ONLINE LEARNING, OERS AND THE CHANGING ROLE OF COLLEGE LIBRARIES

Research and report commissioned by:
Heads of Libraries and Learning Resources (HLLR) of the Ontario College Libraries with support from the Ontario College Library Service (OCLS)

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Executive Summary and Recommendations

Executive Summary: The primary goal of this research paper is to identify current and future trends in online digital learning and open educational resources (OERs) that are having or may have an impact on the Ontario college libraries, singularly and collectively. These impacts may affect the ability of libraries to deliver excellent service to students and faculty, and to make recommendations to Heads of Libraries & Learning Resources (HLLR) about how to take advantage of developments and best position themselves for the future.

The paper is predicated on the Association of Research and College Libraries’ Standards for Distance Learning Library Services, and especially on its Access Entitlement principle. Between the two major existing environmental scan documents (ACRL/Kazakoff-Lane and OECD/Orr) and the research conducted for this report, the following key findings are noted:

Academic libraries continue to be dedicated to all audiences, including those taking hybrid/blended or online-only courses/programs. It is important to not lose the special needs of the remote, online-only student body with the impetus to provide increased hybrid/blended student support.

Libraries need to provide a solid base of online products and services as the minimum service delivery standard to all students. With the growth of eCampus Ontario and OntarioLearn, it is important that these minimum requirements need to be agreed to and offered consistently across the 24 college libraries, regardless of registering institution.

OER further addresses the student access issue to support those who have barriers to course or research materials (e.g., geographical barriers, financial barriers). It is important to support Open Access (OA) materials as a starting point, and as a practical way of providing relevant research materials to both regular online courses and MOOCs.

Many academic libraries see OER as an extension to their faculty outreach and liaison activities under the auspices of scholarly communication. Most libraries can begin to support and promote OER initiatives within their current service offerings by repackaging appropriate existing services under the OER banner. It is important to track and support faculty endeavours in this area, both...
from a traditional library repository approach and from digital literacy and content aggregation/creation standpoints. This area will grow as the emphasis on applied research publication grows.

**Recommendations:** The recommendations below focus on activities/initiatives that could be undertaken in the short- to medium-term (immediate to three years). In order to provide a base level of service across Ontario, it is hoped that the distance and online learning recommendations have a higher priority to that of OER at this time. Certainly, specific OER recommendations should be initiated sooner rather than later.

**Recommendation to HLLR member libraries – Distance and Online Learning**

1. **Conduct an online and distance education audit of service provision, using the ACRL standards in Appendix A.** Map existing services to those that would be needed in a 100% distance learning environment. Prioritize what is missing and meet the gaps.
2. **Appoint a staff member(s) to be liaison to distance education students, faculty teaching online, and continuing education/open learning departments to ensure consistent library positioning and student support for growing OntarioLearn and eCampus presence, in both blended and online only modalities.**

**Recommendations to HLLR (consortia) – Distance and Online Learning**

1. **Establish an HLLR Subcommittee to collect and curate Open Access materials centrally (via LibGuides) for sharing amongst all libraries, from indices to databases/journals to open government documents and open data.**
2. **Promote existing CAAT Direct Borrowing agreement to OntarioLearn and eCampus Ontario for print collections.**
3. **Facilitate individual member online and distance education audits by contracting short-term audit assistance to provide expertise and service consistently across Ontario. – per the summary**
4. **Support information literacy and digital literacy infrastructure development across college libraries by coordinating learning object and webinar development to reduce duplication and increase LO sharing.**
5. **VIRTUAL SERVICES DISCUSSION Launch/relaunch a standardized AskON service package for all libraries including 1-800 number, text, chat and email. Include Skype or a like tool for booking one-on-one online consultations. Determine how this could work within the OntarioLearn/eCampus Ontario infrastructure.**
Recommendation to HLLR member libraries – Open Educational Resources

1. **Lead by example:** Release materials created by the library under Creative Commons and label accordingly. – could the copyright group put a tutorial together?
2. **Don’t reinvent the wheel** – use other libraries’ OER creations (or vendor training materials) and credit accordingly.
3. **Create partnerships** with the continuing education/open education instructional designers and faculty to determine options for OER use.
4. **Provide training to library staff** in all OER initiatives, including open government, open data, open textbooks, etc. an expert or a panel together – ask OCLS – need to be more specific
5. **Offering to create OA digital course packs** for the courses specifically offered on OntarioLearn from your college.

Recommendations to HLLR (consortia) – Open Educational Resources

1. **Establish a HLLR Subcommittee** to investigate the collaborative collection and curation of applied research materials (e.g., articles, reports, data, and presentations) through a centralized college research repository.
2. **Centralize and facilitate** individual college data curation and preservation for applied researchers by contracting long-term repository assistance through consortia to provide expertise and service consistently across Ontario. This serves to meet the data security and curation needs that arise through external grant requirements and internal college research ethics board parameters.
3. **Create an OER Toolkit** for use in promotion by member libraries within institutions, and amend current HLLR copyright resources to help faculty understand use of OER for use in promotion by member libraries within institutions. Hold an OER staff training day via webinar for all member libraries. Launch a version of the BCOER group for college librarians to discuss OER as a community of practice.
4. **Partner with OntarioLearn/eCampus Ontario** to provide input into an Ontario-wide toolkit on how to create open textbooks.
5. **Create course-specific LibGuides** for popular OntarioLearn research-intensive courses that can be shared by all college libraries.
Note: Please review recommendations in Appendix B from previous Strategic Planning Environmental Scan (2014) as the majority are still valid. In addition, there are recommendations on page 22 for distance and online learning that are specific but very relevant.

Infotrova Research Services Canada

June 2016
Introduction

Dr. Brian Murphy, Director of Access, Digital and Distributed Learning at Ulster University, recently presented a blueprint for learner access based on a continuum from core, face-to-face classroom teaching to: a) a blended model, incorporating some online learning, b) distance learning, where access is predominantly remote and online (or through correspondence); and c) open learning, where access through the removal of financial and distance barriers.

The access approach also emulates how post-secondary education has often moved operationally through the stages. It is rare to have institutions jump from core to distance learning course/program provision without having a blended or hybrid stage (though it was been done, and done successfully, especially in the early years of course management system adoption).

This report will deal with the last three stages, of blended and distance learning (together in Part 1) and open learning, specifically in the area of open educational resources (Part 2). As information from one stage informs later stages, blended and distance learning will be discussed first.

A quantified approach to these terms is commonly used in the United States and provides percentages for the amount of online course delivery:
<table>
<thead>
<tr>
<th>Proportion of Content Delivered Online</th>
<th>Type of Course</th>
<th>Typical Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>Traditional</td>
<td>Course where no online technology used — content is delivered in writing or orally.</td>
</tr>
<tr>
<td>1 to 29%</td>
<td>Web Facilitated</td>
<td>Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a learning management system (LMS) or web pages to post the syllabus and assignments.</td>
</tr>
<tr>
<td>30 to 79%</td>
<td>Blended/Hybrid</td>
<td>Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has a reduced number of face-to-face meetings.</td>
</tr>
<tr>
<td>80+%</td>
<td>Online</td>
<td>A course where most or all of the content is delivered online. Typically have no face-to-face meetings.</td>
</tr>
</tbody>
</table>
1. Project Goals (from Request for Quotation, RFQ# 2015-004):

The primary goal of this research paper is to identify current and future trends in online digital learning and open educational resources (OERs) that are having or may have an impact on the Ontario college libraries, singularly and collectively. These impacts may affect the ability of libraries to deliver excellent service to students and faculty, and to make recommendations to Heads of Libraries & Learning Resources (HLLR) about how to take advantage of developments and best position themselves for the future.

2. Methodology

Literature review: Infotrova conducted online and print-based research focusing on academic online databases, open source databases, both the open and deep web, and social media. In terms of geographical scope, the first priority was given to Canadian sources with a focus on Ontario. Second priority was given to American sources and lastly, international resources. The majority of the subject databases was focused in library science, general education, and higher education. The scope of the research was largely from 2012 and onwards (last four years). Earlier documents were considered for either historical content or as overview documents. This scan is a synopsis of seminal overview articles in the field and existing environment scans on the topic.

Please note: Not all articles listed in this preliminary scan were referenced in the final report, and others were added as the research continued, especially if articles on specific subject topics were required. Citations are in modified APA format. Formatting them with hanging indentation would take up too much space due to the length of some URLs. Key readings will be marked in the Bibliography with a star.

Content review: In lieu of interviews, a content review of public-facing college library websites was undertaken to gain understanding of the services provided to online / distance education students. A synopsis of this review is found on pages 23-24. The review was completed from April 1 - 8, 2016.

3. Environmental Scans
The purpose of an environmental scan is to provide strategic intelligence by assessing an organization's internal and external environments in order to identify opportunities and the important emerging trends within its macroenvironment. Ideally, it encourages agile, adaptive strategic planning.

The research reviews and presents recent and future trends (next two-three years) in successful library services for online learning and OERs and highlights areas where libraries can most effectively participate and demonstrate their value. The most common barriers for learners and libraries participating in these activities has been discussed. Specific commentary on instructional design of OERs, policy interventions in specific jurisdictions, and economic models for production and use has been excluded unless considered key to report.

Two previous environmental scans form the foundation of this review. The first is Kazakoff-Lane’s 2014 research in “OERs, MOOCs and Libraries: What Effectiveness and Sustainability Means for Libraries Impact on Open Education.” The second is an Organisation for Economic Co-operation and Development (OECD) report by Orr et al. entitled “Open Educational Resources: A Catalyst for Innovation.” This report examines each environmental scan and builds on them throughout the review with reference to trends in support of online learning and the library services that support online learning.

Kazakoff-Lane’s environmental scan speaks to current trends in OERs, MOOCs, and the role libraries can play in supporting open education. It examines the library as user, creator, and supporter of OERs by drawing on literature from North America and abroad. Although beneficial, this report lacks practical approaches to library services in support of online learning. This environmental scan will examine other sources to build on Kazakoff-Lane’s findings and further develop the discussion around library services.

The 2015 OECD Report by Orr et al. provides an excellent overview of OERs, benefits, challenges and sustainability models. It is has a significant focus on international policy, which is beyond the scope of this review. Its value is in defining open educational resources, alignment to key educational challenges, and the positioning of sustainability models, all of which will be discussed in greater detail.

4. Acronyms
The following acronyms will be used throughout this report:

ACRL – Association of College and Research Libraries
HLLR – Heads of Library and Learning Resources Colleges Ontario
CAAT – Colleges of Applied Arts and Technology
DD – Document Delivery
DE – Distance Education
ILL – Inter Library Loan
FAQs – Frequently Asked Questions
LO – Learning Objects
MOOC – Massive Open Online Course
OA – Open Access
OCUL – Ontario Council of University Libraries
OECD – Organisation for Economic Co-operation and Development
OER – Open Educational Resources
OOLC – Ontario Online Learning Consortium
PSE – Post-Secondary Education
URL – Uniform Resource Locator
VLE – Virtual Learning Environments
VOIP – Voice Over Internet Protocol
Distance and Online Learning Trends

1. Key Educational Challenges

The OECD scan from Orr et al.’s environmental scan provides an excellent overview of the key challenges facing education and thereby sets the context in which libraries must contribute. According to Orr et al. the key educational challenges facing the international community are:

- Fostering new approaches to learning and new ways to support learners for success in a knowledge society.
- Fostering new skill development for teachers tasked with creating or customizing resources to fit this new educational environment.
- Assisting in minimizing costs of public and private education.
- Creating an environment in which continuous improvement of online educational resources thrives in terms of updated content, learning outcomes and pedagogical approaches to fit diverse learner needs.
- Encouraging broad distribution of quality educational resources internationally.
- Minimizing limits of time and place to reduce barriers to education.

2. Key Social Trends

The *Ithaka S&R Report* (2012) posited a number of social trends supporting the development of online learning. Throughout the report, Bacow et al. use the term “interactive learning online” to more clearly define the types of online learning being discussed, which are:

highly sophisticated, interactive technologies in which instruction is delivered online and is largely machine-guided (although of course such technologies may be used in conjunction with more traditional modes of instruction). The best of these systems rely on increasingly sophisticated forms of artificial intelligence, drawing on usage data collected from hundreds of thousands of students, to deliver student’s specific needs—a technology often termed ‘adaptive.’

In addition to a robust definition, the Ithaka survey also noted the social trends that are acting on institutions resulting in a shift toward increasingly more online course offerings. Benefits include:
1. Revenue growth by enrolling students beyond the typical geographic boundaries of the institution’s catchment area;
2. Serving non-traditional populations such as mature students, working students, etc.;
3. Improving retention due to flexible nature of online courses to fit into one’s schedule;
4. Responding to space constraints in physical locations as online courses do not require classrooms or faculty offices;
5. Managing expenses by spreading design and development costs of online courses over several years;
6. Improving learning outcomes with enhanced faculty-student interaction through online systems.\(^5\)

Supporting these trends are advancements in technology that play a role in the continued advancement of online learning.

### 3. Key Technology Trends

In its *Look at the Future of Online Learning* (2016), Contact North explored not only the technology trends currently influencing learning, but also the key features of technology that enable effective online learning. Contact North outlined seven key technology patterns:

1. Machine learning and artificial intelligence will increasingly be used to enable adaptive learning;
2. Handheld, mobile and integrated devices will continue to develop and become the de facto tools for learning, communication and peer networking;
3. Predictive analytics will grow in significance in terms of student retention and learner support;
4. Interconnectivity of devices and systems will be a significant feature of the “Internet of things” and activities;
5. Gamification and virtual reality will enable significant advances in teaching a range of subjects, especially laboratory based subjects;
6. Translation engines will continuously improve and become embedded in a great many applications;
7. Collaborative technologies and knowledge sharing will emerge as key resources for all forms of learning.\(^6,7\)

Institutions, especially those funded based on enrollment, are continually competing for students and for faculty. Broader adoption of online learning will require: a recognition of the changing nature and
preferences of the student population; a supportive institutional strategy, and engaged and online-savvy faculty. It is felt that the importance of an institution being at the forefront of technological innovation and adoption relative to others will impact its ability to attract students and faculty.

According to Contact North, the technology patterns noted above will have an impact not only on the way learning is designed and delivered, but also on how learners and faculty are supported in the learning environment. The patterns will inform the continued evolution of the five features for future online learning that will set the context for the online learning in the near term:

1. Learning is mobile – anywhere and anytime;
2. Learning is interactive and engaging – connectivity and engagement are easier to achieve;
3. Learning is personal and instruction is differentiated – analytics are able to gauge student needs;
4. Learning is intelligent – knowledge is being gathered, shared, and filtered in a more focused and useable way with smart content engines and collaboration software;
5. Learning is global – social media, open resources and networks enable learners, faculty and researchers to connect for the purposes of collaboration and sharing knowledge.

In the near term, they believe the following trends will most affect online learning:

1. Demand for higher education will continue to grow and students will expect increasingly flexible learning options.
2. Programs will continue to change leveraging OERs, rich transfer agreements, and joint college-university programs.
3. Teaching, learning, and the locales and timing of courses will continue to evolve to meet individual needs of students.

Part One - Distance and Online Learning

I. Library Service Trends in Support of Distance and Online Learning
The Babson Survey Research Group has been conducting surveys for the past 12 years on online learning in the United States; as such, they have the most consistent and regular research in this area. In 2013, Babson indicated that 32% of American students took at least one online course (with 80% or more of the delivery is online). In 2014, the authors repeated their study, with the rate growing to an all-time high of 33.5%.

In addition, the Ithaka S&R Survey (2012) of online learning indicated that almost every postsecondary institution in the United States is offering at least one course online. And this trend will only grow in the future; Babson indicated in their most recent survey (2015) that: “The proportion of academic leaders who report that online learning is critical to their institution’s long term strategy has grown from 48.8% in 2002 to 70.8% this year. The proportion of chief academic leaders that say online learning is critical to their long-term strategy is at an all-time high.”

With the popularity and strategic importance of all types of online courses, libraries must find ways to provide online and distance students with an equitable level of service as those who are on campus. The impact of these new modalities on library services is influenced by the institutional context and student, faculty, and curricular requirements. In addition, there is an artificial construct in many PSE institutions in that the 100% distance learning courses are offered by continuing education, and the blended learning programs are offered by the face-to-face instructional group. As these boundaries begin to blur, more library support may be demanded by the continuing education group as a whole, adding to equitable access to an even broader group of students.

1. Access Considerations for Library Services to Distance Students

In 2008, Association of College and Research Libraries (ACRL) published Standards for Distance Learning Library Services. This seminal work outlines the key principles, definitions and service elements that are necessary to achieve the service levels noted in the Standards.

a) The Access Entitlement Principle

1 It seems that these standards are currently in the midst of being updated and will be released within the next couple of months. See https://distancelearningsection.wordpress.com/new-standards-for-distance-learning-library-services/
Every student, faculty member, administrator, staff member, or any other member of an institution of higher education, is entitled to the library services and resources of that institution, including direct communication with the appropriate library personnel, regardless of where enrolled or where located in affiliation with the institution. Academic libraries must, therefore, meet the information and research needs of all these constituents, wherever they may be.17

The intent of the Principle is to ensure that individuals attending PSE institutions from a remote location have the “equivalent” access to resources as those individuals attending the institution for face-to-face courses. The ACRL Standards arose due to a number of factors including non-traditional learning environments, the growth of satellite campuses, increased demand for library materials and services and advancements in course delivery technology.18 In addition to commentary on access entitlement, the Standards are also useful in defining terms and outlining the fundamental elements necessary for institutions to meet the standards. Key to this discussion is the definition of ‘distance library services’:

Library services in support of college, university, or other post-secondary courses and programs offered away from a main campus, or in the absence of a traditional campus, and regardless of where credit is given. Courses thus supported may be taught in traditional or nontraditional formats or media, may or may not require physical facilities, and may or may not involve live interaction of teachers and students. The phrase is inclusive of services to courses in all post-secondary programs designated as: extension, extended, off-campus, extended campus, distance, distributed, open, flexible, franchising, virtual, synchronous, or asynchronous.19

b) Distance Library Services Requirements (see Appendix A for full list)

The ACRL Standards document outlines criteria necessary to reach the stated standards in an institution providing distance learning library services. At the most basic level, the institution providing the distance library services must maintain the budget necessary to support systems, technology, and staff engaged in service provision, define needs for the services and assess progress, make available necessary digital collections, print library materials, and, in cooperation with other stakeholders, obtain the equipment and electronic communication tools and course management software to support the distance curricula.20
The New Media Consortium Horizon Report (2015 Library Edition) offers an in-depth look at technology trends for libraries world over the next five years. A summary of those trends is provided here; however, the entire report is recommended reading for strategic planning purposes. The report is a spin-off to the annual NMC Horizon Report for Higher Education, which is also worthwhile reading. The key trends are summarized as follows, and the ones that apply specifically to online learning have been italicized:

1. Increasing accessibility of research content – encouraging open access publishing
2. Rethinking library spaces – creating spaces for productivity rather than information access
3. Evolving nature of the scholarly record – encouraging innovative communication and publishing models
4. Increasing focus on research data management – curating data and linking to publications
5. Increasing value of the user experience – ensuring efficient and effective interactions with patrons
6. Prioritization of mobile content and delivery – ensuring mobile access to content and services
7. Embedding academic and research libraries in the curriculum – building information literacy skills and assisting in the development of curricula
8. Improving digital literacy – supporting digital skills of librarians, faculty and students
9. Competition from alternative avenues of discovery – improving discoverability for easy access
10. Rethinking roles and skills of librarians – redefining roles that emphasize technology, data mining, web development skills
11. Embracing the need for radical change – adapting to changes in technology, staffing structures, and user expectations
12. Managing knowledge obsolescence – staying current with advances in technology, software and tools
13. Makerspaces – providing library spaces to create for higher order problem-solving
14. Online learning – guiding faculty and embedding in courses
15. Information visualization – representing complex information graphically
16. Semantic web and linked data – connecting the semantic web using metadata and bibliographic protocols
17. Location Intelligence – enriching information access and interactions with location-based services
18. Machine learning – using data management systems that have the ability to analyze, interpret, and act on data.

3. Virtual Reference Service and Research Consulting

Distance education courses require equitable library services in order to be successful in the online environment and responsive to the needs of distance students. A case can be made that these students face additional barriers to success in an online environment, that retention rates are lower in this modality,\textsuperscript{23} and that a wider variety of academic student supports are necessary.

ACRL defines ‘virtual reference’ as the “reference service initiated electronically, often in real time, where patrons employ computers or other Internet technology to communicate with reference staff, without being physically present.”\textsuperscript{24} Dewan and Steelworthy (from Wilfrid Laurier University) noted that there are four venues libraries can use for outreach to distance students: library web sites, learning management systems, video hosting sites, and mobile devices.\textsuperscript{25} For the purposes of this discussion, we will look most
closely at individual methods used to reach distance students as opposed to the ‘venues’ and their challenges relative to face-to-face interactions.

With both students and learning being mobile, there are a number of ways for students to reach the library for reference questions. Research assistance and their modalities can either be asynchronous or synchronous. Asynchronous services typically involve a delay in the response (e.g., email, web forms, browsing research guides). Synchronous services involve real-time interactions such as telephone calls, videoconferencing, and live chat services.

a) Telephone Reference Service

Telephone reference has existed for decades; libraries may have had a dedicated phone line to answer such calls. Yang and Dalal examined libraries with a number of different technologies for virtual reference including: chat, instant messaging, knowledge base, email, phone, video, chat, and text.26 The data indicated that, although email was the most popular remote reference technology, it was followed by telephone for those libraries with only two remote technologies; email, telephone and chat are most popular in libraries offering three remote reference services.27 Chow and Croxton noted that telephone reference service is still often favored among students due to the speed of response.28

The challenges with telephone reference for distance library services are three fold: i) There are potential costs incurred by distance students if they live outside of a local calling area and the library does not have a toll-free number; ii) there is a cost to the library for toll-free numbers and/or long distance calls to reach distance students; and iii) the utility of telephone reference is limited to the hours of the library unless calls are re-routed to an after-hours attendant. Costs may soon be mitigated across the board, however, with the increased adoption of VOIP and unlimited cellphone plans. Despite these challenges, the immediacy of telephone reference will continue to make it a popular choice for virtual reference.

b) Email Reference Services

Another of the most popular virtual reference modes is email reference. Email reference affords distance learners the ability to obtain reference assistance via a central library email address. Royal Roads University
has used email reference as the primary point of contact for distance students requiring reference assistance and, in this model, multiple librarians monitored questions cooperatively. Hedreen found that the most popular tool used by distance students at Southern Connecticut State University was email because of its flexibility in accommodating many types of messages: text, links, images, etc. The challenge with email reference is that there is little opportunity to complete a reference interview without several subsequent email exchanges. This method requires both students and librarians to be clear, focused, and in their communications to make exchanges efficient.

c) Reference via Videoconference or Web Conference

One of the challenges experienced by librarians providing one-on-one virtual reference is the lack of immediacy and inability to read the body language and facial expressions of their students to assess understanding. Some colleges and universities have leveraged the increasing availability of desktop videoconferencing packages to improve the immediacy of reference service. “Videoconferencing is useful for online courses and particularly for multi-campus institutions. The same in-person instruction can be delivered to two places at once, which cuts down on travel time and increase the yield of instruction.”

There are both network software packages for videoconferencing (Citrix GoTo Meeting, Cisco WebEx, Adobe Connect), as well as free packages such as Skype and Google Hangouts. With the prevalence of integrated cameras in computers, this option is less expensive now than a few years ago. While larger network packages tend to have richer features and are more stable, virtual reference service has been successfully conducted using less expensive options such as Skype.

d) Online Chat and Text/SMS Reference Services

In recent years, academic environments have adopted chat and text reference services as a means to better reach students, whether in distance or traditional programs. In Ontario, there are two consortial options. Firstly, askON is a real-time chat and SMS research and information service developed by Ontario libraries and Ask Ontario. Twelve participating college libraries contribute staff to askON’s collaborative schedule. Secondly, Ask A Librarian from OCUL “is a virtual reference service that connects students, faculty and researchers from participating libraries with real-time research assistance through chat”. Ask A Librarian has a largely university membership and is managed by Scholars Portal.
In both cases, these services are collaborative ventures with the member institutions sharing the coverage during the course of the days the service is open. In using these services, students pose questions online and receive answers in real time. These services may extend the hours during which students can receive assistance since the service is often available longer than some of the libraries are open. Shell, et al. noted this as a key step “libraries are taking to be visible and relevant”. 38 This is very valuable to distance students who may be living in a time zone different to that in which the library is located, or simply require assistance after the service at their home institution is closed.

There are both commercial and freeware options for launching chat reference services. In one instance at the University of Wyoming, the free web-based tool Meebo proved superior. The program “could accommodate patrons with different IM client preference [and] the Libraries also created instant message widgets that could be embedded into any webpage and allow for immediate chat reference.” 39 Visibility is also key for the provision of distance library services. By ensuring that the service is visible from the website, students will know what is available to them and where. Kemp et al. noted that placing a branded chat widget on each page of the website enabled more visibility and a significant increase in the volume of chat reference questions. 40

Chow and Croxton studied the usability of five virtual reference services (email, telephone, online chat, text messaging reference, and Skype videoconferencing) at the University of North Carolina at Greensboro and found that email and chat reference were the most popular with their students and that videoconferencing was the least favoured method. 41 According to Chow and Croxton, individuals choose virtual reference services (such as online chat) for convenience, immediacy, efficiency, remote access, price, availability 24/7/365, anonymity, effectiveness, and quality. 42

The type of reference question being asked also has an impact on the preferred method of communication. Below are data from Chow and Croxton’s study comparing the reference service medium popularity for both research vs. factual questions in separate data tables. Chat reference emerged as the clear preference of most students for the reasons noted above, while text was the least preferred medium. 43
Reference Service Preferences for Research Questions

<table>
<thead>
<tr>
<th>Medium</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Chat Reference</td>
<td>16</td>
<td>53.3</td>
</tr>
<tr>
<td>Face-to-Face Consultation</td>
<td>8</td>
<td>26.7</td>
</tr>
<tr>
<td>Email Reference</td>
<td>5</td>
<td>16.7</td>
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<td>Telephone Consultation</td>
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<td>3.3</td>
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<td>Skype Video Reference</td>
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<td>0</td>
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</tbody>
</table>

Figure 3

Source: Chow and Croxton (2014), 318.
Launching virtual reference service presents a number of challenges compared to traditional face-to-face interactions and, as a result, librarians require a different set of skills to provide service of equitable quality.

- **Fiscal Realities:** A study at Arizona State University (2010), discusses this area in significant detail. In order to “maintain services to this growing distance population, we must consider the fiscal realities of providing services and materials to students who may live far from an ASU campus, including library instruction, reference and research support, interlibrary loan, electronic document delivery, and shipping books”. Beyond the philosophical challenges of supporting distance students with equitable service as those on campus, there are additional costs to the shipping of books to off-campus students, equipment and software necessary to reach them, and potentially additional staff hired/retrained to serve this distinct audience.

- **Skill Set Development:** For this type of service, librarians are expected to know the overall technical skill level of students, the programs/degrees being offered online, the electronic collections available either in-house or in other libraries, and to be available extended hours to cover multiple time zones. Furthermore, the emphasis on the use of electronic sources in virtual reference means

| Reference Service Preferences for Factual Questions<sup>45</sup> |
|-------------------------|---|---|
| **Medium**               | **f** | **%** |
| Online Chat Reference    | 18  |  60.0 |
| Telephone Consultation   | 4   |  13.3 |
| Text-a-Librarian Reference | 3  |  10.0 |
| Face-to-Face Consultation | 2  |   6.7 |
| Other                    | 2   |   6.7 |
| Email Reference          | 1   |   3.3 |
| Skype Video Reference    | 0   |   0  |

Figure 4

Source: Chow and Croxton (2014), 318.
that not only do librarians need to be familiar with the resources, but also, they may have to
troubleshoot off-campus access and interfaces of multiple subscription databases. In the past, the
dedicated online/distance learning librarian is quite often a subject generalist in this way, with
liaison responsibilities to a wide array of online programs.

- **Loss of non-verbal cues:** Another challenge for virtual reference librarians is conducting the actual
reference interview remotely. When the interview is carried out over a geographic distance, the loss
of nonverbal cues of the face-to-face interview makes question negotiation more difficult. The
librarian and user may have to exchange a number of emails or chat messages before they can be
clear about the user’s information requirements and how thoroughly it has been fulfilled.  

### 4. Online Information Literacy Instruction and Instructional Support Materials

Distance courses may be asynchronous, synchronous or hybrid and this will influence the nature of the
library instruction sessions offered to the students. If a course is asynchronous, the intention is that the
student will log into the learning management system when convenient as opposed to a scheduled time
(synchronous). Resources and tutorials provided need to be available 24 hours a day, seven days a week, as
the time the student uses the resources is not predictable. In these scenarios, a library web site rich in
instructional resources is often an option to accommodate these students. In recent years, there have been
a number of tools developed to assist librarians in creating that pedagogical richness.

a) Webinars and Lecture Capture

In striving to provide an equitable level of service to online and distance students as on campus students,
one of the challenges is in adapting real-time information literacy instruction sessions. Webinars and lecture
capture technology offer librarians the ability to teach an information literacy session to students in both
real-time and as a recorded event. In real time, there is the advantage of students being able to ask
questions via a chat window or through audio in software such as Adobe Connect. Instructors can use
traditional slide decks and transmit them to the students who are linked to the session.  

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24
Bonnand and Hansen (2012) examined literature from a number of postsecondary institutions and noted that webinars were successfully used for both distance information literacy sessions and embedded librarianship. Furthermore, this method had no negative impact on information literacy skill retention.\textsuperscript{50} Cost of software may be a barrier to implementation, but there are freeware options with limitations on the amount of recording time (e.g., Screencastomatic.com and Jing).

b) Online Subject Guides and Interactive and Video Tutorials

A web site with an abundance of targeted and easily-found information is important to all library users. For academic libraries, the web site is a way to serve all students who have computer access to the library and, as such, provides the broadest reach possible. For online and distance students, being able to find the right information at the right time and to have a sense of immediacy in interactions with the library are invaluable.

In order to meet these needs, librarians need to be able to create a rich set of online resources or subject guides using a variety of tools (e.g., LibGuides or wikis). Students can self-instruct with these tools, and library staff can more easily provide reference services to a wider subject area by referring to these curated resources. Roberts and Hunter have compared the ‘move’ of librarians, collections and students into the online environment to the emergence of new forms of each.\textsuperscript{51} They note that LibGuides provide a distinct advantage to a new type of library that needs to be open 24/7, a new kind of librarian who needs to lead students to valuable online resources with a user-friendly interface, and a new type of student who is technologically savvy and is seeking convenience in the search for research assistance.\textsuperscript{52}

Slide decks created for instructional sessions, as well as recommended resources, can be linked to subject guides or the library web site to create a course-specific resources for information literacy instruction.

Some libraries have created video tutorials as a way to teach short concepts or functions (such as placing a hold on a book) for visualizing the process facilitates understanding.\textsuperscript{53} \textsuperscript{54} \textsuperscript{55} As might be expected, there is considerable planning and design work required at the outset; however, many students can use videos over
a significant period of time barring any significant change in policy or procedure that would precipitate the need to edit or redo the video. Tools such as Camtasia and Jing may be used to create videos that can then be uploaded to YouTube or a site such as Screencast.com and lastly, embedded on the library’s web site or subject guide.

Videos are also very versatile in that they “can supplement in-person classes or act as standalone products at point-of-need. They can also be exported into audio-only files or PDF files of the images and text, thereby accommodating different learning styles”. In addition, it is easy to embed video into learning management systems via YouTube making these learning objects easy to share with students who may be viewing the video on mobile devices.

Recognizing the time and resource intensive nature of building online resources may be a barrier to tutorial development, libraries also have vendor tutorials for information literacy instruction at their disposal. “In order to reduce time spent on creating tutorials, librarians should use vendor tutorials where appropriate. Tutorials from vendors ... are designed and revised regularly with the user in mind. Linking to these tutorials avoids “reinventing the wheel” and gives librarians time to work on other projects.”

Another timesaving innovation comes from the University of Arizona Libraries. Their ‘Guide on the Side’ open-source code enables libraries to create interactive tutorials and it is shared freely via their code library (http://code.library.arizona.edu/gots). “Guide on the Side is an interface that allows librarians to easily develop a tutorial that resides in an online box beside a live web page. Students read tutorial instructions while following along in their browser.” This offers a significant advantage to libraries that struggle to cope with updates to online tutorials when there are interface changes to the catalogue or database that is the subject of the tutorial.

5. Library Access for Distance Students and Online Collection Development

a) Library Access for Distance and Online Students
When supporting distance learners, libraries also need to make print collections available. This service may require various shipping processes to be set up to ensure equality of access between distance and on-campus students. Speed of delivery, digitization of items, consideration of rare or expensive items, insurance, increased budgets for specialized document delivery services and provision of reference materials would all need to be considered in new circulation policies and procedures.

Although an older article, the results of a survey done by Dew in 2001 and cited by Ritterbush in 2013 indicated the relative popularity of various services with distance students. This research is a testament to the fact that distance students continue to want access to print resources. In Dew’s study, when students were asked to rank the three top library services, respondents indicated that online reference, access to full-text databases, and home delivery of books and articles were the most important services, in that order. By contrast, online tutorials and librarian-provided instruction ranked at the bottom of the list, with only 27.9% and 20.2%, respectively, of respondents designating these as important.

Dew’s results are later confirmed by Ezell in a 2013 article in which he discussed a close alignment with online reference and resulting collection requests coining this a “shift in library culture” and further noted that “customer service and instructional models of public service are less likely divorced from one another”. The outcome of this trend, according to Ezell, is increasingly hybrid roles that recognize both the need for collection access, document delivery, and interlibrary loan by distance students linked with the research and resource needs that surface in reference interactions. Ezell recommends roles take the hybrid form of an access coordinator who may oversee the lending and document delivery function as well as the embedded distance librarian function and who is abundantly familiar with the collection requirements of the distance course.

Baich’s 2011 article on interlibrary loan and document delivery (ILL/DD) utilizing open access materials is included here as it is relevant to the impact open access can have on interlibrary loan. Baich studied interlibrary loan activity at one of eight campuses within the Indiana University – Purdue University Indianapolis (IUPUI) system. IUPUI created a prompt in ILL workflow to have staff check if the requested article/document was an open access resource. Baich concluded that while the number of ILL/DD requests remained constant, there were more requests that could be filled with open access resources over time and therefore both staff and students should be made aware of their availability.
b) Online Collection Development

In postsecondary environments with a strategic focus on online and distance education, libraries are under pressure to meet the needs of increasingly larger enrollments in existing and potentially new online courses/programs/degrees with the acquisition of resources in electronically accessible formats. Unfortunately, the costs and limited licensing models of online resources can be a significant barrier and presents real challenges.

Traditionally, collection librarians experience price hikes for annual subscriptions, exchange rate fluctuations, embargoed collections and the support of small enrolment programs with expensive electronic databases. In institutions that are building their distance offers, libraries may struggle to keep pace because of these challenges on both the user and library sides of the access equation.

Open access materials are an option for consideration in order to address many of the limiting factors experienced by users in commercially licensed online resources such as page print limits, simultaneous user limits, and remote authentication challenges.72

6. Consortial Library Cooperation for Online Education

In the literature, consortial cooperation among libraries in serving distance students tends to be localized to specific functions, usually reference- or collection-related. Some pertinent examples will be discussed here:

- Consortial virtual reference is already well developed in Ontario with Ontario Colleges Library Service’s askON and Ontario Council of University Libraries’ Ask a Librarian. Yang and Dalal’s study of 362 institutions indicated that nearly 20% of responding institutions providing chat reference did so through a consortium as a way of accommodating longer coverage hours with more libraries being served and sharing system costs.73
- Besides joint electronic resources licensing and virtual reference, the BC Electronic Library Network is working collaboratively on a BC Digitization Coalition, an online writing service (WriteAway), and a data sharing agreement to expand online access to geographical data.74
• Novanet offers the “Libraries Nova Scotia Borrow Anywhere Return Anywhere” program, between academic and public libraries.75
• The TAL Card enables Albertans borrow materials from more than 300 public, post-secondary and government special libraries across the province.76
• While not discussed in the reviewed literature on a large-scale consortial basis, it would be beneficial for libraries to collaborate on the development of online instructional materials (e.g., videos) and/or share via Creative Commons licensing. The instructional design and development is the most time consuming part of online instruction resource creation. There is tremendous opportunity for consortial or partnership activities in this space to share commonly required instructional resources with some modest coordination effort thereby decreasing duplication in deployment of staffing resources for similar projects.

Providing an electronic collection that is equally as rich in resources as the print collection is a definite budget challenge. To overcome this potential cost barrier, many authors have noted that open textbooks will make it possible to decrease educational costs for students.77 78 By assisting in the awareness of open textbooks or open access resources in general to faculty, libraries can help to keep education costs down for students. For a textbook to be truly ‘open’, users must be able to use it free of charge, copy, convert, reuse, and distribute for non-commercial use.79 Baich and Oldham also noted in their respective studies that OERs could be used to fill a portion of interlibrary loan requests, as users may not have checked open access repositories.80 81 Both of these strategies assist in addressing cost barriers to electronic collection development.

7. Assessment of Distance Library Services: Case Studies

Distance services, like in-person services, should be the subject of regular review to ensure awareness and value of the resources to students’ learning. In the recent literature, the assessment studies for distance library services were of two types: surveys or usability studies.

Williams et al developed a framework for best practices in this area through the study of two post-secondary institutions of varying sizes in the United States. While the amount of distance learning students at each institution was similar, the overall FTE was very different. The survey concluded that six areas that “foster excellent distance library services and student relations ... environment, access, resources, being real, availability at point of need, and instruction.”82 Both the environment and “being real” involved bridging the distance online to create positive, personal connections, foster a sense of belonging, and
expand the online student experience. Creating online community for this group, with its separate and unique needs, was deemed essential.

In the areas of access and resources, best practices were as varied as the topic matter itself:

- Clark’s survey of information-seeking behavior was conducted in Qualtrics and studied students’ comfort with, awareness of, and use of library resources. The survey was designed around questions about students’ use of the library website, use of specific services, and comfort with resources and specific services. The results indicated that all students were aware of article databases and had used them; email was the most popular method of communication to librarians; and students most valued article accessibility.

- Chow and Croxton executed five separate surveys based on the method of communication with the library. “Five types of virtual reference services were examined at two different university reference departments and the results clearly suggest that participant satisfaction and preferences were guided by time of response, convenience effectiveness, and efficiency.” Online chat emerged as the preferred method of communication with high scores across all usability measures. Although the study had a low sample size, it was determined that services were rated most highly if the participant felt the service provided them with a high return on investment relative to their time and effort expended.

- Issues of library accessibility for visually-impaired distance learning students were discussed in a paper from the Open University Library in the UK. Mears and Clough described the process of interacting with instructional designers early in course creation in order to preemptively identify materials that might be needed. In this case, primary source materials needed for course work were not accessible, so alternative readings needed to be located. Content buying was more influenced by accessibility issues, and they need to get involved in course design at the earliest stages was underscored.

- Assessment of library service to distance learners to support student retention is in its beginning stages of development. The Open University Library published a potential methodology to a study they are undertaking. They have a unique situation in that “a librarian is allocated to every course/module team and their role involves working alongside academic and media development
colleagues, identifying suitable library resources to fit the pedagogy, advising how they can be used and driving forward the integration of information literacy." In addition:

Virtual learning environments (VLE) have made the delivery of IL teaching possible; seamlessly embedded into the student experience so that students acquire relevant skills to support their studies and employability. A framework for digital and information literacy provides a structured approach to support the embedding of the skills across programmes and modules. Materials draw on either generic approaches, or are tailored at faculty level and delivered via the VLE. There is as yet no quantitative or qualitative data which makes the connection between skills development and student outcomes.

A longitudinal study approach was proposed, with the following data points for consideration to determine if the library services support student retention: demographic data; course calendar information (for the timing of library links and assignments); VLE activity data (including forums); lists of library resources that are part of required reading; library resources usage data; library helpdesk enquiries; library website usage and analytics data; Tutor Marked Assessment and Electronic Marked Assessment scores; User survey results; and student retention and attainment data. To date, there has been no follow-up article.
II. Trends in HLLR Member Libraries in Support of Distance and Online Learning

In examining HLLR member websites to determine support for distance and online learning, the most frequently mentioned support service offerings discussed in the literature were used. This was also seen as primarily student-facing list, as supports to faculty creating online and blended modules will predominantly be discussed in the Open Educational Resource section.

With the technological advance of libraries, as well as their support of blended and online courses, the basics for service provision have been made available at all HLLR libraries, predominantly in the resource area. All members provide electronic databases, eBooks, and streaming video. Search is through an online catalogue, and ILL is provided for the resources not locally available. From a human factors perspective, email reference is the main lifeline to these students.

It became quite clear that the northern colleges, by way of their long-history in distance and distributed learning to remote users, offered the more traditional approaches to support (e.g., free circulation of print collections and 1-800 numbers) were predominantly found. Northern libraries can most certainly share their experiences with HLLR in regards to these long-established and important service supports.

There are a number of areas that could been seen as simple fixes to help distance and online students that can be done by individual libraries:

- Promoting the CAAT direct borrowing agreement on library websites;
- Creating a library portal especially for distance education students;
- Creating one basic video to introduce/orient students to the library website;
- Including free online citation management tools on websites; and
- Offering a free telephone line through a central 1-800 college number (if it already exists) or through promotion of a dedicated Skype line.

HLLR could also collaboratively on various items which do not require budgetary commitments:
• Establishing a working group to investigate accessibility issues for distance learners under AODA, including database accessibility, supportive literature searching;
• Ensuring assessment and quality control standards for HLLR include distance learning/learners;
• Creating generic instructional modules for shared use, either across HLLR or in partnerships; and
• Providing shared webinars/online training sessions on generic topics (e.g., citation, website evaluation), recorded for future reference and use.

And, HLLR/OCLS could potentially collaborate on:

• Creating a framework for synchronous virtual reference services, including virtual research consultations and booking software;
• Collaboration with other consortia in different time zones to provide 24/7 virtual reference services;
• Offering group purchase incentives for external document delivery services; and
• Centralizing digitization services to extend online special collections.

Note: In the following tables, services offered by all libraries are highlighted in green; Services offered by no single library are highlighted in yellow.

a) Service offerings, by overall tally

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b) Service offerings, sorted highest to lowest
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<td>Subject Guides / Pathfinders</td>
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<td>Promotion of onsite borrowing from other libraries (e.g., CAAT direct borrowing)</td>
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<td>Online Instructional Modules for information literacy, digital literacy, etc.</td>
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Legend – Search was completed only by reviewing web sites. If services offered but not easily found on website, it is not included. Approximately 20-30 minutes spent per site.
11. Print Collection Delivery Services
12. Promotion of onsite borrowing from other libraries (e.g., CAAT direct borrowing)
13. Online Research Consultations
14. Streaming Video
15. Subject Guides / Pathfinders
16. Virtual Reference Services - chat
17. Virtual Reference Services - text
18. Virtual Reference Services - 1-800 #
19. Virtual Reference Services - email
20. Webinars for course instruction
Part Two – Open Educational Resources

I. Open Education Resources Trends

1. Open Access Movement

The open access movement grew out of two pivotal points in publishing history. Firstly, the Internet gave people a means by which to obtain and publish information to a global audience for free. Secondly, the ‘serials crisis’ saw the costs of journal subscriptions rise much faster than library budgets, causing libraries to make difficult decisions about which titles they would continue to acquire. Publicly funded institutions were, in effect, paying twice for the research contained in the journals: once for the research itself, and once to regain access to the information once it was published in a journal and made available in print or behind a paywall.

In order to share knowledge globally and in a more democratic way, libraries advocated for the establishment of open access repositories. Open access repositories enable users to have free, immediate access to information contained in articles, texts, and other formats. They allow for the production, deposit, discovery, and dissemination of open access works. Some repositories (e.g., Google Books, the Internet Archive, OER Commons, MERLOT II) are made possible through independent organizations, postsecondary institutions or government grants.

Public Library of Science (PLOS) is one such example of an open access repository. It defines open access as free immediate access to, and unrestricted reuse of, original works of all types. Through the Creative Commons Attribution license CC BY that PLOS applies to everything it publishes, any user may copy, distribute or reuse the articles without obtaining permission or paying fees, as long as the author and original source are properly cited. Individual institutions and consortia have also implemented models so that the digital out of its researcher is immediately available to the public and the scholarly commons.
There are varying degrees of, and definitions for, ‘openness’. For the purposes, of this discussion David Wiley’s 5Rs of Openness are noted below:

1. Retain – the right to make, own, and control copies of the content
2. Reuse – the right to use the content in a wide range of ways (e.g., in a class, in a study group, on a website, in a video)
3. Revise – the right to adapt, adjust, modify, or alter the content itself (e.g., translate the content into another language)
4. Remix – the right to combine the original or revised content with other open content to create something new (e.g., incorporate the content into a mashup)
5. Redistribute – the right to share copies of the original content, your revisions, or your remixes with others (e.g., give a copy of the content to a friend).

The 5Rs are indicative of what is truly possible with open resources. The utility of open resources is immense and offers significant opportunity to both educators and learners.
2. Open Educational Resources and Massive Open Online Courses

a) Open Educational Resources (OERs)

In their article written for the Center for American Progress, Wiley et al. posited that we now have tools that would enable everyone to be educated virtually free of charge due to the development of OERs for all educational levels. While there may be some variation in how OERs are defined, it is clear that their use has the potential for significant impact on education.

The commonly accepted definition of OERs is from the William and Flora Hewlett Foundation:

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

Central to all definitions is the philosophy of materials being free to access, reuse, and repurpose. Any resource that is made freely available to the public for educational use or knowledge sharing, often through an appropriate Creative Commons license, can be considered an ‘open educational resource’. OERs can enable increased access to quality education around the globe and represent an enormous opportunity for libraries because it fits “with librarians’ professional support for access to information as a public good, the institutional mandate of academic libraries to support teaching and research, and the professional obligations of librarians in public libraries to support continuing education.”

OERs have arisen as a result of social trends and technological advances. These advances include: the rise of research repositories in academic environments to preserve, in the open domain, the research conducted in academia and funded by governments and increasing trend toward sharing and collaboration online by individuals.
Two notable projects were launched in academic environments that directly support the development of OERs. The first is the development of the Creative Commons open license used by most OERs; and the second is Massachusetts Institute of Technology’s (MIT) development of OpenCourseWare, an open online learning environment. These projects have served to both encourage the development of OERs and improve access to high-quality educational materials.

Wiley et al. made reference to Khan Academy, MIT OpenCourseWare, and Washington’s Open Course Library as significant contributions to the OER movement. And, most recently (October, 2015), the United States Department of Education launched the GoOpen initiative, with the belief that “educational opportunities should be available to all learners. Creating an open education ecosystem involves making learning materials, data, and educational opportunities available without restrictions imposed by copyright laws, access barriers, or exclusive proprietary systems that lack interoperability and limit the free exchange of information.”

b) Massive Open Online Courses (MOOCs)

MOOCs can be considered a type of OER. According to Yuan and Powell, “MOOCs developed out of the open education, open source, open access, open educational resource movements, the same social trends as OERs. MOOCs are key to a discussion of the impact of OERs and therefore they are included in this report along with clarifying definitions:

**MOOCs:** “Massive open online courses, or MOOCs, is the name given to immense online classes that are generally (although not always) available for anyone in the world to take for free.”

MOOCs originated with an online university course run out of the University of Manitoba by Stephen Downes and George Siemens with 25 students enrolled and an additional 2,200 students joining online from outside the institution. Though often confused with OERs, MOOCs differ in a few ways. OERs are often oriented toward use by faculty members or teachers and can be remixed and repurposed to fit a particular educational need, whereas MOOCs are typically oriented toward the learner as a self-contained course. Similar to OERs, MOOCs offer low-cost access to high quality education, but often they are not linked to a certification or to a feedback mechanism by
faculty. According to McAuley et al. the MOOC “is open and invitational”.107 “Anyone can participate and learners determine for themselves the extent of their participation. This decision may be based on personal interest, workplace requirements, academic goals, or other reasons. This level of openness allows many people to participate who may otherwise be unable to access learning.”108

cMOOCs: A variation of MOOC in that “the ‘c’ stands for ‘connectivist’. The goal of cMOOCs was to use the Internet to create an extended network of learners who, while generating content and reflections, learn from one another.”109 cMOOCs are focused on connecting students through their review of open course materials and sharing within the context of a learning community.110

xMOOCs: xMOOCs are instructivist, teacher-centred and focused on knowledge transmission and feedback to students based on a variety of evaluation tools within courseware such as edX, Coursera, and Udacity.111 The “most recent ones have the “sage on the stage” lecturing model of classroom learning in the online world (now delivered largely by video clips).”112 Large universities tend to be the institutions offering MOOCs through these systems. Mid-tier universities may use CanvasNet, an open source hosting system for MOOCs. xMOOCs have become the predominant form of MOOC delivery in Canada, with more than 320 MOOCs currently being offered by Canadian institutions or individuals.113

c) OERs and MOOCs: Benefits and Challenges

Orr et al.’s report investigates the potential and practice of OERs within the context of six educational challenges:

1. Fostering the use of new forms of learning for the 21st century.
2. Fostering teachers’ professional development and engagement.
3. Containing public and private costs of education.
4. Continually improving the quality of educational resources.
5. Widening the distribution of high-quality educational resources.
6. Reducing barriers to learning opportunities. 114
Beyond increasing access to new forms and higher quality educational materials, OERs are cost effective as they can be run multiple times and continuously reviewed by educators, thereby enabling curriculum and pedagogical improvements without the need to collect copyright or licensing fees, and resulting in reduced textbook costs when using open resources.\textsuperscript{115}

The development of any online resource requires an initial and significant investment in instructional design and, without a cost recovery mechanism, their development is likely to be limited to select institutions with the financial capability to make such an investment.\textsuperscript{116}

There is also another use for MOOCs, that of a “loss leader.” There is a trend towards using a MOOC as an enticement to sign up for a full online program. In this way, the cost of the free MOOC is absorbed into the cost of the entire program, giving students a free look at what a subject area before signing up for an entire program outright. In this way, there is cost recovery, but at the greater program or institutional level. In addition, “MOOCs can utilize a freemium model to keep costs low for most students and upsell students and organizations that want premium features. Most MOOC providers now offer a certification track, which allows students to pay for an official certificate upon successful completion of a course.”\textsuperscript{117}

Still, the proliferation of MOOCs presents a significant opportunity for library services. Utilizing common library services skills such as “description, classification, management, preservation, dissemination ... intellectual property and licensing rights” libraries are poised to make a significant contribution in the access to, and curricular support of, online learning resources.\textsuperscript{118} On the other hand, upholding the Access Entitlement principle for thousands of students across the globe in regards to their research needs may be limited to a student self-help model, in that any one-on-one support would be cost and labour prohibitive.

d) Sustainability

While funding may exist for the upfront development costs of OERs, there are significant challenges that exist for the continued update, refinement, and maintenance of the resource if there is no long-term funding strategy. “OER production and delivery can be implemented by diverse actors who bear the costs of
different states of the OER lifecycle: design, development, maintenance, and decline ...The challenge for OER organizations is to find strategies that allow them to recover these costs systematically and create a sustainable model for OER.”

The OECD has identified three conceptual models for sustaining OERs: The community-based model, the revenue-based model, and the philanthropy-based model. Figure 1 depicts the challenges and requirements for success in each model.

Each model has its own challenges regarding development and sustainability. The key issue for colleges and universities is if they choose to use OERs developed outside of the institution, will that resource be maintained, updated, and available for use long term? The answer lies in how the resources are used and the degree of integration into the curricula. Orr et al. noted “the SAMR (Figure 2) model developed by Puentedura (2006) to describe the use of instructional technology constitutes a framework that can be applied to how OER are being used in teaching and learning”.

OERs can be used in any of these ways to support teaching and learning. In fact, expecting OERs to become an absolute replacement for all face-to-face teaching and learning may not be feasible. The current trend, according to Orr et al., is for OERs to become part of an enhanced learning setting where they become integrated into existing learning structures without resulting in a full transformation of the learning support structures.
The SAMR Model

- Substitution: The OER replaces a similar learning material allowing for the same functionalities.
- Augmentation: The OER constitutes an improvement in terms of previous learning materials’ efficacy.
- Modification (redesign of the learning activity): The OER enables a substantial learning activity redesign compared to the previous learning material.
• Redefinition (of the pedagogical approach): The OER allows for new forms of learning that were previously unavailable within the teaching and learning configuration.\textsuperscript{123}

Figure 2

e) Cost and Quality Considerations

One of the most exciting aspects of OERs is the ability to share them globally. Although the costs to design and develop OERs can be quite high initially for individual institutions, the widespread sharing and reuse of open resources makes it possible to reduce education costs overall for students. “The costs of new educational resources can be kept low by reusing existing resources from other producers (the reuse first principle). This cost saving is most evident for textbooks, which are widely used as a basis for learning at all educational levels across the world.”\textsuperscript{124}

OERs experience the same challenges as print materials in keeping pace with advancements in knowledge, technology, editorial process and approvals, graphic design, data visualization, peer review, translation etc. However, producing an OER is, in most cases, less costly than publishing a new print volume of a textbook and can get new information to learners in a faster way. According to Orr, the dynamics of a knowledge society lead to three challenges for educational resources: they must reflect new developments in the subject area they cover, they must reflect new learning theories in order to better support high-quality learning, and they must be fit for purpose for the expected learning outcomes and the heterogeneous group of learners who are using them.\textsuperscript{125}

3. Online Education Initiatives
With the increasing focus on open access and removing barriers to education, MOOCs and OERs have sparked national and international collaborative efforts. Select Canadian (both federal and provincial) and international efforts are highlighted below as examples of the activity in this space and they illustrate curricula development and support opportunities available to institutions, and their related services, such as libraries.

a) Online Educational Initiatives in Canada

As previously noted, many of the MOOCs delivered in Canada are developed by large educational institutions or, to a lesser extent, by individuals and are xMOOCs. There are more 300 such courses being run from Canada.\(^{126}\)

Most of these courses are provided by top-tier traditional institutions using the commercial Coursera platform (McMaster University, University of British Columbia, University of Toronto); or the non-profit EdX platform (McGill University, University of Alberta, University of British Columbia, University of Toronto). Others, mainly middle-tier institutions use the openly licensed CanvasNet platform (Dalhousie University, Royal Roads University, Athabasca University, and the University of Saskatchewan).\(^{127}\)

*Government of Canada’s Open Data Portal Project:* As education is under provincial jurisdiction in Canada, coordinated national efforts on open access have been slow to develop. Postsecondary institutions have tended to be the trailblazers in this arena by creating institutional repositories for research produced within the institution and the development of open institutional presses.\(^{128}\)

The Open Data movement became popular in 2009 in a number of countries throughout the world and by 2011, Canada had launched its Open Data Portal as part of a larger Open Government Strategy.\(^{129}\) The Open Data Portal Project “is a federal program underway to promote the growth of the open data movement through a new open data licence” (Scassa, 2012).\(^{130}\) For the purposes of the Open Government Strategy, (of which Open Data is a part), open data is defined as “structured data that is machine-readable, freely shared, used and built on without restrictions.”\(^{131}\)
The criteria noted above recognize the need, in the Open Government environment, for data sets created by the government to be made available to taxpayers to ensure a level of transparency. They also recognized the need for all users to be able to work with the data set and to remix it to suit their particular requirements. Data such as this is invaluable as an open resource for research. Provinces and municipalities have provided access to data sets at their levels, and both public and academic libraries are sharing data as well (e.g., Edmonton Public Library, Vancouver Public Library, University of British Columbia Library).

Canadian Association of Research Libraries and Compute Canada National Platform Service: Canadian Association of Research Libraries (CARL) and Compute Canada announced in late January 2016 that they are in the planning stages for a national data repository that with federated search capabilities to support access to data repositories across the country. The pan-Canadian platform will provide tools and services to support the curation, access, discoverability, and preservation of research data, allowing researchers across Canada in a range of disciplines to have improved access and control of large amounts of data. This addresses a longstanding gap in Canada’s infrastructure for digital research data management.

CANARIE Network: Another innovation supporting open access is the CANARIE Network, consisting of 12 provincial and territorial partners including postsecondary institutions, hospitals, research institutions and government laboratories. It is a non-profit institution funded by the federal government that “designs and delivers digital infrastructure, and drives its adoption for research, education and innovation.” The CANARIE network provides the high-speed digital infrastructure that connects “one million researchers, scientists and students at nearly 2,000 Canadian institutions, including universities, colleges, research institutes, hospitals, and government laboratories” to...facilitate open access to publications and related data resulting from federally-funded research in easily accessible formats.

Creative Commons Canada: In addition to the technical infrastructure gains in the open access movement made possible through the establishment of CANARIE, Creative Commons Canada, an affiliate of the global body, was established to support the legal and technical structure necessary for the sharing of open resources in Canada. CC Canada is a non-profit “collaborative initiative comprising the Samuelson Glushko
Canadian Internet Policy and Public Interest Clinic (CIPPIC) at the University of Ottawa, BCcampus and Athabasca University.”

Over the past few years, Canada has become one of the most engaged countries in terms of its support of the open access movement. Technological and legal supports were the first to develop and the recent policy gains made possible through the Open Data Pilot Project have significantly added to the ability of researchers, faculty, students and the general public to access government data to further research and innovation.

**OOO Canada Research Network:** This community of practice was formed “by a group of young Canadians who attended OpenCon in 2014, an international conference which brings together students and early career researchers to discuss how knowledge can be more equitably and efficiently distributed through open access, open data, and open education approaches.” This group is in its formative stages but is getting quite a bit of traction in social media.

**Canadian Virtual University:** Canadian Virtual University (CVU) is an association of public Canadian universities specializing in online and distance education, and collaborating to increase access to quality assured university education through waiving credit transfer fees. CVU’s mandate is “to increase access to higher education, to avoid duplication, and to foster collaboration among publicly funded universities committed to online and distance education. Collectively, participating universities offer over 2,500 distance and online courses, and over 350 complete degrees, diplomas, and certificates. One quarter of CVU’s programs and courses are offered in French.” Participating universities include Athabasca University, Carleton University, Laurentian University, Royal Military College of Canada, and TELUQ.

b) Online Education Initiatives in Ontario

Ontario has recently seen significant investment in online education with all 45 postsecondary institutions offering online courses or entire programs. Some examples of initiatives are outlined below and are indicative of the continued evolution in online learning resources at the provincial level.
**Contact North/Contact Nord:** Established in 1986, Contact North is Ontario’s bilingual distance education and training network and is focused on providing information on courses, web conferencing services, and student and faculty support resources. Contact North grew out of the distance education tradition, with a focus on teleconferencing for northern communities. In the 1990s, almost every secondary school in Northern Ontario was equipped with Contact North teleconferencing equipment. This equipment gave all schools electronic access to more than 100 other schools in communities across Northern Ontario and beyond. In this way, students can participate in online and distance programs and courses from Ontario’s PSE institutions and 250 literacy and basic skills and training providers without having to leave their community.

Currently, there is 112 learning centres across Ontario that assists with audio/video/web conferencing from any of the partner sites as well as computers and study space. There is also a student hotline for courses and registration information as well as a portal that supports online instructors with current resources and tools for developing online curriculum.

**eCampus Ontario:** eCampus Ontario is a portal established by the Ontario Online Learning Consortium (OOLC), a non-profit consortium of postsecondary institutions in the province. Launched in 2015, it is funded by the Ministry of Training, Colleges, and Universities to be a centre of excellence; it provides Ontario students with access to online courses in 45 publicly funded postsecondary institutions. According to the February 2016 Ontario government budget,

"The first phase of eCampusOntario.ca is providing students across the province with one-window access to more than 13,000 online courses and over 600 programs offered by Ontario colleges and universities. There are also more credit transfer opportunities and new tools available to help students navigate the postsecondary education system. Students now have access to 120,000 course equivalencies and about 1,300 pathways on ONtransfer.ca, an online database of courses that allows students to know how many credits they can expect to receive before transferring institutions."
eCampus also has some academic support skill resources, for students from video workshops on a wide variety of topics including writing, citation skills to a help line. Faculty resources include a library of teaching resources, learning objects, and assessment techniques for online instructors.

OntarioLearn: OntarioLearn is an educational brokering organization that was started in 1995 and enables students to search the online course inventories of the 24 Ontario community colleges and institutes. The website serves a bilingual audience. More than 700,000 enrollments have been made by the consortia from 1995 to 2015. In the most recently published annual report (2014-15), the following enrollment trends were identified:

![Figure 3](image.png)

**Figure 3**

2014-2015 OntarioLearn Course Enrollment Trends
Figure 4
OntarioLearn Course Enrollment by College

The organizational priorities listed in the new three-year digital plan – The OntarioLearn Digital Strategy 2014-2017: Excellence through Innovation should be closely monitored. The plan itself “outlines several tools and resources available to enhance teaching and learning, and reports on an environmental scan of other consortia” and is worthwhile reading. Strategic pillars are: expand access; harness collaboration; deliver high quality and enhance profile. Of especial note is the focus on increased participation of the Francophone colleges, with emphasis on immediate provision of 24/7 technical help desk support by email, chat and telephone in both official languages. Quality one-stop support services, including library reference services is identified as a priority. OCLS is also mentioned as part of a review of support services offered.
c) Online Educational Initiatives in Other Provinces

*Memorandum of Understanding between BC, Alberta, and Saskatchewan:* In March of 2014, the provincial governments of Saskatchewan, Alberta, and British Columbia signed a Memorandum of Understanding to encourage the development, collaboration, and sharing of open educational resources for higher education. The document sets forth that PSE institutions within the signed provinces may use the “teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation, and redistribution by others with no or limited restrictions” and the agreement is in effect for three years.148

*Athabasca University:* One of the cornerstone institutions of OER activity in Canada is Athabasca University (AU). It has, for a number of years, been a key player in the development and promotion of OERs. “AU is home to the Technology Enhanced Knowledge Research Institute (TEKRI) and the UNESCO/COL/ICDE Chair in OER, both of which promote research into and the implementation of OER at institutional, national, and international levels. The OER Knowledge Cloud was created as a goal of the Chair initiative. The OER Chair is also a member of the board of the OER Foundation, which hosts the OER universitas (OERu).”149 AU has been instrumental not only with regard to research and the implementation of OERs, but they have also become trailblazers in the development of a scholarly journal and an online repository.

AU's adoption of open access began with the creation of the scholarly journal, *International Review of Research in Open and Distributed Learning* (IRRODL) in 1999 and continued in 2005 with the implementation of AUSpace, a DSpace repository of scholarly articles, theses, and other documents produced within the AU community. In addition, Athabasca’s AUPress was the first open access university press in Canada, starting in 2010, and currently offers over 100 volumes.150

*BCCampus:* BCCampus is one of the finest examples of online educational portals in Canada due to its variety of options, technology supports, and power as a tool linking students to postsecondary courses. It is a publicly funded organization that supports, promotes, and collaborates with the 25 publicly funded institutions within British Columbia. “BCCampus was created to enhance students’ ability to not only identify, choose, register for, and take courses but also to apply any academic credits earned to credentials
at a selected home institution; it was also intended to benefit institutions through the rationalization of demand for academic opportunities from students with the supply of online courses from BC’s public post-secondary institutions.\footnote{151}

Supporting the BCcampus course portal is the BCcampus Sharable Online Learning Resources Repository (SOL*R). SOL*R “enables the licensing, contribution, and access to free online teaching and learning resources ... This includes the major Open Textbook Project ...”\footnote{152} Twenty new online textbooks were most recently announced for skills training and technical programs; these are in addition to the initial 19 made available in 2013 and the 21 others completed September 2014 for 40 highly enrolled first-year and second-year post-secondary subjects.\footnote{153} Another initiative of note is the implementation of an OER initiative around apprenticeships for the trades in partnership with BC’s Industry Training Authority.\footnote{154}

eCampusAlberta: eCampusAlberta, like BCcampus, is a publicly funded organization with relationships to 26 Alberta postsecondary institutions and another example of the significant OER development in Canada. Established in 2002, it links students “to more than 900 online courses and 70 programs offered by 26 Alberta post-secondary institutions, including provincially approved certificates, diplomas and applied degrees”.\footnote{155} This consortium increases the access that students have to high quality online education and supports students with technology infrastructure and faculty with professional development in online instruction. It also uses the ‘lead and partner’ model which enables students to choose a program in a school that may not be close to their homes, but they can access support services and exam supervision at a partner institution that is close to their residence.\footnote{156}

d) International Online Educational Initiatives

A key event in online education was the 2012 World OER Congress in Paris out of which came the establishment of the \textit{2012 Paris OER Declaration}. The Congress created the 10 principles that would guide UNESCO member countries in the development, support, and creation of online learning:

1. Foster awareness and use of OER.
2. Facilitate enabling environments for use of Information and Communications Technologies (ICT).
3. Reinforce the development of strategies and policies on OER.

4. Promote the understanding and use of open licensing frameworks.

5. Support capacity building for the sustainable development of quality learning materials.

6. Foster strategic alliances for OER.

7. Encourage the development and adaptation of OER in a variety of languages and cultural contexts.

8. Encourage research on OER.

9. Facilitate finding, retrieving and sharing of OER.

10. Encourage the open licensing of educational materials produced with public funds. 157

OERu: One of the most high profile international initiatives is the OER universitas (OERu). It offers free online university courses in collaboration with Canadian partners so that learners can gain formal credentials from the partner institutions. OERu is a consortium of more than 36 institutions and several organizations on five continents.... There are seven members of the OERu located in Canada: three universities (Athabasca, Thompson Rivers and Kwantlen); one community college (Portage College in Alberta); and three organizations (BCcampus, eCampusAlberta, and Contact North in Ontario). 158

Open Education Europa: Open Education Europa is an initiative of the European Commission and was launched in 2013 to provide online access to all European MOOCs, courses, and OERs in multiple languages and through a single portal. 159 The site also includes news, events (including the OER Conference), and recent research related to OER.

Open Education Consortium: The OEC is a “global network of educational institutions, individuals and organizations that support an approach to education based on openness, including collaboration, innovation and collective development and use of open educational materials”. 160 The site contains a subject listing of open textbooks, Science, Technology, Engineering and Mathematics (STEM) courses, and open courseware publishing resources.
Open Universities Australia (OUA): OUA is another international educational brokering organization that has seen phenomenal success in recent years with 144,000 graduates since its inception in 2005. The organization is owned by seven affiliated universities in Australia and offers 1400 courses and 170 qualifications with courses available globally. OUA had 23% market share of online courses in Australia in 2012 and, although it is not a degree-granting institution, it provides access to degrees through its affiliated institutions and has robust transfer credit agreements across institutions.

OA2020: OA2020 is an international initiative under the umbrella of the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, which has been embraced by more than 540 signatory institutions. It aims "to accelerate the transition to open access by transforming the existing corpus of scientific journals from their current subscription system to open access." The group acknowledges that the current subscription model will eventually become obsolete, and that the world's research organizations and their libraries must allocate their money accordingly. The call to action here is clear: "What is required is a broad, global consensus among these organizations to withdraw all spending from journal subscriptions and re-allocate those same resources to publishing services. ... It is incumbent on the research institutions and their libraries to take this important initiating step."

II. Library Trends in Support of Open Educational Resources

A 2016 BC survey of university and college faculty showed current use of OERs in curriculum development. Three-quarters of the respondents reported having used OER, “whether by adopting OER for use in the classroom (60%), adapting OER to suit their specific classroom context (35%), or creating OER (28%) ... although OER adoption was similar across the different types of institutions, educators at research-intensive universities were more likely to report having adapted and created OER than educators at teaching-intensive universities or community colleges/institutes."

When asked about barriers to OER use, the following was determined. It is clear that community college faculty need additional support in all areas:
In the evolution of their current faculty assistance role, library staff are well positioned to both lead and support the creation and use of OERs in postsecondary institutions. Kazakoff-Lane noted that libraries are staffed with people who have the skills to advise on copyright clearance and open licensing, instructional design, cataloguing and indexing, archiving and discoverability in aid of the development of OERs. She offers a quick list of library services currently offered within a library environment include:

- Provide OER support through existing library resources
- Highlighting and promoting open access research materials and open access as a whole
- Serve as subject specialists to locate and aggregate potential OER resources (by course, by program, by subject)
- Present information on licensing and copyright to help faculty understand proper use of OER
- Provide centralized resources for multimedia support (e.g., makerspace or edtech lab)
- Provide centralized training for multimedia support (e.g., edtech training)
- Provide storage repository for completed OERs college-wide (with metadata provision, etc.)
- Provide open textbook and digital course pack creation/support
- Provide leadership in college and/or advocacy
- Provide awareness throughout the college on a wide range of OER topics
- Collaborate with Teaching and Learning staff in the provision of faculty professional development
1. Open Education Resources and Scholarly Communications

Many universities bundle their institutional repository with their scholarly communications initiatives, tying together the storage, access and instructional components throughout the scholarly publication process. This brings library outreach programming and services to both the faculty and student researcher. A good example of this is the eScholarship initiative through the California Digital Library, which combines their open access policy, their repository, and support on journal management platforms, print on demand and storage for working papers, audiovisual media and research data. The University of British Columbia Library has documented every possible step in scholarly publication within a OER environment, from building an academic profile online to content development to “being a player.” This approach provides a helpful service checklist for further college library developments in this area.

In looking at what universities are currently providing in the way of scholarly communications, there may be an especial need within colleges in supporting those faculty not familiar to the research and publication cycle. Extra instruction and consultation in research design, data analysis, literature reviews, and grant reporting/writing may fall to the library in supporting the institution’s research plan. In addition, the area of a scholar’s research impact (measurability through bibliometrics for traditional publication and altmetrics
for non-traditional avenues) will be of increasing interest as colleges compete for research funds with more established university institutes. The area of protecting novice researchers from predatory journals is a concern, especially as this area grows in the open access arena.¹⁷²

Open Access Author Funds are also usually coordinated through the library. These funds are set aside from operating budgets to encourage and support those in the university who wish to make their scholarly work available via open access publishing and who are required to pay an article processing fee in order to make this possible. This is a growing trend in Canadian university libraries, with approximately 14 institutions with funds as of January 2016.¹⁷³

2. Open Education Resources and Open Textbooks

Beyond the provision of service, the use of OERs in teaching and learning requires students and instructors to acquire new publishing skills regardless of the amount of curricular integration. “The adaptability of OER allows teachers to revise and tailor their educational resources to better fit the educational environment in which they are teaching. It can also lead to a higher level of collaboration between teachers in producing materials for their lessons or lectures, which is key to teachers’ professional development.”¹⁷⁴

Lesson planning is one of the most time-consuming activities for instructors; this task can become a more efficient endeavor if they were able to collaborate and share online resources on the same subject matter. Furthermore, instructors may find it easier to make the transition to the use of OERs as part of a group. Instructors have developed communities of practice to share not only content but also expertise for design, development, and reworking of lessons.¹⁷⁵
The flip side of lesson planning includes textbook support for students. The Canadian leader in this area is the BC Open Textbook project, funded by the BC Ministry of Advanced Education, and managed by BCcampus. Texts are available for use by faculty, and free digital versions of the texts are available to students, with a low cost print-on-demand option. The BC Open Textbook project and the University of Saskatchewan have created online guides to open textbook creation, both including a chapter on copyright and licensing. BC Open Textbook have also created an award-winning accessibility toolkit as well.

There are many American initiatives of note, including SUNY Open Textbooks, OpenStax (Rice University), and most importantly, the University of Minnesota’s Open Textbook Library and Open Textbook Network, with more than 100 universities participating.

But there are challenges to open textbook adoption. Contact North’s 2011 study of OERs reported that, in Ontario, “there are a few faculty at the forefront with open textbooks, but there are many more unaware, uninterested or even opposed to the idea of OERs. Many faculty view open textbooks unfavourably, associating them with ‘a proliferation of information on the Internet and its indiscriminate use by many students.’” To counter this concern, the BCOER Librarian Working Group has come up with a rubric for evaluation of OER repositories prior to recommendation.

A recent document from the Canadian Association of Research Libraries specifically deals with opportunities for libraries within the open textbook arena, and believes “It is an opportune time for research libraries to be more directly implicated in the sustaining and promoting open textbooks as students and governments at various levels have clearly begun to direct time and resources to them. This is likely something libraries cannot do alone. They can help the higher education community achieve a more robust and sustainable open textbook platform by aligning themselves with student groups, those faculty members already involved, and with governments that are already active in this space.”

3. Open Education Resources and Institutional Repositories
In 2013-14, Colleges and Institutes Canada published survey results on the level and investment of applied research at colleges nationwide. Results showed that since 2009, investment in applied research has steadily grown from $138MM in 2009 to $259MM in 2013.\(^{181}\)

Survey results confirm there is growing institutional commitment to applied research, evidenced through institutional financial commitments, the establishment of research structures, opportunities for faculty and students, areas of research expertise, research facilities, involvement in research networks, the use of performance measurement tools, and their impact on curricula and program delivery.\(^{182}\)

With increased applied research activity in the Canadian college sector, preserving the institutional research memory and tracking the institutional contribution to the literature of various disciplines is increasingly important. The inclusion of articles, research, instructional readings, texts [in repositories] could have a significant impact by decreasing textbook costs for students, promoting the research of the institution for future grants or investment, disseminating research to the global community, and preserving the institutional memory.\(^{183}\)\(^{184}\) According to Wiley et al.

it will require, however, that we share the educational resources we produce and that we spend our limited public resources wisely. It will require educators to openly license and share their educational resources and be willing to use others’ OER. The academic culture from elementary to higher education must change from ‘not invented here’ to ‘proudly borrowed from there’.\(^ {185}\)

In universities, institutional repositories have become relatively common can be found on directories of institutional repositories. OpenDOAR.org and roar.eprints.org are two worldwide directories listing institutions that have repositories and the latter also has a search engine.\(^ {186}\) British Columbia has started an institutional repository network of both colleges and universities in their ARCA initiative.\(^ {187}\) And the Atlantic provinces are following suit with their CAIRN initiative, “aimed at providing information about digital collections and data held by Atlantic Canada's post-secondary institutions, and working toward both a single point of access and search for Atlantic Canadian collections.”\(^{188}\)
Conclusion

The evolution of open education resources has the potential to revolutionize education in terms of design, instruction, cost, and support services delivery. Various countries throughout the world are putting the technical and policy infrastructures in place to support the continued development of OERs. The increasing numbers of distance courses and programs being offered by postsecondary institutions result in larger enrollments and additional demands on support services.

Libraries, with their uniquely skilled staff, are well positioned to adjust, adapt, and create new ways of providing equal access to stakeholders, whether on campus or remotely. The recommendations offered in this report serve to provide practical steps towards providing that equal access, to both hybrid and only-only learners, and faculty teaching in this space.

On a more grandiose note, Kazakoff states the future vision of library involvement best:

“Libraries seeking to provide citizens of the world with access to knowledge are in a good position to work with higher education stakeholders and provide them with an alternative model of open education: a model that is open, rationalized, sustainable and provides more useful (i.e., effective) content—a model capable of working in both MOOC and non-MOOC institutions alike. No one believes it to be easy, but libraries’ battles on behalf of open access, together with their increasing encapsulation of relevant publication, multimedia, instructional design, and intellectual property services, means they have the credibility, knowledge, and relationships needed to argue for and support an open education consistent with all of their values, not just some. In so doing, libraries might ensure that higher education:

- is not entering into a world where it loses control of its content again,
- is not the sole property of a few major institutions, with potentially devastating impacts on tuition and research in smaller universities,
- is capable of both developing and taking advantage of open content in a rationalized and sustainable fashion, and
• is providing content that aids people with diverse cultural, linguistic, and learning needs.

That is a vision of open education that all libraries could get behind, champion and sustain."
Appendix A:

Specific Requirements of Library Service to Distance Learners as outlined in ACRL’s Standards for Distance Learning Library Services (2008)

Fiscal Responsibilities

The originating institution must provide continuing, optimum financial support for library services to the distance learning community. This support must be sufficient to meet not only the specifications listed below, but also those given in other sections of the Standards, as well as specifications in other applicable ACRL standards and guidelines, and those of professional, state, and regional accrediting agencies, as noted earlier. This financing should be:

- related to the formally defined needs and demands of the distance learning program;
- allocated on a schedule matching the originating institution’s budgeting cycle;
- designated and specifically identified within the originating institution’s budget and expenditure reporting statements;
- accommodated to arrangements involving external agencies, including both unaffiliated and affiliated, but independently supported, libraries;
- sufficient to support staffing as specified in Personnel;
- sufficient to cover the type and number of services provided to the distance learning community; and
- sufficient to support innovative approaches to meeting needs.

Personnel

As noted in the definition of the librarian-administrator and in the opening statement of the following Management section, the functions of the librarian-administrator may be dispersed across innovative or distributed library systems among a number of librarians rather than assigned to one designated individual; however, under such circumstances, care must be taken to ensure that none of the essential functions of the librarian-administrator, as provided in the Standards and other closely related documents, are omitted from these systems.
Personnel involved in the management and coordination of distance learning library services include both library administrators and key administrative and support personnel from the originating institution, who participate on the main campus, and at distance learning sites. Among these are the ADA compliance officer or staff from support services for people with disabilities. Participating library personnel include the librarian-administrator and librarians with the appropriate expertise to provide services to the distance learning community.

The originating institution must provide professional and support personnel with clearly defined responsibilities at the appropriate location(s) and in the number and of the qualifications necessary to attain the goals and objectives for library services to the distance learning program, including direct human access for the distance learning community. These individuals may be assigned to the library or in separately administered units, and should include:

- a librarian-administrator to plan, implement, coordinate, and evaluate library resources and services addressing the information and skills needs of the distance learning community;
- additional professional and/or support personnel with the capacity and training to identify informational and skills needs of distance learning library users and respond to them directly, regardless of location. The exact combination of central and site staffing for distance learning library services will differ from institution to institution.

Distance learning library personnel must have:

- classification, status, salary scales, and workload equivalent to that of other comparable library employees, while reflecting the compensation levels and cost of living for those residing at distance learning sites;
- written policies establishing their status, rights, and responsibilities. Policy regarding faculty librarians should be consistent with the ACRL *Standards for Faculty Status for College and University Librarians*, http://www.ala.org/ala/mgrps/divs/acrl/standards/standardsfaculty.cfm, and
- opportunities for continuing growth and development, including continuing education, professional education, and participation in professional and staff organizations.
Library Education

To enable the initiation of an academic professional specialization in distance learning library services, schools of library and information science should include in their curriculum, courses and course units in this growing area of specialization within librarianship.

Management

As noted above both in Definitions and Personnel, the functions of the librarian-administrator may be dispersed across innovative or distributed library systems among a number of librarians rather than assigned to one designated individual. Care must be taken under such circumstances to ensure that none of the essential functions of the librarian-administrator, as presented below, are omitted from these systems.

The librarian-administrator, either centrally located or at an appropriate site, is the principal and direct agent for implementation of library services and resources in support of distance learning programs, as funded by the chief administrative officers and governance organizations of the originating institution, and as framed through the active leadership of the library administration.

As an agent of both the originating institution and the library, the librarian-administrator manages services and access to resources for the distance learning community. At a minimum, the librarian-administrator pursues, implements, and maintains all of the following areas of management in order to provide a facilitating environment in support of teaching and learning, and in the acquisition of lifelong learning skills.

1. Mission, goals, and objectives

The librarian-administrator:

- develops a written statement of immediate and long-range goals and objectives for distance learning library services, which addresses defined needs and outlines the methods by which progress can be measured;
- promotes the incorporation of the distance learning mission statement, goals, and objectives into those of the library and of the originating institution as a whole;
- involves distance learning community representatives, including local administrators and on-site faculty and students, in the formation of the objectives and the regular evaluation of their achievement; and
- participates in the strategic planning processes of the originating institution and the library.
2. Needs and outcomes assessments
The librarian-administrator is responsible for ensuring and demonstrating that all requirements for distance learning library services are met through needs and outcomes assessments, and other measures of library performance, as appropriate.

The librarian-administrator assesses the existing library support for distance learning, its availability, appropriateness, and effectiveness, using qualitative, quantitative, and outcomes measurement devices as well as a written profile of needs.

The librarian-administrator regularly surveys distance learning library users to monitor and assess both the appropriateness of their use of services and resources and the degree to which needs are being met and skills acquired.

Assessment instruments may include surveys, tests, interviews, and other valid measuring devices. These instruments may be designed specifically for the function being measured, or previously developed instruments may be used. It is critical, however, to choose carefully the instrument, the size of the sample, and the method used for sampling. The instrument should be valid, and the way it is used should be appropriate for the task.

These planning and evaluation processes are ongoing and should be conducted in cooperation with the library and the originating institution. The librarian-administrator:

- uses inputs, outputs, outcomes, and assessments as detailed in Standards for Libraries in Higher Education  http://www.ala.org/ala/mgrps/divs/acrl/standards/standardslibraries.cfm
- prepares a written profile of the information and skills needs of the current and potential distance learning community;
- conducts general library knowledge surveys of students at the beginning, midpoint and near graduation to assess the effectiveness of their information literacy instruction;
- uses evaluation checklists for librarian and tutorial instruction to gather feedback from students, other librarians, and teaching faculty;
- tracks student library use through student journal entries, or information literacy diaries;
- asks focus groups of students, faculty, staff, and alumni to comment on their experiences using distance learning library services over a period of time;
- assesses and articulates both the electronic and traditional library resource needs of the distance learning community; and
- assesses and articulates needs related to library services, including instruction;
• assesses and articulates needs for facilities, in both traditional and online environments;
• conducts reviews of specific library and information service areas or operations which support distance learning library services;
• reviews accessibility of distance learning library services for the entire learning community;
• considers distance learning library services in the assessment strategies related to institutional accreditation;
• compares the library as a provider of distance learning library services with its peers through self study efforts of the originating institution;
• employs assessment and evaluation by librarians from other institutions or other appropriate consultants, including those in communities where the institution has concentrations of distance learners; and
• participates in continuous institutional assessment and effectiveness programs and processes.

3. Collections and services
The librarian-administrator:

• prepares or revises collection development and acquisitions policies to reflect the profile of needs;
• develops methods for delivering library materials and services to the distance learning community;
• ensures that needed services identified in the planning process are provided to the distance learning community; and
• promotes library support services to the distance learning community.

4. Cooperation and collaboration
The librarian-administrator:

• participates in the curriculum development process and in course planning for distance learning to ensure that appropriate library resources and services are available;
• works collaboratively with teaching faculty in distance-delivered programs to integrate information literacy into courses and programs in order to foster lifelong learning skills;
• promotes dialogue between distance learning and library administrators to ensure cooperation between the two groups;
• initiates dialogue leading to cooperative agreements and possible resource sharing or compensation for unaffiliated libraries, where applicable.
• develops partnerships that ensure the necessary technology support for the distance learning community; and

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• acts as an advocate for the distance learning community among colleagues in the library and on campus.

Facilities and Equipment

The originating institution must provide sufficient facilities, equipment, and communication tools to attain the objectives of the distance learning programs. The size, number, scope, and accessibility of these facilities and equipment must be sufficient to provide timely access for all students, including those with disabilities. Arrangements may vary and should be appropriate to programs offered. Examples of suitable arrangements include but are not limited to one or a combination of:

• access to facilities through agreements with a nonaffiliated library;
• designated space for consultations, ready reference collections, reserve collections, electronic transmission of information, computerized data base searching and interlibrary loan services, and offices for the library distance learning personnel;
• a branch or satellite library; and
• online services, including Web-based virtual libraries, electronic communication tools, and course management software.

Resources

The originating institution is responsible for ensuring that the distance learning community has access to library materials equivalent to those provided in traditional settings. Thus, the institution must provide or secure convenient, direct access to library materials in appropriate formats that are of sufficient quality, depth, number, scope, and currency to:

• meet all students’ needs in fulfilling course assignments;
• enrich the academic programs;
• meet teaching and research needs;
• support curricular needs;
• facilitate the acquisition of lifelong learning skills;
• accommodate students with varying levels of technological access (i.e. low bandwidth); and
• accommodate other informational needs of the distance learning community as appropriate.

When more than one institution is involved in the provision of a distance learning program, each is responsible for the provision of library materials to the students enrolled in its courses, unless an equitable
agreement for otherwise providing these materials has been made. Costs, services, and methods for the provision of materials for all courses in the program should be uniform.

Services

Library services offered to the distance learning community must be designed to meet a wide range of informational, instructional, and user needs, and should provide some form of direct user access to library personnel. The exact combination of service delivery methods will differ from institution to institution. Specific professional standards and guidelines which should be utilized in providing these services include, but are not limited to:


[http://www.ala.org/ala/mgrps/divs/rusa/archive/protools/referenceguide/guidelinesbehavioral.cfm](http://www.ala.org/ala/mgrps/divs/rusa/archive/protools/referenceguide/guidelinesbehavioral.cfm)

[http://www.ala.org/ala/mgrps/divs/rusa/archive/protools/referenceguide/virtrefguidelines.cfm](http://www.ala.org/ala/mgrps/divs/rusa/archive/protools/referenceguide/virtrefguidelines.cfm)

[http://www.ala.org/ala/mgrps/divs/rusa/archive/protools/referenceguide/professional.cfm](http://www.ala.org/ala/mgrps/divs/rusa/archive/protools/referenceguide/professional.cfm)

The following, although not necessarily exhaustive, are essential:

- reference assistance;
- online instructional and informational services in formats accessible to the greatest number of people, including those with disabilities;
- reliable, rapid, secure access to online resources;
- consultation services;
- a library user instruction program designed to instill independent and effective information literacy skills while specifically meeting the learner support needs of the distance learning community;
• reciprocal or contractual borrowing, or interlibrary loan services using broadest application of fair use of copyrighted materials;
• access to reserve materials in accordance with copyright fair use policies or permissions;
• adequate service hours for optimum user access;
• promotion of library services to the distance learning community, including documented and updated policies, regulations and procedures for systematic development, and management of information resources;
• prompt delivery to users of items obtained from the institution’s collections, or through interlibrary loan agreement via courier or electronic delivery system; and
• point of use assistance with and instruction in the use of nonprint media and equipment.

Documentation

Documentation must be maintained in order to indicate the degree to which the originating institution is meeting the Standards. The library and the librarian-administrator should have the following current information available in print and/or online in an accessible format:

• user guides and other library instructional materials;
• statements of mission and purpose, policies, regulations, and procedures;
• statistics on library use;
• statistics on collections;
• facilities assessment measures;
• collections assessment measures;
• needs and outcomes assessment measures;
• data on staff and work assignments;
• institutional and internal organization charts;
• comprehensive budget(s);
• professional personnel vitae;
• position descriptions for all personnel;
• formal, written agreements;
• library evaluation studies or documents; and
• evidence of involvement in curriculum development and planning.
Appendix B:

Reprint - Selected Trends and Recommendations Outlined in the Infotrova report *Final Report: Environmental Scan for Strategic Planning (2014)* that pertains to Distance Library Services and/or Open Educational Resources

(note: sources are in Endnotes but not in Bibliography for this component)

A. Distance and Online Education

**Focusing on new MTCU initiatives — Ontario Online:** An independent non-profit enterprise, Ontario Online, will be launched by MTCU for the 2015-2016 school year (this is the old Ontario Online Institute initially discussed in the 2011 Budget). Colleges and universities will govern and operate this initiative to promote online course offerings as well as centralize specific courses. Three hubs will be introduced: the course hub will offer online courses that are fully transferable between participating colleges and universities; the instruction hub will allow institutions to develop and share best practices, research, and data on instruction; and the support hub will provide academic and technical assistance. $42-million in startup funding will be allocated by 2016, with up to $12-million available in 2013-2014. $8.5 million of the $12 million amount will be earmarked for the Shared Online Course Fund, where "students from multiple institutions enroll together in the same course and each student receives credit at his or her home institution." Up to $75,000 in one-time allocations will be available for the creation or redesign of each shared course; only credit courses are available for funding. According to Naylor and Proulx (MTCU), 50 courses have been funded to date out of this envelope, and the allocation is now completed. The majority of courses were of a introductory or "101" nature. The Support Hub will also have monies available for "a suite of student supports; an online portal for students, instructors and researchers providing access to information, resources and online courses; the consolidation of resources and materials used in course and instructor development; oversight of technology necessary for the provision of "Ontario Online" activities;
investigation of Ontario-wide technology licenses, and curation of open educational resources.\textsuperscript{192} Colleges Ontario is pleased by the announcement.\textsuperscript{193}

Peter Devlin (FAN) believed that this initiative needs to be better incentivized, and that the colleges are still discussing what should be done jointly and what individually. He also explained that the differentiation framework should be extended into Ontario Online, so that certain institutions that have a better history in online course delivery could and should take the lead in this area. To his knowledge, college presidents have not discussed any student support mechanisms to date for Ontario Online. Fred Gibbons (NOR) stated that Ontario Online is "the minister's pet project," and was directed mainly at the universities, since there was no equivalent to OntarioLearn at the university level. Gibbons believed there is now quite a bit of duplication between OntarioLearn, Contact North (Northern Ontario) and the elearnnetwork.ca (Southern Ontario). There may be some stumbling blocks to expansion of Ontario Online province-wide due to lack of broadband and/or fiber optic in many northern and rural communities. Gibbons also commented that "it is a good time to do some hard thinking around consortia to see how they can add value as a whole to the college system. Buying through consortia is a model of efficiency; we need to find new ways of doing that. I don't think it would be prudent to wait for Ontario Online; I think the OCLS board needs to take the initiative on it or it may be too late."

David Agnew (SEN) stated that it is still unknown what Ontario Online will represent. He mentioned that OntarioLearn was a highly successful model but had "almost too quiet" success, as MTCU and the universities didn't know it existed. Agnew hoped that the colleges would get some good core courses out of the initiative that will reflect the good work done to date in the transfer credit area. He also has been speaking out about broadening the scope to include a focus on technology-based learning as a whole, especially in regards to hybrid learning and flipped classroom methodologies. Especially with international students coming to Canada specifically for face-to-face instruction, Agnew believed that we "should not obsess about online-only instruction but how we can best combine TEL and face-to-face."

Recommendations: Investigate future project collaborations in: joint credit course in information literacy or other academic literacies; in an "academic literacies by online learning" program; in funding for additional eResources and OER repositories; in provision of a wide range of student support activities within an online context (e.g., tutoring), and in university and college consortia collaboration for any college/university jointly offered courses. Track who within colleges get the $75,000 grants, and partner with them. Watch for student feedback from rural areas in regards to connectivity issues.
Moving to mobile everywhere: Cellphone and tablet purchases will surpass PCs in Canada for the first time this year, with PCs adopting touchscreen technology in a major way. According to the Canadian Wireless Telecommunications Association (Q3 2013), there were 27 million mobile subscriptions in Canada, with more than 270 million text messages sent a day. Mobile subscribers grew 10% in Canada over last year, with the Android platform being most popular. Search was the fastest growing mobile content category. Trends in the consumer market are coming into the workplace with IT managers increasingly expecting employees to be using their own tablets to work in 2014. By 2014, more mobile phones will connect to the Internet than computers; 73% of smartphone users access the Internet daily.

To that end, mobile computing is not a fad – it is happening now, outside and inside of academia. The 2013 NMC Horizon report placed tablet and smartphone adoption at one year or immediate, noting their portability, feature-rich app environment, use for off-campus activity and fieldwork, and overall pervasiveness of the technology. In the 2013 ECAR study, when students use smartphones as academic tools, their reasons were to source information (looking up information or accessing digital resources) and to photograph information while in class. In the 2013 Campus Computing survey, "senior campus IT officers now report that tablets and smartphones have higher priority in their IT planning activities: 86% cite tablet devices and 82% note that smartphones will be “very important” in IT planning over the next two-three years.” Tablets have become so quickly adopted in academia because users can seamlessly and easily load apps of their own choosing, making the unit itself a portable, personalized learning environment. With the advent of the Bring Your Own Device (BYOD) movement, many schools have "adopted the BYOD approach for learning and have experienced huge improvement in student engagement and overall learning outcomes;" this cohort will be amongst the next set of incoming college students. Libraries are lagging behind the overall technology world in mobile implementation, let alone in the sophistication of approach. It is felt that libraries "that ignore this critical mode of engagement with their users are missing a tremendous opportunity to improve and expand access." Recommendations: Lobby college IT departments to partner on implementation of mobile strategy. Decrease numbers and spaces allocated for computer labs. Increase the need for device support, bandwidth and platform independence of locally created materials. Implement the use of responsive web design to assist in device neutrality in app
development to meet the needs of a diversified mobile device marketplace. Make mobile functionality of any new library eResources a mandatory selection consideration.\textsuperscript{208}

**Providing tools within Learning Management Systems (LMS):** It is a common user experience practice to move educational technology to "where the students are" for the sake of convenience and access. Within the college environment, that is predominantly within the LMS. This approach can create friction between IT and academic libraries in that: a) many library systems do not easily integrate into the LMS; b) library service provision is comprehensive and requires its own web presence; and, c) library branding and awareness issues come into play. LMS companies also share the same centralization philosophy, and are gradually incorporating more and more add-ons within their platforms. Blackboard, for example, combines "social media features, analytics, and a library of tools that can be used to incorporate a variety of content into class materials" and most recently, an online bookstore.\textsuperscript{209} Desire2Learn's Insert Stuff framework allows embedding from Flickr, YouTube, Vimeo, and Desire2Learn Capture.\textsuperscript{210} While the benefits of this approach are evident, they also serve to limit instructors and librarians in regards to the tools they could use in their instructional design. With the trend towards co-creation spaces and the specialized and open software used within, LMS-embedded tools could be more of a barrier to content development. **Recommendations:**

**Monitor changes in LMS tool provision for instructional opportunities. Determine priority of the LMS for library services and content.**

**Utilizing the Academic Cloud:** Cloud-based platforms from library vendors have been increasingly available for digital repositories, discovery layers, and many other applications. Libraries are seeking more flexible, efficient ways of managing their collections and operations, and are investigating cloud computing as an option (with their IT departments). At best, cloud solutions provide shared access to sometimes expensive applications, and entry to products that would not be affordable otherwise. Even the quality of the service can improve via the cloud; in the case of article recommender services, for example, data from one single organization may not be as informative to the user as the collection of data from peer organizations across the continent. Security, privacy data ownership and risk assessments on an institutional scale need to be accomplished before wide-scale adoption will be seen.\textsuperscript{211} Adoption of administrative system cloud-based technologies is still quite low and is estimated to stay that way for the next five years.\textsuperscript{212} As students move their own academic output to personal cloud-based applications, there is an opportunity to educate learners in privacy issues under the digital literacy banner.\textsuperscript{213} **Recommendations:** Partner with academic IT departments.
to monitor what individual CIOs are feeling about local cloud computing implementations. Lobby for specific tools where/when appropriate.

**Completing the migration to print and expanding digital collections:** Academic libraries continue to reallocate funds towards licensed digital access, rather than physical ownership, to capture any cost efficiencies. Conversion to the "digital library" from an academic perspective is well underway with reference works and serials; it is estimated that almost 95% of print journals will be electronic in the very near future.\(^{214}\) Requests for increased levels of electronic materials remains high, and David Lewis has suggested that by 2020 "all published content will be delivered electronically... and a printed book will be made available on a print-on-demand basis."\(^{215}\)

The University Leadership Council posits four major barriers to wide-scale movement from a print-based library to a digital-only library: "copyright prevents access to orphan works and scanned material; eBook versions of academic monographs not yet universally available; eBook procurement more complicated than traditional purchasing; and current DRM restrictions limit how patrons can use eBooks."\(^{216}\) The demand for more eBooks that are currently available from publishers continues to be a concern; a 2013 study indicates that a maximum of 33% of print books are actually currently available in eBook format, with approximately 26% readily obtainable.\(^{217}\) A 2014 report from BookNet Canada states that, amongst Canadian publishers "almost half (49%) of all respondents have more than 50% of their active print titles available as eBooks, and 19% reported that 100% of their active list is available in a digital format.\(^{218}\) Small publishers continue to struggle to convert print material backlists to eBooks\(^{219}\) and are facing competition from the rise in self-publishing and digital-only houses. In addition, continued price inflation of licensed eResources, even within consortial arrangements, means that libraries struggle to provide stable, year-over-year access to these materials, impacting investment into other library collection development practices.\(^{220}\) Despite the challenges, eBook spending went up 109% in 2011 at ACRL associate degree granting institutions.\(^{221}\)

Interestingly, in the 2013 Ithaka study, library directors appear to be taking a relatively cautious stance toward the role of ebooks in collections, even at the baccalaureate level (most akin to college libraries). The survey showed that showed that, since 2010, "there has only been a very slight increase in the percentage of library directors who believe that eBooks play an important role in the research and teaching at their institutions." **Recommendations:** Continue to expand efficient collaborative agreements with consortia, individual vendors and library partnerships. Investigate innovative shared purchasing/borrowing...
arrangements on the print monograph side to free up additional monies for electronic resources. Investigate selection and acquisition of eBook titles where and when appropriate to the academic program/subject matter due to the continued lack of suitable, usable inventory by publishers.

Establishing data curation and preservation at the college level: There is a push towards greater faculty research at the college level; across Canada, ACCC reports more than "1,774 faculty and staff (e.g. industrial experts and technicians) engaged in applied research in 2011-12, up by 10% from 2010-11." Consequently, there will be an increased need for the appropriate curation and storage of any research data, especially as funding agencies ask for data plans in their application criteria. It remains to be seen how the 2013 integration of CONII within the Ontario Centres of Excellence will develop, as OCEs fall under the Ministry of Economic Development, Trade and Employment / Ministry of Research and Innovation and not MTCU. Data curation is an area that has been adopted by university libraries, so a like expectation/precedent may be there for college libraries as well. Recommendations: Investigate options for sharing knowledge and resources in the areas of data authentication, storage / archiving, management, preservation, retrieval, and representation, meeting a range of privacy and information technology standards. Investigate partnering with the ORION Nebula project in regards to a cloud based data curation using their established internet connectivity, project managed hosting, and data backup and recovery systems. Consider hiring staff to provide expertise in data curation and preservation to member libraries at OCLS. Investigate centralized, secure, shared data repository through OCLS.

Expanding instructional role from information literacy to 21st century skills and academic literacies: Loosely defined, these are the basket of skills/literacies needed to analyze and solve problems regardless or content area or modality. Digital literacy skills will increasing be of even greater importance, as well as the 4C's: creativity, collaboration, communication and critical thinking. The library is increasingly seen the main location on the college campus where learners will be able to bring these skills together. However, as shown by recent Ithaka S+R reports, librarians view themselves as seeing primarily in a teaching role, whereas faculty still have the perception of librarians as purchasing agents. To combat this perception, academic literacies must be treated as a program-wide or institutional outcome – with the library as

![Figure 2](image-url)
the lead partner. In discussions with David Lankes (SYR), he felt that helping the learner navigate college life from Day One was of central importance to the library; various ways of helping learner to "hack the college" and make important connections was a key priority for moving forward. Recommendations: Expansion of self-directed, classroom and one-on-one instructional roles. Introduce makerspaces for experiential learning. Increase staff training in these literacies. Update all staff competencies. Lobby for increased involvement of library directors and senior staff in college-level academic and strategic planning.

Focusing on learner experience design (LXD/LX) and learner-centredness: Colleges (and their libraries) insist that their organizations are learner-centered, but what does that really mean? By placing the learner in the centre of the learning process, they are active, responsible participants with the instructor as coach/facilitator/sage on the side. All virtual and face-to-face program and service design considerations need to be made with iterative feedback from this main stakeholder group, and managed / modified by the subject experts in that area (instructors, librarians, other staff) in the learner’s best interests. It also serves to actively engage students, demonstrate empathy and respect, communicate clear expectations, encourage independence, create and reaching and learning community, and use appropriate assessment methods. Drawing upon research in of informatics, human factors, cognitive psychology, and human computer interaction, LXD aims to marry the two fields of user experience and instructional design in a way that is intuitive and supports the learning process, but driven by the needs of the learner, not the institution. It is not merely imparting information, but driving behavioural change. Recommendation: Train staff in areas of instructional design and user experience. Ensure ongoing, simple learner feedback mechanisms are in place for all service provision. Act on the learner feedback given. Consider centralized OCLS staff resources for member consulting.
Leveraging digital collections and systems:

With e-priority policies now firmly in place, academic libraries are well on their way to creating digital libraries. Encouraging widespread use of these assets has become crucial, given the many competitive information streams available. There has been large scale increases in student use of eBooks and eTextbooks; the continued integration of electronic collections into curriculum development, assignment design and course management systems will be key to faculty and student adoption. Strong virtual discovery tools, now considered to be a mature technology, will be needed to make browsing more efficient. Flexible, intuitive next-generation library systems/platforms of all types will be needed to locate multi-format eResources: “in both the realms of discovery and management, an overarching concern to be more comprehensive relative to the totality of library collections prevails. The current wave of web-scale discovery services brings library collections together for library patrons through a comprehensive index that includes print, electronic, and digital materials.” Planning for upcoming advances in linked data, the semantic web and metadata need to be done now to ensure investments in new systems are relevant and usable in the future. Social catalogs that allow for reader’s advisory and recommender services, as well as social media sharing, also require consideration. Cross-promotion of new library collections and systems within the classroom, as well as in one-on-one instruction will be ongoing, as well as the need for well-designed, searchable online learning objects.

With all these integration demands, it is felt that the ILS will continue to persist “though in ever evolving forms, as a parallel thread in the industry. The library services platforms appeal especially to those libraries, such as academic and research libraries, that have increasingly complex collections of print, electronic, and digital components that demand a unified platform for management and access … the most promising development seems to be in the direction of extending an existing ILS rather than shifting to an entirely new genre of software. A new phase of evolution can be seen in the initiatives to integrated ebook discovery and lending into the online catalogs of ILS or discovery services.”

Recommendations: Continue to improve on accessing all digital collections via union catalog. Conduct needs assessment with OCLS membership to determine importance of various features and capabilities in the short, medium and long-term.
Transferring academic student support services to the online context: With Ontario Online and the growth of blended and flipped classrooms, academic support services (e.g., writing and learning services, counseling, test centers) must be fully present to support these learners: "Online education requires both the development of dedicated support services, specifically created for online students, as well as attention to or adoption of existing support to ensure access by online learners." Whether asynchronous (e.g., through interactive learning objects or discussion boards) or synchronous (e.g., webcasted classroom/small group discussion or one-on-one live tutoring), systems and bandwidth must be available and easy to use for both librarians and learners. Nontraditional learners enjoy the flexibility of online learning, and also have very specific learning styles that need to be addressed. Expanding to virtual support would also help in alleviating the lack of consultation space, enable tutors to work from multiple locations, and increase the range of service hours. Colleges need to be well positioned to provide the equivalent level of service online as learners receive in the F2F environment. Recommendations: Investigate whether a collaborative venture would be of interest, possibly with one or two areas as a pilot (e.g., writing and learning services).

B. Open Educational Resources

Capitalizing on Open Educational Resources (OER): The creation of free, high-quality educational materials will be increasingly encouraged to help address financial barriers to post-secondary education, internal cost-cutting and the need for greater PSE student recruitment and retention. Benefits include: creating materials for very specialized programs with small enrolments; customizing materials for local use, language requirements or special need; involving students in OER creation in an iterative basis, and developing more appropriate, relevant peer review processes. In fact, the Ministries of Advanced Education in Alberta, BC and Saskatchewan have very recently signed an MOU to collaborate cross-provincially on OER creation, including sharing best practices and foster partnerships between PSE institutions across the three provinces. In addition, the movement towards flipped classrooms will impact OER adoption in a major way. The flipped classroom uses educational technology to provide the instructor’s lecture before convening in the classroom, reserving face-to-face time for active, evidence-based, or experiential learning. In this fashion, the learner has higher levels of subject engagement by reviewing the material at their own pace, when and where it is convenient to them, and with the extra functionality that multimedia provides. The prepared "readings" could take the form of various OER, from video lectures, to podcasts, to enhanced eBook content. Course management systems, used effectively, helps to facilitate the process. Instructors have successfully adopted the model across the globe, giving this approach a time-to-adoption
horizon of one year or less in the 2014 NMC Horizon Report.\textsuperscript{240} And a recent survey indicated that nearly 80\% of students preferred and learned more from a blended learning environment.\textsuperscript{241} \textbf{Recommendations:} Investigate makerspaces and how the two trends can co-evolve in a cost-effective manner; faculty, librarians and students will increasingly become OER content creators, “requiring the infrastructure, software and connectivity to access the Internet and develop or adapt educational materials of different kinds.”\textsuperscript{242} Increase staffing to support the increased incorporation of OER materials in online courses (especially with Ontario Online) in regards to finding aids / cataloguing of electronic resources, copyright issues, quality assurance, and sustainability. Create library learning objects for ease of incorporation all blended learning modalities. Employ flipped classroom techniques in library instruction.

\textbf{Evolving MOOC service delivery models:} IFLA predicts that online courses will be “serving more people in the near future than all the students currently attending universities around the world.”\textsuperscript{243} With advent of new online pedagogies and the ability of instructors to be anywhere in the world, the number of interdisciplinary, non-traditional courses will increase, as well as the number of faculty co-teaching these classes. Massive Open Online Courses (MOOCs) are one such innovation. MOOC delivery multiplied worldwide in 2012-13 in both universities and commercial enterprises; Canadian students stated, however, that only 4\% of them took a MOOC in 2012.\textsuperscript{244} Most recent statistics indicate “that the average MOOC course is found to enroll around 43,000 students, 6.5\% of whom complete the course.”\textsuperscript{245} Fanshawe and La Cite have moved into MOOC provision in Desire2Learn Open Courses.\textsuperscript{246} \textbf{Recommendations:} Negotiate clear parameters in regards to library support of MOOC projects (with a potentially worldwide audience, location and provision of materials for course readings can be difficult to license and incorporate, especially when numbers and locations of learners are initially unknown). Determine costs and obtain funding for OA design, hosting and updating.\textsuperscript{247} Offer staff and equipment support for new OA content and learning objects creation (e.g., video, audio) specific to that course as “using rich media and incorporating plentiful opportunities for interaction are key.”\textsuperscript{248} Clarify with administration if MOOCs are to be treated the same as any other eLearning course in regards library access entitlement (with “regular” online courses, it is incumbent upon the originating institution to provide an equitable level of library service to their students, regardless of instructional modality. Depending on the nature of the MOOC, distance education library services is an entire subspecialty, encompassing a wide range of nontraditional support, from partnerships with local unaffiliated libraries to delivery of print materials worldwide to remote academic literacy instruction).\textsuperscript{249}
Positioning of Open Access (OA) vs. paid electronic databases: OA has emerged as an alternative and competitor to traditional commercial and academic society publications. With OA's benefits of being freely accessible to anyone online, speeding up the research cycle and not tying into arcane copyright restrictions, libraries are reassessing the percentages of OA materials in the overall resource mix. As of March 24, 2014, there were more than 9,700 journals listed in the Directory of Open Access Journals, with more than 1.5 million articles. As FYI, OCUL currently has more than 370,000 OA titles in their eBook platform.

Funding agencies are jumping on the bandwagon as well, with increased ROI for them in terms of visibility for sponsored projects and accelerated knowledge mobilization. In the United States, the NIH Public Access Policy ensures that the public has access to the published results of NIH funded research. It requires scientists to submit final peer-reviewed journal manuscripts that arise from NIH funds to the digital archive PubMed Central immediately upon acceptance for publication. In 2013, the US government expanded this mandate to include all federally funded agencies with budgets more than $100 million in research and development, making their research publically accessible within one year. As of January 2014, in Canada, NSERC and SSHRC were holding consultations on the Tri-Agency Open Access policy; this policy would allow federally funded research be disseminated publically within one year of publication. It is felt that the government has a “fundamental interest in ensuring that the results of publicly-funded research are broadly disseminated, enabling other researchers as well as policy-makers, private sector, not-for-profit organizations, and the public to use and build on this knowledge.”

It is felt OA will become the dominant model for scholarly publishing within six years. Recommendations: Investigate creating shared, centralized finding aids and instructional resources for open access resources. Monitor the percentage of OA materials that are currently indexed and abstracted in aggregated databases, and lobby for greater inclusion. Investigate and track how adoption of OA will influence eResource costs, plan for a future tipping point between open and for-free materials, and adjust budgets and contracts accordingly. Educate staff and faculty in regards to predatory OA journal practices.

Do you agree or disagree with the following statements?

- Free online content adds value to the research process
- Libraries are ideally placed to become specialists in assessing the value of free resources
- It would benefit institutions to invest more resources in surfacing free online content
- Free online content is likely to become at least as important to our users as paid - for content in the future
- Users appreciate the work of the library in selecting and buying quality paid - for resources
- User - generated content (e.g. discussion forums and social media) will become more important
- Paid - for content is of greatest value to the research process
- Academic authors prefer their work to be protected by licenses, rather than freely available

![Figure 3: Facilitating access to free online content, Taylor and Francis survey, 2013](image-url)
Providing support in the area of open data, including geospatial and data literacies: With open government and open data initiatives, free datasets on all subject areas are increasingly being offered to the public. International portals (like the Open Data Index) are being created to track the vast amounts of information being offered.\textsuperscript{257} The Government of Canada alone has 200,000 online datasets on its Open Data portal – "public information that covers everything from numbers of foreign students to crime statistics to geological maps of Vancouver".\textsuperscript{258} Provinces and municipalities are following suit, with many groups actively hosting hackathons at libraries for community data development and analysis.\textsuperscript{259} And colleges are actively getting involved: CODE, the national data hackathon, was recently launched by Treasury Board Minister Tony Clement at Mohawk College. In order to make sense of the stories behind this data, library staff are being called to be the intermediaries\textsuperscript{260} between faculty and students in determining the best ways of incorporating data into assignments, and how to create relevant analysis using the datasets and related software products. There have been a number of datacamps (especially in makerspaces) for librarians in recent months,\textsuperscript{261} and the role of libraries in data literacy instruction is increasingly being addressed. Recommendations: Investigate creating centralized finding aids for open data resources, data literacy tools and instructional resources, library staff training in these new software systems, acquisition of free and for-fee software, appropriate hardware and maintenance. Consider centralized staff resources for member consulting.

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