect and demand digital content to learn. Students are accustomed to:

- Grabbing “bites” of information as they need it;
- Customizing content themselves for their own purposes;
- Accessing content from any device, anywhere, anytime;
- Using resources chosen by the teacher and self-selected for independent study (i.e., inquiry-based projects and assignments);
- Having some choice on the content and the formats/modes of the content they access;
- Co-creating, presenting, and sharing content using different technology tools;
- Completing assessments linked to content; and
- Developing their digital literacy skills by learning how to question and authenticate content themselves.

It is widely accepted that teachers are faced with numerous challenges that affect the shift from print-based to digital resources within the limitations of their realities. As such, they are incorporating digital content into their instruction according to their individual ability and comfort level to do so.

Given their current realities and limitations, teachers tend to access the following:

- Digital and print resources developed by educational publishers/developers;
- Existing resources (and may copy, modify and/or share them);
- Free or open content sourced on the Internet;

- Free or licensed content found in databases, portals, and systems deployed by the province or district;
- Local resources created by individuals or co-created by colleagues;
- Teacher-created materials accessed from sites such as *Teachers Pay Teachers*.<sup>33</sup>

## The Use of Free Online Content

People for Education is an independent charitable organization that was founded in 1996 with a mandate to conduct research, make policy recommendations, and facilitate a communications strategy to support public dialogue about public education. In a report entitled *Digital Learning in Ontario, The New Normal* (2012), People for Education share their insights on free online content.

The results of their survey of school principals highlight the increasing degree to which free online resources are being used in elementary and secondary classrooms. The findings are summarized in the following table.<sup>34</sup>

When teachers at your school need new learning resources, are they most likely to...	Elementary	Secondary
Acquire print textbooks or materials	31%	33%
Use online resources developed by publishers	19%	22%
<b>Use free online materials</b>	<b>36%</b>	<b>25%</b>
Other	14%	20%

People for Education, 2014, p. 6

One principal states: “Each year we purchase textbooks and materials as needed—but we do prioritize what we purchase due to budget constraints. Furthermore, staff will frequently find other good quality materials and resources that are free”.<sup>35</sup>

## Canadian Content

The People for Education report also brings the issue of quality of free online content and access to Canadian content to the forefront.

They offer this perspective on the use and quality of free online content:

Typically, free online materials are chosen by teachers based on their professional judgment. While some principals referenced receiving support from the Board, or from colleagues for choosing online resources, there is not a well-established system for vetting the quality of the free online resources that are widely used. To assemble good-quality materials using free online sources makes considerable demands of teachers’ time and expertise—most are not trained to develop curriculum.<sup>36</sup>

People for Education, 2014, p. 6

Classroom resources delivered in any format have always been expected to be of high quality and reflect Canadian perspectives. Publishers take great care to ensure that the materials they produce address the following requirements:

- Align with curriculum expectations/outcomes;
- Support instruction and self-directed study;
- Support the development of literacy and numeracy skills and 21<sup>st</sup> century skills and competencies;
- Meet students' diverse needs, interests, learning styles, and abilities;
- Promote deep understandings and meaningful inquiry;
- Provide multiple viewpoints that respect and reflect:
  - Local, provincial, and Canadian values and perspectives
  - Francophone communities
  - Knowledge and ways of knowing of First Nations peoples
  - Global issues;
- Be up-to-date, relevant, credible and reliable;
- Be of “high quality” and error- and bias-free;
- Be affordable, easy to access and use, and appropriate for the learning context.

People for Education also acknowledges the important role Canadian publishers play in the delivery of Canadian content. Their report highlights the challenges publishers face.

**Canadian publishers have raised concerns that, as funding for resources is reduced and as boards feel less obligation to pay copyright fees, publishers' capacity to provide high quality resources that are specifically Canadian and that are tailored for the Ontario curriculum is reduced.<sup>37</sup>**

People for Education, 2014, p.6

They also underscore the challenge faced by publishers to keep up with the increasingly diverse forms of digital content and the competition they face from technology providers.

**Publishers have started to convert textbooks into their digital or online forms, but this practice is already in danger of becoming outdated. There are hundreds if not thousands of companies who see a lucrative market in providing new apps, software, more integrated resources, multimedia learning content, and new “learning management systems” to schools and boards.<sup>38</sup>**

People for Education, 2014, p.6

An additional issue they raise is “how teachers, principals and school boards can evaluate the resources flooding in from the education technology market”.<sup>39</sup>

## Evaluation of Free Content



**While the potential to access new resources is now nearly limitless, it remains a concern that at least part of what drives schools to look for free materials is the decline in provincial funding for learning resources. Free online materials are not necessarily subject to review for quality, relevance or Canadian content and the use of these materials makes considerable demands on teachers’ time and presumed expertise. This important development needs conscious policy.**<sup>40</sup>

People for Education, 2014, p. 6



During the research phase of this report, it was challenging to find published policy guidelines regarding the evaluation and acquisition of free content for instruction. Where policies do exist for digital content in general, they tend to be holdovers from print acquisition protocols.

Guidelines such as those used in the approval of resources for Ontario’s Trillium List, may include criteria for evaluating curriculum-based materials that combine digital and print-based components. However, “the materials teachers are accessing for free online fall outside the scope of resources that are approved by the Ministry of Education in its *Trillium List*, which boards and teachers are required to use to select textbooks”.<sup>41</sup>

Many of the educators engaged in our discussions expressed concern that the lack of policies or guidelines for the evaluation of free or open digital content may negatively impact the quality and efficacy of educational resources used in many Canadian classrooms for years to come. They believe that without clear direction, teachers may continue to use material that has not been appropriately vetted for use in an educational setting. This belief is not intended to diminish the role teachers play in selecting the right content for their students, but rather to highlight the fact that teachers do not all have the time nor expertise to thoroughly evaluate or authenticate every piece of content accessed by themselves or their students.



The Ontario Educational Resource Bank (OERB) does provide Ontario teachers with online teaching resources contributed by their colleagues. These teacher-shared resources may be very useful but they do not answer the question of how the education system is ensuring the *quality* of free online resources, and we have not been able to determine how extensively the Resource Bank is being used.<sup>42</sup>

People for Education, 2014, p. 6



## The Submission and Approval of Educational Resources

As education in Canada is governed by each province and territory, policies relating to the submission and approval or recommendation of resources used by teachers and students vary from jurisdiction-to-jurisdiction. In many cases, local school districts review, approve, and license resources for use in their schools.

Resources may be submitted for approval or even adoption when the jurisdiction puts out a “Call for Resources” or a “Request For Proposal” (RFP). In jurisdictions that have an “evergreen” policy, resources may also be submitted on an ongoing basis.

Not all provinces have guidelines indicating the required submission processes. However, when resources are requested for review, the branch of the Department or Ministry of Education responsible for the review will post the submission requirements.

Resource submission opportunities are available in some provinces and these have been highlighted in *Section A.4, Sample Provincial Overviews*.

# A.2 DIGITAL CONTENT

## A.2.2 Open Educational Resources (OER)

In general, OER are teaching and learning materials licensed in such a way that they are free and may be used, reused, remixed and otherwise customized to meet specific needs.<sup>43</sup>

Fletcher, G., et.al., 2012, p.8

The OER movement continues to grow and is becoming a cornerstone of the Canadian K–12 educational system. The proliferation of OER content is evident across the country and there are numerous initiatives that support the development, access, and distribution of content.

At the heart of OER are four basic principles that were originally put forward to describe OER by David Wiley, one of the pioneers of OER, and his colleagues. These principles are as follows:<sup>44</sup>

**Reuse:** You are allowed to use all or part of the work for your own purposes (e.g., download an educational video to watch at a later time).

**Redistribute:** You are able to share the work with others (e.g., email a digital article to a colleague).

**Revise:** You can adapt, modify, translate, or change the work (e.g., take a book written in English and turn it into a Spanish audio book).

**Remix:** You are able take two or more existing resources and combine them to create a new resource (e.g., take audio lectures from one course and combine them with slides from another course to create a new derivative work).

OER are being supported across Canada in K–12 through a variety of organizations that include but are not limited by the following:

- Tutela is an ESL/FSL website with student and teacher resources;<sup>45</sup>
- Project Gutenberg Canada is a database of eBooks in the public domain;<sup>46</sup>
- Open School BC offers a collection of curriculum-based resources;<sup>47</sup>
- The Ontario Education Resource Bank (OERB) is a database of curriculum resources available to students and teachers in Ontario with a login provided by their institution;<sup>48</sup>
- Many OER resources have a Creative Commons license;<sup>49</sup>
- OER Commons is a commonly used US-based database of resources that can be filtered by theme, subject, grade level, common core standards, and other criteria.<sup>50</sup>

## Open School BC (OSBC)<sup>51</sup>

One of the numerous initiatives that support the development and distribution of open courses and OER is Open School BC.

A branch of the Service and Technology Division within the Ministry of Education, Open School BC develops and distributes educational resources for BC's K–12 system and public sector, and also provides online learning services to districts, schools, teachers, students, and parents. Specifically, their services include project management, instructional design, writing, editing, teaching, multimedia design, publishing, and information technology.

### Online Services

OSBC offers web-based, multimedia-enriched online courses that are provided through two LMS, Blackboard Learn 9.1 and Moodle. Their e-learning hosting service, the Online Consortium (OC), provides educators with an interface to teach online courses. This service is a cost-recovery, membership-driven service model.

### Open Course Resources

OSBC provides open course resources that are designed for self-paced, independent learners. Two main types of these resources are:

- “Course” resources provide content pages, activities, quizzes, assignments, and multimedia such as video and simulations.
- “Resource of the Week” resources provide smaller, discrete, interactive media segments that address specific topics.

### Online Resources

OSBC provides the BC school system with over 3,500 free online resources developed to address BC curriculum outcomes and to support all learning environments. Many of these resources are also available for purchase by the general public and delivered via print-on-demand, subscription, or data warehouse.

Types of Resources Include:

- Resources for Grades 10–12 non-credit open courses that are available through the Moodle LMS portal;
- Multimedia resources and websites;
- Teacher Guides, lesson plans, and assessments; and
- eTextbooks that are downloadable to multiple devices.

# A.3 DIGITAL CONTENT DELIVERY

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## A.3.1 Introduction

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Digital content is delivered to students through a wide variety of channels and systems. The format of resources range from flat PDFs that tend to be mirror images of published print resources to eBooks and interactive web-based learning objects, videos, and audio files.

Content databases are available through provincial and local district portals or directly through school-based websites. Many jurisdictions provide access to a variety of digital content through their Library Learning Commons.

Content databases or platforms such as CBC's Curio.ca and GALE by Cengage are often hosted by the owner of the content and are accessed by students and teachers through a sign-in process. For content providers who wish to offer access to their resources, the technology exists through LMS software to allow students immediate access to licensed content upon sign-on or login.

The following section of this report lists the technology systems, websites, platforms, portals, and databases commonly used across Canada to deliver content to teachers and students.

# A.3 DIGITAL CONTENT DELIVERY

## A.3.2 Learning Management Systems (LMS)

A Learning Management System (LMS) is generally defined as an online system or platform that provides a centralized place to create, deliver, and manage a course or a learning module. The software can be hosted locally or institutionally, by the province or district, or it can be made available through web-based technology. LMS contain a standard set of tools that can be accessed by students anytime, anywhere, and via multiple devices.

LMS all have similar goals and features that allow educators to plan, deliver, observe, and assess a form of learning. The form of learning varies in each circumstance and can range from an individual topic, outcome, or objective, or may be a full online course. The systems each have their own proprietary modes of operation that allow educators to post or link content, manage and monitor student interaction and participation, and assess and grade individual performance. Depending upon the feature sets included in each system, the LMS normally utilizes threaded discussion forums, group interaction forums and in some cases, provides the ability for real-time video conferencing.

The most widely used LMS systems in the Canadian educational market are Moodle, Blackboard Learn, and Brightspace by D2L.

LMS fall under two categories: open source, and those that are licensed by provincial education ministries, districts, and schools. Open source LMS include Moodle, Canvas, Sakai, and Google Applications for Education. Licensed LMS include Brightspace by D2L, Blackboard Learn, Edsby, Schoolology, and Edmodo.

LMS tools provide many solutions and benefits to 21<sup>st</sup> century education stakeholders. These include the following.

### Wireless & Student Access

LMS are accessible on all devices. The flexibility of these systems allows the education community to offer all means of access in areas with robust WiFi availability or by server-based technology in more rural and remote areas.

### Single Sign On (SSO)

Instructors and students log on to the LMS, where they have unlimited access to their course or learning module and a wide variety of resources, tools, and applications. This SSO capability removes the time and frustration it takes to sign in and out of numerous systems, applications, and websites.

SSO capabilities are a necessary function of an LMS system, though other third party software companies offer a SSO capability that can be integrated into an LMS.

## **Administration**

LMS save precious time by providing educators with a means to organize instruction and automate administrative tasks such as student information data, assignments, grade books, and announcements.

## **Flexible Learning Options**

One of the strongest attributes of LMS technology is the flexibility it provides to meet individual students' needs and give them more autonomy over their learning. It enables teachers to deliver instruction and resources through blended and online or virtual learning opportunities.

Students have access to information and course materials anytime from anywhere. They also can set their own pace in learning. For example, students can move quickly through material they already know, or return and review content as needed.

LMS also allow students to learn through multiple learning modes including audio, video, photos, articles, and interactive simulations.

The delivery of virtual or online courses through a licensed LMS is the preferred method to deploy distance education. Increasingly, provincial governments are utilizing LMS-based online courses to deliver a full range of programs to students located in population centres that do not offer a full range of in-class courses.

## **Social and Collaborative Learning**

LMS allow students to learn from each other by providing tools to create and share ideas, projects, resources, research findings, and questions. These tools typically include file sharing, social media, discussion forums, wikis, and group and individual blogs.

## **Communication**

LMS provide teachers with a means to more easily communicate and share information with students and parents through discussion forums, social media, videoconferencing, email, grade books, and announcements.

Students are able to connect with their peers and subject matter experts to conduct research, work on inquiry projects, or help each other with assignments.

Online tools allow teachers and their colleagues to share lesson plans, units of study, and emerging instructional practices. This technology facilitates and enhances professional learning.

## **Assessment**

LMS allow teachers to create and deliver assessment opportunities as well as collect data, provide instant feedback, and track ongoing student progress through homework, participation activities, assignments, and quizzes. Students are able to choose how to demonstrate their learning in a variety of ways including presentations, reports, podcasts, videos, wikis, and blogs.

## **Content**

LMS provide teachers with the space to create lessons and post content that can be used by students anywhere, anytime. Students have access to multiple resources such as e-books, videos, articles, podcasts, blogs, and reference materials at varying levels of difficulty and complexity. Personalized learning is made possible through the content choices students are able to make with the teacher facilitating those options.

## **Content Development and Delivery via an LMS**

Educational content is typically sourced from multiple providers that include publishers, multi-media companies, open source, the Internet, databases, and portals. Once a district, school, or teacher has made the decision to acquire or purchase a specific resource, that district, school, or teacher takes responsibility for integrating the content into a single LMS system.

Sometimes, course content (text-based readings, assessments, videos, and simulations, etc.) is developed locally by working groups, individual teachers, and other subject matter experts. The content is then integrated into the LMS.

At times, a comprehensive curriculum resource is adopted as the primary learning material. The resource (print or digital) may be made available to the student independently of the LMS.

Therefore, at the present time, LMS do not offer a marketplace for the content developed and published by ACP members. Commercially developed resources tend to be selected and acquired through the usual channels. Where digital content is already being sold into schools and post-secondary institutions, it is not on the strength of being pre-loaded or pre-integrated into an LMS.

# A.3 DIGITAL CONTENT DELIVERY

## A.3.3 Other Systems and Platforms

### Google Applications for Education (GAPE)<sup>52</sup>

The use of Google Apps for Education, and in particular Google Classroom, is expanding rapidly across the country. The fact that GAPE is free to schools has greatly increased its use and acceptance by the education sector.

A growing number of teachers are taking advantage of professional development opportunities to learn how to use and integrate GAPE into their teaching practice by attending workshops and institutes sponsored by Google.

GAPE is a core suite of productivity applications that Google offers to schools and educational institutions. These communication and collaboration apps include Gmail, Calendar, Drive, Docs, and Sites. A GAPE account unlocks access to dozens of other collaborative tools supported by Google. All of these applications exist only online and can be accessed from any device with an Internet connection.

Once a school decides to use GAPE, they can register their school domain (web address), and administer all teacher and student accounts from an administrative dashboard. In K–12, these apps are gaining market share and in some provinces and boards, the use of these apps is a district- or province-wide initiative.

There are a number of third party apps that are licensed applications that work seamlessly with GAPE and when used together, offer far more than a traditional LMS.

## Student Information Systems (SIS)

Student Information Systems (SIS) are used throughout educational jurisdictions to manage their day-to-day administration functions. Many of the systems include technologies that allow for the integration of initiatives such as ePortfolios and project-based learning. Many of the systems also include the ability to manage the access to resource databases and portals.

My Education BC is one example of an SIS used in K–12.

### My Education BC (MyEdBC)<sup>53</sup>

MyEdBC is the new BC Ministry of Education's Student Information System (SIS) procured from Follett Aspen to replace BCeSIS in the fall of 2015.

As reported by the BC Ministry of Education in the BC Education Plan (2015 update), MyEdBC was implemented in 18 school districts and more than 50 independent schools covering 131,000 students in 2014-15.<sup>54</sup>

The main function of MyEdBC is to collect and store data on all K–12 students in the province. Historically, this information included attendance, registration, courses of study, timetabling, and record cards. New features include a portfolio to track students' K–12 career, a grade book, and a private, cloud-based repository that houses student work, teacher plans, and learning resources. Records pertaining to Individual Education Plans (IEPs), learning outcomes, assessments, and “competencies” are also available. Parents have access to information about their child’s learning through a Family Portal.

MyEdBC website is hosted by Fujitsu and managed by the BC Ministry in collaboration with various district working groups.

## Library Management Systems and Portals

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A Library Management System is a software system used to manage and track the inventory and media assets of a library or large curated collection of content. It can be accessed anytime, from anywhere, and on multiple devices by logging in to the system.

### **Follett Destiny Library Manager<sup>55</sup>**

Many K–12 schools and districts use Follett’s Library Management System called Destiny Library Manager.

Destiny Library Manager supports open standards for integrated data sharing and single sign-on access, including Schools Interoperability Framework (SIF), Learning Tool Interoperability (LTI), OneRoster Security Assertion Mark-Up Language (SAML), and Open Educational Resources (OER).

Through Follett’s Destiny Discover, an eBook software application, students are able to access print and digital resources, including eBooks, audiobooks, and media assets, as well as free and subscription-based databases.

Features of Destiny Discover include:

- Access through any web browser and free mobile apps that support BYOD;
- Ability to search library resources through Google with Destiny Discover Chrome Extension;
- Circulation, cataloguing, inventory, and reporting capabilities.

### **Insignia Library System<sup>56</sup>**

Insignia Library System is a web-based HTML5 technology that offers modules within their system that go beyond a Library Management System offering. The system provides a SSO integration with both Microsoft and Google, a Textbook Manager, an Asset Manager, a full Online Catalogue, a Report generator, and mobile apps for smartphones and tablets.

Insignia can be used on any device in any browser. One of the largest school boards in the country, the Toronto District School Board, currently uses Insignia across their system.

## OverDrive Education<sup>57</sup>

OverDrive offers more than two million titles from over 5,000 publishers to support curriculum and instructional goals. The content available on OverDrive is compatible with all commonly used devices.

OverDrive can be used online or offline with an accompanying application.

Canadian publishers who distribute their materials on OverDrive include, but are not limited to: Crabtree, Brush Education, Kids Can Press, Annick Press, Orca Book Publishers, Anansi, HarperCollins Canada, Québec Amérique, and Tralco-Lingo.

Content available through OverDrive includes:

- Books by selected Canadian publishers;
- Textbooks and supplemental curriculum materials;
- Streaming video;
- Novels, literacy nonfiction, and information texts;
- Reference and research;
- Professional development resources;
- Special Education, French Immersion, English Language Learners (ELL) and foreign languages.

# A.3 DIGITAL CONTENT DELIVERY

## A.3.4 Databases, Websites, and Portals

### British Columbia

#### Educational Resource Acquisition Consortium (ERAC)<sup>58</sup>

ERAC is a cooperative organization that works in partnership with their members, public school districts and independent schools to provide a variety of services to support the BC K–12 education system. ERAC operates on a cost-recovery basis and a vendor pay model. It is funded through membership fees, an annual Ministry grant, and fees for services rendered.

Services include but are not limited to:

- Evaluation, licensing, and acquisition of print, software, and digital learning resources;
- Access to ERAC Resource Collection, an online, searchable bank of resources evaluated by BC educators and approved by ERAC for use in BC schools;
- Access to BC Digital Classroom, an online database of digital resources;
- Resource training for products purchased from ERAC.

Working as a consortium, ERAC secures licenses for all types of resources at better prices and passes those savings to their membership across BC. ERAC member districts and schools are responsible for payment transactions to vendors.

ERAC's Roadmap to the *Digital Classroom* may be of interest to publishers and can be found here: <http://bcerac.ca/resources/whitepapers/roadmap/index.aspx>.

### Alberta

#### LearnAlberta.ca<sup>59</sup>

LearnAlberta.ca is a comprehensive website that provides digital learning and teaching resources to support the province's Programs of Study. It is managed by the Curriculum Design Supports and Production Branch (CDSPB) of Alberta Education.

The CDSPB both develops and purchases digital resources included on this site. The site also provides access to the following:

- Online Reference Centre (ORC) that is available to all Alberta K–12 students, parents, staff, and pre-service teachers; and
- T4T Courses which provide teachers with access to provincially authorized teaching and learning resources (student courses, assignments, teacher resources, answer keys, etc.) developed by the Distributed Learning Branch of Alberta Education.

## Manitoba

### Manitoba Education Library<sup>60</sup>

The Manitoba Education Library provides K–12 educators, post-secondary students, adult literacy instructors, and parents with a wide collection of resources and library services to support curriculum implementation, research, and professional development.

A searchable database, The Library's Online Catalogue includes:

- Manitoba & WNCP recommended resources;
- Supplementary K–12 materials;
- Fiction, graphic novels, big books;
- Kits, pictures, posters;
- Multimedia (including audio);
- Manitoba Education Publications; and
- Grades and Subject Guides which include Recommended Learning Resources, books, kits, and digital resources with a focus on the Manitoba curriculum.

## Ontario

### OSAPAC/CCPALO Database Of Digital Resources<sup>61</sup>

The Ontario Software Acquisition Program Advisory Committee (OSAPAC) works with the Ministry of Education to survey teachers in Ontario regarding their overall software requirements.

They then consult with the Ministry of Education to confirm those requirements and an RFP or RFT process is initiated for requested software.

Some general features looked for in software include the following.

- Commercially released;
- No more than three years old;
- Networkable;
- Available in Windows 2000, XP, Vista, Win7, Win8, Win8.1 and/or Macintosh OS X;
- Available in English and French;
- Canadian made, or at least, provided by an exclusive Canadian distributor;
- From a company that is capable of providing regional training and support.

Licensed software is made available to all schools in Ontario. The complete list of licensed software is available at <https://www.osapac.ca/dlr/>.

## Ontario Educational Resource Bank (OERB)<sup>62</sup>

As Ontario's learning object repository, the Ontario Educational Resource Bank (OERB) offers a growing number of free digital learning resources to K–12 teachers and students. There are thousands of resources including units, lesson plans, activities, maps, and interactive resources, which are:

- Created by teachers for teachers;
- Aligned with the Ontario curriculum;
- Searchable by grade, course or subject, strand, overall expectations, learning style, author, file format, and keyword;
- Derived from and designed for both the public and Catholic systems;
- Easy to access and use;
- Offered in convenient formats including Microsoft Word, PowerPoint, PDF, and Flash;
- Downloadable and modifiable.

## Commonly Licensed or Free Digital Content Collections and Databases

<b>Content Collections and Databases</b>	<b>Description</b>	<b>Country of Origin</b>
National Geographic Kids	Digital content such as magazines, books, apps, games, toys, videos, etc. delivered by National Geographic	United States
National Film Board	A collection of Canadian media that includes over 3,400 French and English films and clips	Canada
Curio.ca	Streaming access to documentaries from CBC and Radio-Canada including television and radio, news reports, and archival material	Canada
Gale Education	A collection of thousands of digital, non-fiction, curriculum aligned content from Cengage Education	United States
Discovery Education	Robust collections of digital content and TechBooks for all grades and multiple subject areas	United States
World Book	Research tools including articles, primary source collections, student activities, audio, video, and periodicals	United States
Britannica Online School Edition	Britannica Online School Edition provides licenses for encyclopedias and related materials for students of all levels	United States
TumbleBook	A collection of animated talking picture books	Canada

Learning A- Z	Reading A-Z (Reading Solution Bundle) and RAZ Kids include over 3,000 printable online books, quizzes, and vocabulary activities	United States
Scholastic Digital BookFLIX, ScienceFLIX	Over 100 themed pairs that match classic, fiction video storybooks with related non-fiction eBooks from Scholastic	United States/ Canada
Expert Space (XSpace)	Online content from Scholastic (videos, articles, primary sources, web links, etc.) and tools designed for social studies and science	United States/ Canada
DreamBox	A K-8 online math program complete with lessons and interactive activities from DreamBox Learning	United States
Math Strategies Primary	Software program that supports K–3 students with single and multi-digit computations	Canada
Matific	A digital K-6 math resource	Israel
Gizmos	Over 400 math and science simulations for Grades 3–12	United States
Idélo	Thousands of online resources in French from Groupe Media TFO	Canada
KnowBC.com	An online, subscription-based collection of BC reference and history resources from Harbour Publishing	Canada
Access Learning	Canada's leading provider of educational media. Over 4,500 full-length and 20,000 clip level educational videos. Search, stream and download content that has been correlated to provincial curriculum.	Canada
Safari Montage	An integrated platform that delivers curriculum-linked educational video titles from PBS, The History Channel, National Geographic, Scholastic, Disney Education, BBC, and others	United States
Khan Academy	Education lessons for science, math, arts, humanities, and computing	United States
Learn 360	Curriculum-based educational audio-visual content (i.e., feature films) for classroom instruction	United States
EPIC	Access to 20,000+ books for kids aged 12 and under on multiple devices	United States
EBSCO Host	Massive online library database of eBooks, magazines, journals, audiobooks, reference materials, fiction and nonfiction titles, etc.	United States

## Commonly Licensed or Free Software Tools for Teachers

Software Tools	Description	Country of Origin
ESRI Canada ArcGIS Online ArcView	A mapping platform to make and share maps from ESRI Canada. A GIS package, with tools for mapping, analysis, data editing, and map publishing	Canada
Pixton	A comic creation and digital storytelling tool	Canada
Bitstrips for Schools	Tools to make and share comics	United States
Frames	Stop-motion animation, claymation, and digital storytelling software program	United States
Mindomo	A mind mapping tool and collaboration services provider	Romania
XpressLab	Tools for creating assignments and tests to develop oral communication skills using voice recordings	Canada

# A.4 SAMPLE PROVINCIAL OVERVIEWS

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## Introduction

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It was the original intent of this report to include substantive information on each province and territory in Canada and to include their individual policies and protocols as they relate to the acquisition and deployment of digital resources. However, it was difficult to engage with those responsible for the policies and protocols governing digital resource acquisition in every jurisdiction. As well, there is very little information online from any of the provinces outlining their policies and protocols. Where information is available, it tends to be for print-only resources and in some cases, more than ten years old.

Therefore, after speaking with teachers, consultants, and others in the respective jurisdictions, the decision was made to provide sample overviews that focus on new curriculum renewal and digital initiatives as well as how digital resources are generally approved, recommended, and acquired in select K–12 jurisdictions in Canada.

## British Columbia

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British Columbia has both provincial and district based digital initiatives. Although the province does not define a specific technology blueprint for all schools, most districts have developed a technology action plan to address their specific local priorities and needs.

Provincial technology initiatives include:

### **K-12 Next Generation Network<sup>63</sup>**

This initiative focuses on providing improved access to digital tools and resources that support both face-to-face and online learning in the K–12 sector. In 2014, the Ministry of Education entered into a three-year agreement with Telus to upgrade the Provincial Learning Network to a modern, high-capacity network. This project is scheduled for full implementation in 2017.

### **MyEducationBC Student Information System<sup>64</sup>**

MyEdBC is the new BC Ministry of Education's Student Information System (SIS) procured from Follett Aspen to replace BCeSIS beginning in the fall of 2015. The full implementation of MyEdBC is scheduled to take place by the 2017-18 school year.

## Evaluation and Approval of Educational Resources

### Educational Resource Acquisition Consortium (ERAC)<sup>65</sup>

One of most valuable services ERAC provides to its membership is the review and approval of education materials. They evaluate print, software, and digital learning resources on a cost-recovery, vendor-pay basis.

Currently ERAC reports that it is evaluating more print than digital resources. They report that teachers still prefer to use print over digital resources because print-based materials are considered more reliable. They also report that teachers prefer Canadian content as long as it is no more expensive than materials available from the international marketplace.

ERAC also acknowledges that the nature of print resources is changing. They see a shift away from larger single volumes of material to smaller, discrete “chunks” of content. They believe this allows for greater differentiation and supports personalized learning.

On the print side, storybooks, picture books, activity cards, and modules are in most demand.

## Curriculum Renewal

In October 2013, BC launched the development of a revised curriculum for K–12.

The K–9 curriculum was released for full implementation in the fall of 2016, with grades 10–12 to follow in the fall of 2017.

*BC's Education Plan: Focus on Learning* (January 2015 update) provides a detailed description of the key priorities of the Ministry, which include a focus on:<sup>66</sup>

- High standards;
- Personalized learning;
- Foundations skills (literacy and numeracy);
- 21<sup>st</sup> century skills and competencies,
- Flexibility and choice;
- Quality teaching;
- Innovation; and,
- Public engagement.

To access this document and for detailed information, visit <http://www2.gov.bc.ca/gov/content/education-training/k-12/support/bcs-education-plan>.

## Alberta

Alberta also has both provincial and district based digital initiatives. In addition to several policy guidelines released by Alberta Learning, most districts have developed a technology action plan to address their specific local priorities and needs.

Provincial technology initiatives include:

### **Learning and Technology Policy Framework<sup>67</sup>**

This document describes a common vision for the integration of technology into the learning environment across Alberta. Five interrelated policy directions include student-centred learning; research and innovation; professional learning; leadership; and access, infrastructure and digital learning environments.

### **Evaluation and Authorization of Educational Resources**

Although Alberta Education reviews, authorizes, and develops print, digital, and multimedia learning resources, the use of those resources by teachers and students is not mandatory. School boards are free to choose instructional resources for use at the local level.

A database of all authorized learning and teaching resources is available on the Alberta Education website. Authorized learning and teaching resources and provincial resource subscriptions are also available digitally from LearnAlberta.ca.

Whenever resources are needed, Alberta Education invites publishers, producers, and suppliers to respond to Calls for Resources or RFPs.

### **Alberta Education Publishers' Database<sup>69</sup>**

Alberta Education maintains a database of companies that may be interested in responding to Calls for Resources or RFPs. Publishers who wish to register for this database can go to <https://education.alberta.ca/information-for-publishers/publishers-database/>.

### **Curriculum Renewal**

Alberta Education announced the development of a curriculum redesign beginning in September 2016 and continuing to 2022. Timelines are broken down as follows:

- K–Grade 4 by late 2018;
- Grades 5–8 by late 2019;
- Grades 9–12 from 2020–22, in phases.

The new curriculum will be informed by the following existing documents:

- Current Programs of Study;<sup>70</sup>
- Inspiring Education;<sup>71</sup>
- Ministerial Order on Student Learning, and the Guiding Framework.<sup>72</sup>

The redesign will focus on the following elements:

- Learner outcomes that support 21<sup>st</sup>-century competencies\*, literacy and numeracy, deep and personalized learning;
  - First Nations, Métis, and Inuit student learning; Education for Reconciliation
  - Francophone perspectives.
- \* Competencies include critical thinking, communication, problem-solving, collaboration, managing information, cultural and global citizenship, creativity and innovation, and personal growth and well-being.

Curriculum redesign work will be done simultaneously in English and French for six subject areas: Arts, Language Arts (English, French, Français), Mathematics, Social Studies, Sciences, and Wellness. There will be a common design across all grades and subjects and the number of specific learning outcomes will be reduced to allow for flexibility.

Of particular note, the curriculum will be developed and available for use through an interactive digital platform called the Curriculum Development Application (CDA). The platform will:

- Provide a one-stop shop for subject-specific programs of study, resources, and assessment allowing teachers to create learning opportunities through access to the portal;
- Support a shorter curriculum development cycle and an ongoing (evergreen) process.

## Manitoba

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Manitoba Education does not define a specific technology blueprint for all schools, however many districts have developed a technology action plan to address their specific local priorities and needs.

Manitoba and Saskatchewan both deploy Blackboard as their provincially licensed LMS. Blackboard is mainly used to deliver and administer online/distance education and blended learning.

GAFE has a large and growing base of users. More teachers are attending Google institutes and workshops to gain knowledge and confidence in using this platform.

### Evaluation and Recommendation of Learning Resources

#### Learning Resources Unit: Manitoba Education<sup>73</sup>

The Learning Resources Unit of Manitoba Education and Training is responsible for the evaluation and recommendation of learning resources. Materials are submitted and then selected for use in Manitoba classrooms based on criteria pertaining to curriculum fit, inclusion of appropriate instructional approaches, as well as design, bias, appeal, and age-appropriateness.

Manitoba Education accepts submissions of resources on a continual basis and puts out a Call for Learning Resources to publishers, distributors, and content providers, requesting submission of relevant resources for review and recommendation.

School divisions nominate teams of teachers to review and make recommendations to Manitoba Education on the suitability of new materials submitted. Recommended resources are listed on annotated bibliographies by subject area and by shortlists.

Recommended resources can be found by visiting:

- <http://www.edu.gov.mb.ca/k12/learnres/bibliographies.html>
- <http://www.edu.gov.mb.ca/k12/learnres/shortlists.html>

For detailed information on the Learning Resources Evaluation Process, see [http://www.edu.gov.mb.ca/k12/learnres/evaluation/eval\\_process.pdf](http://www.edu.gov.mb.ca/k12/learnres/evaluation/eval_process.pdf).

### **Manitoba Learning Resource Centre (MLRC)<sup>74</sup>**

School divisions and/or schools are free to select learning resources for use in their local area and purchase those materials from the Manitoba Learning Resource Centre (formerly the Manitoba Textbook Bureau);

Schools in Manitoba may purchase all types of print, digital, and multi-media learning resources that are recommended by Manitoba Education from the MLRC. Their services include the acquisition, distribution, and billing of resources.

Manitoba Education provides a grant of \$60 per student for the purchase of learning resources. Of this \$60, \$30 per student is allocated to each school district and \$30 to the MLRC.

## **Ontario**

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Ontario, the largest and most diverse Canadian province, has both provincial and district based digital initiatives. Most districts have developed local technology action plans to address their specific local priorities and needs.

Provincial initiatives include the following.

### **Ontario's eLearning Strategy<sup>75</sup>**

The Ontario eLearning Strategy supports Ontario schools with access to courses, software, and resources. The technical components of this initiative include:

- Provincially licensed LMS, Brightspace by D2L;
- Ontario Educational Resource Bank (OERB), a digital library of curriculum based resources;
- eCommunity Ontario, an online community for districts and teachers;
- OSAPAC, a web-enabled database of provincially licensed software;
- eLearning Ontario Secondary School Courses, which are offered by school districts. Lists of available online courses offered each year are available at <https://courses.elearningontario.ca>.

## Achieving Excellence: A Renewed Vision for Education in Ontario<sup>76</sup>

In 2014, the Ontario Ministry of Education released a policy document that highlights four key goals:

- Achieving Excellence;
- Ensuring Equity;
- Promoting Well-Being; and
- Enhancing Public Confidence.

The first three action items in the first goal of Achieving Excellence: A Renewed Vision for Education in Ontario are directly related to this report and highlight the direction taken by the Ministry of Education.

To achieve success, Ontario will:

- Invest in the technology, design, and infrastructure required for the classrooms of the future to serve the needs of all communities;
- Invest in innovative teaching practices and instructional methods enabled by technology to more precisely engage and address the learning needs of all students;
- Work with partners including TVO and TFO to build on existing online resources for students, educators, and parents.

## Evaluation and Approval of Textbooks

### Trillium List<sup>77</sup>

The Trillium List contains the titles of those textbooks approved by the Ministry of Education for use in Ontario schools. The textbooks included on the Trillium List have been subjected to a rigorous evaluation in accordance with the criteria specified in a document available to publishers, titled *Guidelines for Approval of Textbooks*.

The definition of “Textbook” in the Guidelines for Approval is the following:

**A textbook is defined as a comprehensive learning resource that is in print or electronic form, or that consists of any combination of print, electronic, and non-print materials collectively designed to support a substantial portion of the Ontario curriculum expectations for a specific grade and subject in elementary school or for a course in secondary school, or a substantial portion of the expectations for a learning area in the Ontario Kindergarten program. Such a resource is intended for use by an entire class or group of students.<sup>78</sup>**

Ontario Ministry of Education. <http://www.trilliumlist.ca/>

One of the key criteria for inclusion on the Trillium List is that the materials should be Canadian authored and printed in Canada. There is, however, no inclusion in the Trillium List for the evaluation of stand-alone online learning resources.

Trillium List Guidelines have not been updated since 2008. Some districts and some schools adhere more than others to the Trillium List when they select resources for teaching and learning. In the cases where the district does not adhere to resources included on the Trillium List, they make the decision to review, approve, and select resources at the local level.

## New Brunswick

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In New Brunswick, technology is mostly purchased through board initiatives and school councils. The Department of Education does support a Computers in Schools department and they provide technology to the school boards and directly to schools.

Most schools have a Learning Commons or library centre with computer stations.

SMART Boards are used throughout the province but are not in every classroom. Many schools employ a cart-based system with either Chromebooks or iPads. GAFE is deployed on a school-by-school basis and the uptake is fairly sporadic.

The Department of Education supports Brightspace by D2L for Distance Education courses. They do not have a provincial BYOD policy.

New Brunswick provides K–12 education through traditional school-based programs as well as offering senior level (Grades 9–12) programs through Distance Learning. There are two parallel streams of Education, one Francophone and one Anglophone. The courses mirror each other and the province prides itself on being educationally bilingual. The information collected for the purpose of this report has been from the Anglophone sector.

The Department of Education, through the Program Development Division, provides the provincial curriculum and the resources to support the curriculum. For the most part, the Department continues to provide print support for all core curriculum subjects. They contract publishers for any locally needed content when the curriculum dictates local content. In the past, the province has contracted publishers to adapt their content to meet the New Brunswick curricular outcomes.

Similar to Newfoundland and Labrador, the province is not looking at sourcing digital-only material but will supplement print resources with digital resources if they are available. The inconsistency of access to technology or to broadband precludes the provision of digital-only materials.

## Newfoundland and Labrador

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The province of Newfoundland and Labrador provides K–12 education through traditional school-based programs as well as offering Grades 9–12 programs through Distance Learning. There is only one English school board for the province with regional offices based in St. John's, Gander, Corner Brook, and Happy Valley-Goose Bay.

The Department of Education provides the provincial curriculum and the resources to support the curriculum. For the most part, the Department continues to provide print support for all core curriculum subjects. They contract publishers for any locally needed content when the curriculum dictates local content. The province has in the past contracted curriculum-based publishers to adapt their content to meet the Newfoundland and Labrador curriculum guidelines.

At the current time, the province is not looking at sourcing digital-only material but will supplement print resources with digital resources if they are available. The inconsistency of access to technology or to broadband precludes the provision of digital-only materials.

The Department of Education does not provide library resources and all library content is sourced either through the English School Board or through direct school purchases.

The Department of Education does not support a province-wide LMS except for the provision of Distance Education courses, nor do they have a provincial BYOD policy.

Technology is purchased through board initiatives and school councils. Most schools have a Learning Commons or library centre with computer stations. SMART Boards are used throughout the province but are not in every classroom. Many schools employ a cart-based system with either Chromebooks or iPads. GAFE is deployed on a school-by-school basis and the uptake is fairly sporadic.

### **Evaluation and Approval of Learning Resources**

The Curriculum Branch of the Department of Education in Newfoundland and Labrador is responsible for evaluating and approving learning resources. Once approved, the resources are ordered through the Learning Resources Distribution Centre (LRDC). The centre stocks resources and schools order through an online ordering system.

Curriculum development and the selection of resources is an ongoing responsibility of the Department of Education and the Curriculum Branch will put out a Call For Resources to examine the landscape of resources for a curriculum under development. Once the call is completed, the curriculum branch decides whether the resources meet the needs and outcomes of the curriculum. They may then decide to pilot the resources before making any decision to purchase. Depending upon the fit of the resources to the curriculum, the Curriculum Branch may ask for an adaptation from the publisher or they may go to an additional Call for Resources to have materials customized for Newfoundland and Labrador students.

To check for current Calls for Submission, visit <http://www.ed.gov.nl.ca/edu/k12/curriculum/lrdc.html>.

# B.1 DIGITAL CONTENT

## B.1 Digital Trends and Initiatives

All colleges and universities in Canada have embraced technology to facilitate student learning but increasingly, they employ technology as a tool to manage and deliver courses. Blended learning, the flipped classroom, and online-only courses are standard in most post-secondary institutions in Canada.

For the most part, post-secondary institutions now mandate the use of an LMS for each course available to students. The LMS course shell for on-campus courses is the tool most accessed and used by both the students and instructors. As described earlier, the LMS is a robust enterprise system with modules or features that allow instructors and students to engage fully with the course.

The use of an LMS is determined by the instructor. At a minimal level, it is used as an administrative tool that allows the student to see the course outline, schedule, and the grades and marks awarded during the course. However, the flexibility of the LMS allows instructors who wish to take full advantage of the features, to facilitate learning opportunities for their students that include:

- Access to lecture slides and notes;
- Readings that have been uploaded;
- Video files that enhance the learning;
- Links to websites and databases;
- Links to preapproved purchased or licensed resources;
- Assignment and homework instructions;
- The ability to hand in assignments through the LMS;
- Interact online through the LMS with learning groups.

Each LMS has numerous other functions that are only limited by the instructors' decision to access and utilize such features of the LMS.

# B.1 DIGITAL CONTENT

## B.1.1 Learning Environments

### Blended Learning

The blended learning environment refers to learning that occurs both online and in-class. The online component of a blended learning course usually extends the in-class time between the students and the instructors in a variety of ways, including:

- The provision of additional content;
- Follow-up readings;
- Assignments; and
- Further research.

In a course employing blended learning techniques, the possibilities for using various forms of content are endless. In cases where instructors are providing the content, it is uploaded to the LMS or a link to the content is highlighted. In many instances, the links are directly to content held by the institutions Library/Learning Commons.

Post-secondary institutions' adoption of "Fair Dealing Guidelines" and interpretation of fair dealing for education have allowed instructors to migrate content that was previously made available to students through purchased coursepacks directly onto LMS systems for free.<sup>79</sup> This practice has contributed to a loss in revenue for Canadian publishers for their content when used by students as required or recommended course materials.

### Flipped Classroom

The flipped classroom is a form of blended learning where students are normally introduced to a topic through online delivery. The online component could be a reading or chapter from a book, a video on the topic, a slide presentation, or any other form or genre of content the instructor feels introduces the student to the topic. The in-class portion occurs after online learning and tends to focus on what the students have learned from the introduction of the online component and how to extend the learning.

### Adaptive Learning

In 2015, Gartner Inc., the world's leading informational technology research and advisory company, listed adaptive learning as the number one trend in their top ten educational technologies to watch.<sup>80</sup>

Adaptive learning allows for the presentation of content that allows students to interact with and follow numerous paths or avenues of learning. The path the student follows is usually based on a comprehension model of previously seen material. Data is collected along the way and the system or software can then adapt the information given to the student. This adaptation allows the students to comprehend and master the content at their own pace.

Adaptive learning has been known as guided learning or student-based learning, and is increasingly cited as a form of personalized learning.

# B.1 DIGITAL CONTENT

## B.1.2 Open Access

The Open Access movement for course content is represented by a variety of models. Free or freely available materials are provided through numerous databases of content. Most of these content repositories contain material licensed with Creative Commons licences and are freely available to instructors and students.

A comprehensive listing of the free academic databases and search engines is available through Wikipedia. One of the major listings is the The Directory Of Open Access Journals (DOAJ) that, as of September 2014, includes more than 10,000 open access journals in multiple research areas. Each post-secondary institution also has links to open-source content through their Library Learning Commons. The following is summary of Open Educational Resources available to post-secondary teachers and students.

### OER Commons

OER Commons is a dynamic digital content hub. It includes full courses, modules, syllabi, lectures, homework assignments, quizzes, lab activities, pedagogical materials, games, simulations, and many other resources contained in digital media collections from around the world.

These searchable collections allow educators to find a variety of materials across different disciplines. Most offer advanced searching options that allow you to narrow what can sometimes be an overwhelming number of results into a manageable list of quality resources. OER Commons and MERLOT are the largest repositories of content with broadest coverage; the other repositories are more targeted.

### BC Open Textbooks

The goal of the BC Open Textbooks project was to make higher education more accessible by reducing student cost through the use of openly licensed textbooks. Specifically, the project was asked to create a collection of open textbooks aligned with the top 40 highest-enrolled subject areas in the province. A second phase was announced in the spring of 2014 in which an additional 20 textbooks targeting trades, technology, and skills training would be developed.

### MERLOT

MERLOT is a curated collection of free and open online teaching, learning, and faculty development services contributed to and used by the international education community. The MERLOT collection consists of tens of thousands of discipline-specific learning materials, learning exercises, and content builder web pages, as well as associated comments and personal collections. All of these materials are intended to enhance the teaching experience.

## **Open Stax College**

Open Stax College offers free open-source, peer-reviewed textbooks for college courses, primarily in physics, sociology, and biology.

OpenStax College is an initiative of Rice University and is made possible through the support of several philanthropic foundations such as The William and Flora Hewlett Foundation and The Bill & Melinda Gates Foundation.

## **Open Textbook Library**

Open Textbook Library is a library of open access textbooks and a tool to help instructors find affordable, quality textbook solutions. All textbooks in this library are complete and openly licensed, and the system allows for peer review.

## **InTech**

InTech is a multidisciplinary open access publisher of books and journals covering the fields of science, technology, and medicine. InTech has published more than 850 open access books, and provides support services for faculty who wish to publish a book or journal and make it available via open access.

## **MIT OpenCourseWare (OCW)**

OCW is a web-based publication of virtually all MIT course content. A permanent MIT activity, OCW is open and available to the world. Subject coverage spans the humanities, social sciences, and science.

## **Massive Open Online Courses (MOOCS)**

The advent of Massive Open Online Courses (MOOCS) has furthered the open source movement by offering an unlimited number of post-secondary courses for free. The Economist estimated that in 2016, more than 55 million users worldwide signed up for a MOOC.<sup>81</sup>

The drop out rates for MOOCs are extremely high, but as the Economist article points out, MOOCs are here to stay. MOOCs contain their own content, though in rare instances, a MOOC may provide links to content available for purchase or licence.

## **eCampusOntario**

eCampusOntario.ca is the website and forum for the Ontario Online Learning Consortium (OOLC), a not-for-profit corporation with membership comprised of all publicly funded colleges and universities in Ontario. The goal of the organization is to provide learners and faculty a support network and virtual space to access and share a variety of resources related to online and blended learning. OOLC is fully funded by the Ontario government and provides open online resources for students and faculty across disciplines and courses for all of Ontario's colleges and universities.

# B.2 DIGITAL CONTENT DELIVERY

## B.2.1 Introduction

The digital landscape of teaching and learning resources as evidenced by the above list of available resources is growing exponentially. The discoverability and availability of content is a primary concern for educators. Digital content that is discoverable by curricular outcomes or topics can be easily integrated into an LMS system and made available for student use. However, the uptake of digital course materials is a slow process.

“Asked when they thought the majority of their course materials would be primarily digital, fully a fourth of the surveyed faculty indicated “never,” while another 9 percent said by fall 2022, and 17 percent indicated by fall 2020. In contrast, fully a sixth (16 percent) reported that majority of their current course materials were digital as of fall 2015, and a third (34 percent) anticipated primarily digital course materials by fall 2018.<sup>82</sup>

Campus Computing, 2016

## B.2.2 Landscape of Digital Content

In order to take advantage of the various teaching scenarios available through the use of technology and particularly by utilizing LMS, the types, genres, and sources of digital content vary greatly. Digital supplements as well as eBooks available from the major educational publishers have pushed digital sales to more than 50% of their educational revenue. Pearson reports that digital products now account for more than 50% of their revenue and McGraw-Hill announced that digital unit sales overtook print unit sales in its U.S. Higher Education Group in 2015.<sup>83</sup> Although eBooks are the cornerstone of publishers’ digital offerings, digital courseware such as assessment and testing software and homework or study guides are becoming more popular with instructors and students.

Numerous options exist for instructors to include all the required content and features for the courses they teach. The traditional LMS have increased their functionality to include all of the robust features needed to cover the requirements of a full course. The acquisition and delivery of content through an LMS happens in a number of ways. Most LMS are SSO enabled and every student, when registered in a course, can log on and automatically have access to all features of the course including course outlines and schedules, lecture notes, assignments, uploaded readings, videos, links to the institutional library for other content held in the library collections, and other components the instructors want included in the course. Increasingly in partnership with campus bookstores, links to purchasing adopted content is also available through the LMS. Transactional third-party software for purchasing content is also now available through some LMS.

# B.2 DIGITAL CONTENT DELIVERY

## B.2.3 Systems and Platforms

Most campus bookstores have partnered with publishers or their digital content suppliers to sell eBooks and digital supplements to students. Typically when a resource is recommended by an instructor for a course, the student will buy the resource either in person at the bookstore or online. They are given a unique code to unlock the resource and after signing into their course they can enter the code and will then have access to the resource through the LMS or whenever they are logged on. There are also provisions for offline access depending on the agreed upon terms of sale.

Increasingly, a new business model is emerging and is known by many different names. These names include but not limited to:

- Inclusive Access;
- Academic Content Licensing;
- Institutional Sales;
- Course-Fee Model Sales;
- Subscription Model;
- Text with Tuition;
- 100% Sell-Through;
- Digital Resource Market;
- Immediate Access.

This approach to delivering course materials is designed to ensure that every student has all the required material on the first day of class. The fee for the resource can be charged in a variety of ways depending on the model adopted by the institution. It can be included in the course tuition, it can be charged to the student's account, or students can pay through a transactional model through the course system.

In Canada, one of the first institutions to adopt this model was Algonquin College in Ottawa. In the beginning, the college negotiated with individual publishers for access to adopted digital content. The college worked to have all digital resource materials available in an inclusive model. The undertaking worked well and eventually was outsourced to a company called Kivuto through a division called Texidium.

Texidium is one company in Canada offering the pay-through-tuition model and they negotiate pricing with individual publishers. Texidium is currently conducting pilot projects in a number of institutions across the country that employ a variety of payment models.

The forty-five Follett-owned campus bookstores in Canada have their own proprietary offering. Follett Discover™ is a comprehensive set of tools enabling easy access for instructors and students to all course materials. Students are better prepared for class by having easy access to purchase and manage their course materials quickly and effectively. If the institution has implemented Follett Discover™ all actions regarding course materials can happen within the LMS. Follett also offers an eBook reader called Brytewave which is powered by Vital Source, an Ingram company. Vital Source also has a version of the model called Vital Source Access and they also act as a channel partner for publishers.

## **Content Management Systems (CMS)**

Content Management Systems allow users to create, manage and develop content utilizing a variety of authoring tools and services. The systems are utilized to build databases of content that can be delivered to students in various formats. In some cases, the content developed in a CMS is delivered through an LMS since the LMS contains the tools necessary to manage the course or learning activity and assess the students. For example, Ryerson University utilizes the software system Ektron for the development of online content by the instructors and professors and the content is then delivered to students through Brightspace by D2L.

Most CMS or authoring tool software programs allow for content to be shared across multiple systems.

## **Learning + Content Management Systems (LCMS)**

The blending together of a Content Management System with an LMS is the most popular application in eLearning today. The tools available to instructors in an LMS allow the management of student achievement, supporting the placement of course materials online, associating students with courses, tracking student performance, storing student submissions, and moderating communication between the students and their instructors.

Some of this same functionality can be seen within an LMS, so it is understandable why there is some confusion between the various systems. The significant difference is that the functionality of an LMS far exceeds that of a CMS.

At the post-secondary level, there is not a readily accessible marketplace for the licensing or purchasing of recommended or required digital content and resources other than through the inclusive models listed above. The LMS + Content Management Systems combine to offer course content to students, but it is almost exclusively instructor/professor created.

# C. RECOMMENDATIONS

## Introduction

It was abundantly clear from everyone we interviewed throughout our research that Canadian content is considered to be a critically important component in the delivery of education across all levels from K–12 to post-secondary. However, reduced spending on educational resources, the transition from print to digital resources, the ubiquitous nature of content available from the Internet, and a lack of clear policy on the use of Canadian content (particularly in K–12) has shown a diminished use of Canadian resources licensed or purchased from Canadian publishers for use in schools. It is also evident that in the K–12 system teachers continue to have more freedom in accessing and using content that has not been vetted or approved by any systematic process or protocol. While educators always support the importance of Canadian content, expediency and availability of non-Canadian resources, especially over the Internet, have become routinely the resources of choice for teachers and students.

One of the goals of this research project was to engage with the stakeholder groups of the ACP to discuss our findings and explore any opportunities that might arise to highlight Canadian content for educators. A key stakeholder meeting was held once our Interim Report was completed. The purpose of this roundtable discussion was to present the findings of the research and discuss possible collaborative strategies with interested parties of the ACP including 49th Shelf, eBOUND Canada, and Access Copyright. It is envisioned that the ACP may explore opportunities to partner with the interested parties on collaborative ventures to further the knowledge of and acquisition by schools of digital Canadian published content. Current initiatives of the interested parties were shared and discussions were held about how those initiatives might play a role in any future strategies or plans. The open-ended roundtable was a positive step in understanding how the ACP might in the future facilitate the provision of Canadian educators and students with tools that would increase the discoverability of Canadian-published content, and ease the identification of resources appropriate for use in particular curriculum areas or grade levels.

## Recommendation 1

### **Develop a discovery tool for teachers to highlight Canadian resources for K–12 schools**

Throughout our research, one of the most repeated refrains from educators was the lack of online information highlighting all of the appropriate Canadian-developed content, in print or digital form. We believe that a single robust online discovery tool for teachers that highlights Canadian-authored resources appropriate for K–12 schools should be developed. The tool should be available through a variety of means including a website and mobile applications. At a minimum, the search functionality should include age and grade level, as well as subject area and discipline. Further search functionality could be enhanced as publishers add additional metadata for their print and digital works.

The tool could be highlighted in all Canadian-published promotional materials and links to the discovery tool should be included on all government websites highlighting Canadian culture and publishing activities.

## Recommendation 2

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### **Consider creating a database of digital published works, for use by schools, school districts, and provincial Ministries and Departments of Education**

As a follow up to the Discovery Tool mentioned above, a committee consisting of ACP members, digital supply chain personnel, and members of the educational community should be set up to look at the possibilities of creating a database of published works that could be made available to schools, school districts, and provincial Ministries and Departments of Education. The database could include all, or subsets of, the digital material available in the Discovery Tool. Considerations and the Terms of Reference for the committee would be to look at how resources are currently licensed, the pricing models of those licences, and the technical requirements that would allow for the purchasing and licensing directly from the Discovery Tool. A survey of existing models of digital supply and potential partnerships with those systems should also be explored.

## Recommendation 3

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### **With Ministries and Departments of Education, develop best practices for the acquisition of digital resources, with a focus on Canadian resources**

Educational policy has not kept pace with the proliferation of digital content and devices used in K-12 schools, and teachers have increasing flexibility to use free resources that have not been reviewed for content or quality.

We recommend that the ACP Education Committee approach various Ministries of Education to work collaboratively on best practice guidelines for educators seeking materials online, to ensure students have access to Canadian perspectives. Given ACP's national mandate, this may be more effectively done in partnership with provincial publishing associations, which in many cases have existing relationships with Ministry staff.

# APPENDIX A

## K-12 Systems, Platforms, Websites, Portals, and Databases

<b>British Columbia</b>	
LearnNowBC	Blackboard Collaborate
MyEdBC	Follett Aspen Student Information System
ERAC, Various districts	Follett Destiny Library Management System
Open School BC	Blackboard Learn; Brightspace (D2L)
Various Districts	Fresh Grade, Google Apps for Education

<b>Alberta</b>	
Alberta Distance Learning Centre	Moodle; Brightspace (D2L)
Evergreen School Division	Edsby

<b>Manitoba and Saskatchewan</b>	
Provincial K-12	Blackboard
Various schools	Google Apps for Education

<b>Ontario</b>	
eLearning Ontario Provincial K-12	Brightspace (D2L)
Various School Boards	Google Apps for Education Edsby, Edmodo Fresh Grade Follett – SIS/ Destiny Library Management OverDrive for Schools Haptara

<b>New Brunswick</b>	
Provincial K-12	Brightspace (D2L)
Various schools	Google Apps for Education Follett Shelves Individual School Choice for school software

<b>Newfoundland and Labrador</b>	
Provincial K-12	Brightspace (D2L)

# APPENDIX B

## Post-Secondary Learning Management Systems

<b>British Columbia Universities</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
Capilano Emily Carr Kwantlen Polytechnic Royal Roads University of Victoria University of Northern BC	Vancouver Island	Thomson Rivers University University of British Columbia University of the Fraser Valley	Simon Fraser University (Canvas)
<b>British Columbia Colleges</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
College of New Caledonia College of the Rockies Nicola Valley Institute of Technology Okanagan College Selkirk College Vancouver Community College	British Columbia Institute of Technology Camosun College Langara College Northern Lights College Northwest Community College	Douglas College Justice Institute of British Columbia North Island College	

<b>Alberta Universities</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
Athabasca University of Lethbridge	University of Calgary	University of Alberta Mount Royal University Grant MacEwan	
<b>Alberta Colleges</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
Northern Lakes College Alberta College of Art and Design Grande Prairie Regional College Keyano College NorQuest College Northern Lakes College Olds College NAIT	Bow Valley College Lakeland College Portage College SAIT	Medicine Hat College Red Deer College	Lethbridge College (Canvas)

## Post-Secondary Learning Management Systems

<b>Saskatchewan Universities and Colleges</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
University of Regina Carlton Trail Regional College	Great Plains College Lakeland College North West Regional College Saskatchewan Polytechnic	University of Saskatchewan Cumberland College Northlands College Parkland College Southeast Regional College	

<b>Manitoba Universities and Colleges</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
Brandon Assiniboine Community College	University of Manitoba University of Winnipeg University College of the North Red River College		University of Winnipeg (Nexus) Red River Community College (Learn)

<b>Ontario Universities</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
Algoma University Carlton York	Lakehead Laurentian McMaster Queen's University of Waterloo Ryerson University of Guelph Wilfrid Laurier	Nipissing University Trent York University of Toronto University of Ottawa University of Windsor Ontario Institute of Technology	Brock (Sakai) Western (Sakai) OCAD (Canvas)

<b>Ontario Colleges</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
	Cambrian Canadore Centennial Collège Boréal Conestoga Confederation Durham Fanshawe Fleming Lambton Mohawk Northern College Sault College Sheridan	Algonquin George Brown Georgian Humber La Cité collégiale Loyalist Niagara College St. Clair St. Lawrence College Seneca	

## Post-Secondary Learning Management Systems

<b>Nova Scotia Universities and Colleges</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
Acadia Cape Breton Mount Saint Vincent St. Francis Xavier Nova Scotia College of Art and Design	St. Francis Xavier Dalhousie Nova Scotia College of Art and Design Saint Mary's Nova Scotia Community College		

  

<b>New Brunswick Universities and Colleges</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
Mount Allison	University of New Brunswick	New Brunswick Community College New Brunswick College of Craft & Design	St. Thomas (Ember)

  

<b>Prince Edward Island Universities and Colleges</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
University of Prince Edward Island			Holland College (SAM - proprietary)

  

<b>Newfoundland and Labrador Universities and Colleges</b>			
Moodle	Brightspace (D2L)	Blackboard Learn	Other LMS
	Memorial College of the North Atlantic		

## APPENDIX C

### K-12 Enrolments: Public Elementary and Secondary Schools in Canada

<b>Province/Territory</b>	<b>Total Students</b> Table C.2.1 <sup>84</sup>	<b>Total Educators</b> Table C.2.2 <sup>85</sup>
BC	550,038	33,008
Alberta	550,059	34,763
Saskatchewan	161,672	11,102
Manitoba	171,654	12,604
Ontario	1,953,624	146,068
Quebec	979,563	78,170
New Brunswick	104,421	7,550
Nova Scotia	128,131	10,062
Prince Edward Island	21,162	1,652
Newfoundland and Labrador	66,288	5,619
Yukon	4,847	477
North West Territories	8,576	617
Nunavut	8,515	653
Canada Totals	4,708,548	342,345

## Project Team

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### Susan Howell

With over thirty-five years of pan-Canadian experience in the K–12 and post-secondary educational industry, Susan has worked for a variety of education institutions, leading Canadian educational publishers, and learning solutions providers in a range of executive and managerial positions. A published author with a background in teaching, Susan has led the successful development and implementation of numerous K–12 educational resources in both print and electronic formats as well as multiple eLearning projects for professional learning. She has also written and taught the in-class and online *Overview of K-12 Educational Publishing* course in the publishing program at Ryerson University.

### Brian O'Donnell

With more than forty years' experience in the publishing and copyright industries, Brian brings a breadth of knowledge and experience to this project. Having worked for a number of educational publishing companies including Addison-Wesley and Copp Clark Publishing, and having acted for more than fifteen years as president of Irwin Publishing, his knowledge of the K–12 and Higher Education sectors is extensive. He has also taught in the Publishing Program at Ryerson University and has written and developed online courses for *Educational and Academic Publishing* as well as for *The Business of Book Publishing*.

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