Online Learning in Canada:

At a Tipping Point

A Cross-Country Check-Up 2012

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Online Learning Thriving across Canada

In this overview, we outline the developments across Canada, starting on the West Coast (British Columbia), moving across the prairies (Alberta, Saskatchewan and Manitoba), into Ontario and Québec and then on to the Atlantic provinces (New Brunswick, Newfoundland and Labrador, Nova Scotia and Prince Edward Island) and ending in the northern territories (Yukon, Northwest and Nunavut).

What we can say is that online learning is thriving across the country at the post-secondary level and that new investments are being made to support its continued growth and development, particularly in Ontario and in British Columbia. We can also observe that there is a renewed interest in focused investment aimed at increasing the quality, reach and success rates for online learning.

Setting the Context

Before looking at the state of online learning in Canada, it is necessary to set the context. In particular to understand the following:

- The demography of Canada and the profile of the community engaged in learning;
- The socio-economic environment and its links to demand for learning;
- The post-secondary infrastructure and the role of the private sector; and
- The challenges faced by the system in responding to need.

Canada is a diverse country with a strong Aboriginal community and a range of diverse cultural groups. For example, in a single region in Alberta (Wood Buffalo), there are one hundred and sixty-nine cultural groups and fifty-seven languages are spoken as first languages, with English or French (Canada's two official languages) being second or third languages for over two-thirds of this community.

Canada also has a strong history of public engagement and the development of public institutions. Health care, education and social services remain largely publicly-funded and managed activities, with the private sector playing a supportive rather than controlling role in the provision of these services. However, the cost of providing public services is becoming a strain for a number of jurisdictions, with austerity being part of the mantra of governments coast to coast to coast.

All jurisdictions in Canada are struggling to balance three components of their post-secondary education system: (a) balancing demand against cost through the efficient and effective use of scarce resources; (b) increasing collaboration and using collaboration to seek synergy, enable growth and spur efficiency and quality; and (c) encourage and enable innovation. Online learning (sometimes called technology enhanced education) is seen by all jurisdictions as able to contribute to all three of these components. The intent of this cross-country check-up is to make clear both the current state of online learning and the potential for development.

In Canada, education (including K-12, post-secondary, training, apprenticeship) is an exclusive provincial responsibility. As such, Canada has no national department or ministry of education and no national educational strategy. This makes it difficult to provide a simple and comprehensive national picture of the state of play of any aspect of education, especially post-secondary education, for the nation as a whole. In contrast, the strength of Canada rests in its uniquely provincial response to need, opportunity and circumstance. Each province and territory has developed a system of post-secondary education that fully reflects its understanding of its challenges. Some voluntary coordination through the Canadian Council of Ministers of Education (CMEC) does occur, but since this organization lacks research and supportive capacities, its function is limited.

For example, definitions of a "full-time student equivalent" (FTE) differ between jurisdictions and data is not held in a common format, making direct comparison difficult. Also, many jurisdictions do not collect separate data on registrations in online courses versus more traditional registrations and only survey data, collected occasionally and not by all, reveals the growth of blended learning. As a final example, the quality assurance requirements which institutions have to meet differ by provinces and there are legal constraints on institutions offering programs outside of their own jurisdiction, though several do.

Social and Economic Context

Canada was affected by the global recession of 2008-2009, but not nearly as dramatically as the United States (US). In part, this is because banking and mortgage regulation and controls were established in Canada in the early 1970s and have been continuously refined, thus avoiding some of the excesses of over-selling of mortgages, sub-prime mortgages, derivatives and the housing bubble.

What did affect Canada, and the reason that governments across the country injected significant stimulus funds to support the economy (including funds to post-secondary institutions and to broadband access), was the substantial slowing of the US economy – over 80 per cent of Canadian exports feed this one market. Canada is the US's largest goods trading partner with $525 billion in total (two way) trade during 2010. Goods imported from the US to Canada totaled $248 billion; goods exported to the US from Canada totaled $276 billion. The US goods trade deficit with Canada was $28 billion in 2010. The Canadian dollar currently trades around par with the US dollar.

The slowdown of the US economy had a major impact on the flow of people, goods and capital to Canada and disrupted key industry sectors, such as manufacturing, forestry (especially in British Columbia and Ontario), automotive production and technology. While each province has experienced the economic downturn in the US differently, we can draw attention to three aspects of the Canadian economy which tie back to education and which apply across the country:

- Canada's low productivity relative to the productivity of the US – the productivity gap between Canada and the US has been growing for some time. Between 2002 and 2011, the gap equated to around $7,000 per worker. In 2011, this gap narrowed, with Canada posting a productivity gain of 0.8 per cent - a full 0.6 per cent higher than the US. We still have a way to go.
- Canada's lack of competitiveness in comparison to our primary trading partners – US, China and the European Union.
- Canada's lack of investment in employer-led training and research and development.

All three of these issues link to the extent to which the Canadian workforce is highly educated, the continued investment in its education and training in the workplace and the focus of the commitment to education.

The government of Canada is seeking to address some of these issues in its emerging strategy for innovation[1] and is also convinced that there needs to be a strong digital economy so as to spur economic growth and development[2]. However, some of the supports it has provided for broadband expansion have been eroded. For example, the Community Access Program, which enabled high adoption rates for broadband use (especially in rural Canada), has been discontinued.

1 See, for example, http://rd-review.ca/eic/site/033.nsf/eng/home.

2 See, for example, http://www.digitaleconomy.gc.ca/.

Demographics

Since 1851, population growth in Canada has been defined by three distinct demographic periods. From 1851 to 1900, the population grew slowly by a few million. High fertility was offset by very high mortality levels. Then, in the first half of the twentieth century (1901 to 1945), despite the two world wars, the growth rate accelerated, in part due to the settlement of Western Canada. Owing to the post-war baby boom and strong immigration, the second half of the twentieth century saw the Canadian population grow at an even faster pace. During the 65 years from 1946 to 2011, Canada's population went from 12.3 million to 33.5 million, an increase of more than 21 million.

More recently, between 2006 and 2011, Canada's population grew at an average annual rate of approximately 1.0 per cent, mainly owing to strong immigration. This growth is expected to continue in the coming decades, and Canada could have 42.5 million inhabitants in 2056, under the most likely growth scenario using projections developed by Statistics Canada, the national statistics agency.

In 2006, international migration accounted for two-thirds of Canadian population growth. The remaining third was provided by natural increase - the growth that results from the difference between the number of births and the number of deaths. Until the early 1990s, natural increase was almost always the main engine of Canada's total population growth. However, in the mid-1990s, a reversal occurred: the migratory component became the main engine of Canadian growth, particularly because of low fertility of resident Canadians and the aging of the population. Around 2030, deaths are expected to start outnumbering births in Canada. From that point forward, immigration will be the only growth factor for the Canadian population.

Some implications of this demographic condition include:

- A significant change in the dependency ratio (the number not in the workforce versus the number in the workforce). Currently the ratio is 65 per cent (per cent in work) but by 2036 it is likely to be 44 per cent - there will be fewer people working than those not working.
- Significant labour shortages are forecast for Canada and are already evident in some provinces. Demand for labour will rise from 19.4 million to 22.6 million by 2031. Forecasts suggest a labour shortage of between 1.4 million and 2.7 million by 2031. Alberta alone is forecasting 100,000 unfilled vacancies by 2015.
- The emerging economy, which relies heavily on knowledge work, will require more and more workers with a post-secondary qualification. Current estimates are that some

  66.6 per cent of the Canadian workforce holds such a qualification. To be competitive in the future, this figure needs to rise to closer to 75-80 per cent by 2031.
- A reliance on immigration, which all predict, requires the fast recognition of foreign credentials, especially with respect to professional immigrants (health professionals and engineers in particular). Protectionism can make this process slow.

These demographic challenges are being experienced now in different ways. They have led some provinces, such as Ontario, Alberta and British Columbia, to significantly increase their investment in post-secondary education so as to increase the number of qualified workers in the workforce. This has also encouraged investment in online learning.

It is worth noting at this point that the attitude towards post-secondary education in Canada is somewhat different to that found in some jurisdictions, such as India and many Asian countries where significant numbers of high school graduates do not seek places in post-secondary education in Canada, though this is now changing. In 2009, the proportion of young adults (17-19 years of age) participating in formal post-secondary education rose to its highest point in Canadian history. Over the past 20 years, the overall trend has seen a steady increase from 25 per cent in 1990 to 37 per cent in 2009[3], which places Canada third in the 17-19 age group post-secondary participation amongst the OECD countries (behind Poland and France). These shifts are driven by two particular factors – the higher participation rate of women in post-secondary education and the growth of access to university places.

Socio-Economic Conditions

Government debt has challenged several jurisdictions, especially in Europe but also in North America, to pursue a strategy of austerity. One consequence of such measures is that investment in post-secondary education has not kept pace with the growth of the sector or its costs and this has resulted in a continued increase in the cost to the learner of their college or university education. This, in turn, transfers a debt burden from the state to the individual.

In Canada, national sovereign debt is currently $582 billion (84 per cent of GDP) and a tight fiscal environment has been created by the desire to be deficit free by 2015-2016. But since the federal government has no direct delivery role in education (except through its sizeable funding of research and fiscal transfers to the provinces for post-secondary education), the real issue is the fiscal health of the provinces and territories. Provincial debts are $435 billion, with the provinces and the territories coming close to doubling their debt (as a percentage of their respective GDPs) in the generation between 1986 and 2011 – from 15 per cent to 27 per cent.

In this context, fiscal prudence is emerging as a characteristic of the economic strategy in all jurisdictions. This shows itself in two ways: (a) budget allocations – with those jurisdictions increasing their funding to colleges and universities doing so at a rate below inflation; and (b) increasing the cost to learners of their post-secondary education.

On this latter point, the average university graduate in Canada who owes money has a debt[4] burden of $145,400 (including all debt, such as mortgages), while Canadians who attended post-secondary education somewhere other than a university owe an average of $114,300. The typical borrower, who did not attend post-secondary education, owes an average of

3 See http://www.cli-ica.ca/en/about/about-cli/indicators/know-pse.aspx.

4 Debt levels are linked to income, mortgage costs, higher education costs and financial literacy.

$90,900. Post-secondary education indebtedness is a significant factor in the high levels of debt carried by Canadians[5]. While some jurisdictions freeze tuition rates from time to time or offer tuition subsidies, the underlying problem is that operating costs are rising faster than government support for the sector, forcing tuition fees to rise.

Household debt is the largest single threat to the Canadian economy, with the average debt now at 150 per cent of household income[6].

Post-secondary Infrastructure and the Role of the Private Sector

Post-secondary education in Canada is undertaken largely at three kinds of institutions: universities, colleges and polytechnic institutions. All have varied mixes of courses and qualifications and all can offer degrees, though some are limited to applied undergraduate degrees. The following table shows the number of colleges and universities in each province of Canada.

Table 1: Distribution of Post-secondary Institutions in Canada

	Universities	Colleges	Private Degree Granting (Not Theological)
British Columbia	11	14	4
Alberta	6	13	5
Saskatchewan	3	8	0
Manitoba	4	3	
Québec	17	12[7]	
Ontario	20	24	1
Nova Scotia	10	3	
New Brunswick	4	3	3
Newfoundland and Labrador	1	2	

5 See http://www.statcan.gc.ca/pub/75-001-x/2012002/article/11636-eng.pdf.
6 ibid
7 The CÉGEP system is included a single institution with many campuses.
8 The University of the Arctic operates across the Arctic region and has facilities in the three northern territories.
9 Each territory has its own college institution and shares access to the University of the Arctic.

Prince Edward Island	1	2	
Territories	0[8]	3[9]	
Total	77	87	13

While several private universities secured permission to operate – the University of Phoenix and its offspring Meritus University, for example – several have also quickly exited the system due to poor registrations and performance. Others have been closed for a failure to comply with quality assurance requirements (Lansbridge University in British Columbia and New

Brunswick), leaving just a handful of private universities operating in Canada, all of them small[7]. The private college and training sector is, however, vibrant.

Distance Education and Online Focused Universities

Canada has six academic institutions which have a significant, strategic focus on distance education and online learning. These are Royal Roads University (British Columbia), Thompson Rivers University (British Columbia), Athabasca University (Alberta), Memorial University (Newfoundland and Labrador), TÉLUQ (Québec), and Centre collégial de formation à distance (Québec).

Royal Roads University was founded in the late 1990s as a successor to the Royal Military College. From the outset, the university sought to offer innovative program design which balanced flexibility through online learning with short, intensive on-campus experiences. Its graduate degrees in leadership and business are seen to be creative uses of both of these forms of learning. In 2011-2012, the university had a total enrolment of just over 2,000 full-time equivalent students.

Thompson Rivers University, a former community college in the British Columbia interior, was established in 2005 and at its establishment absorbed the Open University of British Columbia and the Open College of British Columbia. It now offers only undergraduate level programs. The university also has many on-campus programs. Its Open Learning program offers continuous enrolment through flexible admission for undergraduate programs and has extensive transfer credit and prior learning assessment arrangements. The Open University Learning program is administered separately from the main campus programs of the university and has approximately 2,000 FTEs (20,000 course enrolments).

Athabasca University is the oldest of these, founded in the 1970s as a distance teaching university. It has some 42,000 student registrations; it launched the world's first online MBA in 1993-1994 and is an early adopter for online program development and delivery, especially

10 In British Columbia - Farley-Dickinson University, University Canada West, Sprott Shaw Degree College, Quest University; in Alberta - Kings University College, Concordia University College, Canadian University College, Ambrose University College and St. Mary's University College.

at the graduate level and for professional education. The university uses Moodle as its predominant learning management system (LMS), though the MBA is offered by means of Lotus Notes.

Unlike many other specialist distance education and online universities, Athabasca has an open admissions policy for undergraduate studies and begins all of its undergraduate courses at the start of each month, with flexible end-date options to permit students to self-pace their studies. Thompson Rivers and the UK Open University also have open admissions, but offer courses in a start and end time-table. Its most innovative program is the Master of Arts in Integrated Studies which permits graduate students to design a degree appropriate to their needs. It also offers doctoral degrees where students study almost entirely online. Athabasca also was an early adopter of prior learning assessment and recognition (PLAR). The university has no on-campus programs.

Memorial University is the only university in Newfoundland and Labrador, and as such, has a mandate and civic responsibility to serve all citizens of the province. In 1969, the university began offering credit courses by distance to rural and remote populations in the region. Since then, Memorial has grown to offer over 400 courses and a variety of programs to over 19,000 registrants annually, and has expanded to serve students both nationally and internationally. The university's Distance Education, Learning and Teaching Support unit, which develops and delivers the university's online and distance education offerings, is also the first distance education unit in Canada to have a registered quality management system with the International Organization for Standardization (ISO).

All of Memorial's online and distance courses are administered entirely online through the Desire2Learn learning management system. In fact, Newfoundland and Labrador's public institutions have a unique relationship whereby the K-12 and post-secondary institutions (university and colleges) all adopted Desire2Learn as the province-wide learning management system. This collaboration is the first of its kind in North America, and facilitates an environment where any student engaged in online learning uses the same system.

The presence of online learning is rapidly finding its way into on-campus courses as well. The number of technology-enabled courses at Memorial has risen from three in 2002 to over 1,700 course sections in 2008/09, and continues to rise indicating a desire from faculty and students to use technology to enhance both student engagement and the overall learning experience.

One reason for the success of these institutions is the existence of systematic transfer credit systems in British Columbia, Québec and Alberta and the adoption by universities of block credit transfer – students holding a certificate or diploma from a community college may transfer their entire diploma into an undergraduate program, significantly reducing the time taken to complete a first degree as well as the costs of doing so. Ontario does not have effective, efficient transfer credit systems in place at this time, though investments are being made to create such a service.

A second reason for the success of these institutions is that they have offered their services to all Canadians (as well as international students). Athabasca University, even though it is a publicly-funded university in Alberta, has more students from Ontario than it does in its home province.

Under various quality assurance regulations in Canada – Canada has a patchwork quilt of such legislation and related regulatory regimes – these three universities must seek Ministerial approval in several provinces to offer degrees (British Columbia, Alberta, Saskatchewan, Québec, Ontario all have this requirement) and, should they wish to offer face-to-face activities of any kind, they must secure quality assurance approval from the appropriate authority. For example, to offer laboratory sessions or week-end workshops in British Columbia or Ontario, Athabasca University requires approval from the appropriate quality assurance organization in these provinces – this despite being a publicly-funded institution and being accredited by Middle States in the US. There is no reciprocity of quality assurance recognition between provinces and territories in Canada.

TÉLUQ (Québec) is a fully autonomous institution offering degrees and related qualifications in French in Québec and throughout the French-speaking nations. Part of the Québec higher education system, it was created in 1972 as the TéléUniversité by the University of Québec and granted autonomy in 1992. In 2005, TÉLUQ returned to the management of the Université du Québec à Montréal, but secured its independence again in 2012. It offers undergraduate and graduate programs in a range of subjects. It has approximately 18,000 student registrations each year.

Centre collégial de formation à distance (Québec) In 1991, the Ministère de l'Éducation du Québec mandated the Collège de Rosemont to manage and develop the Centre collégial de formation à distance (CCFD). Although other colleges were interested in the field, Rosemont was the main provider of distance education at the college level. It had already been offering correspondence courses since 1974. In 1990-1991, it offered 17 courses and supported approximately 2,000 distance education course enrolments, including 300 from 16 colleges that had service agreements with the CCFD. Then, inspired by Télé-Université, which had become a major player in distance education at the university level, the Ministère de l'Éducation du Québec decided to further the development of distance education by entrusting an organization within the community colleges of Québec co-operative network (known as CEGEP) with a specific mandate to expand the distance education offerings within the province.

In the 1990s, the government of New Brunswick saw technology industries in general, and e-learning in particular, as a jurisdictional advantage. They sought out and encouraged the formation of private online universities. The remaining operations – the University of Fredericton and Yorkville University – are both small and specialized. The University of Fredericton offers only a narrow range of management programs and Yorkville University offers a Masters in Counselling and Masters of Education. Other online universities – notably Meritus University (a wholly owned subsidiary of the Apollo Group, which owns the University of Phoenix) and Lansbridge University closed.

In 2012, several Canadian universities joined with others around the world in the establishment of the OER (Open Educational Resources) University. The Canadian players are BCcampus (see below), Athabasca University and Thompson Rivers University. This networked, virtual institution aims to provide credit recognition for students who use OER courses and programs to further their learning. It is intended to begin full operations in 2013.

For the most northern parts of Canada – Yukon, Northwest Territories and Nunavut – an additional institution needs to be recognized. This is the University of the Arctic, now celebrating its tenth year of operation. Operated by a consortium of one hundred and nineteen international institutions (including post-secondary institutions from Canada, Russia, Finland, Denmark, Greenland, Iceland, Sweden, Norway), it aims to increase access to education, build a strong voice for the North and help shape a regional identity. The university, which offers undergraduate and graduate programs as well as a range of other educational experiences, has over 3,000 registered students. The government of Canada provided some financial support for this organization, but withdrew funding in 2011.

Dual Mode Universities

Other universities offer some of their programs across Canada using online platforms. These include, but are not limited to:

- University of British Columbia (British Columbia), which offers 120 courses and several programs, including a Masters of Educational Technology, entirely online.
- Simon Fraser University (British Columbia), which has the largest distance education program in the province with over 12,000 enrolments. Its courses are increasingly delivered online.
- British Columbia Institute of Technology (British Columbia), is one of the largest providers of online and distance education programming in the province offering over 300 online courses in a variety of technical, professional and vocational programs.
- Northern Alberta Institute of Technology (Alberta), which offers 15 undergraduate courses online and some e-apprenticeship course components.
- University of Saskatchewan (Saskatchewan), which has a number of online courses, although as yet few full programs are available online.
- University of Manitoba (Manitoba), which offers a Diploma in Instructional Design and has a range of bachelors degrees, including bachelor of social work, bachelor of arts and a bachelor degree in integrated studies.
- University of Guelph (Ontario), which offers three online graduate programs, namely, an MBA in Hospitality and Tourism Management, an MBA in Food and Agribusiness Management, and an MA (Leadership) program, as well as numerous undergraduate courses. The university has been offering distance education programs for a considerable period.
- Queens University (Ontario), which offers an MBA through a combination of in-class activities and online learning and a wide range of distance courses at the undergraduate level.
- Nipissing University (Ontario), which offers a Bachelor of Commerce and will soon offer a PhD in Sustainable Development online.
- The University of Ottawa (Ontario), which offers courses in both English and French.
- Laurentian University (Ontario), which offers a range of programs in English and French.
- McMaster University (Ontario), which is increasing its offerings for online courses and programs.

- Université Laval (Québec), which offers 450 distance education courses in 80 disciplines, the majority of which are online. It also delivers online programs into Francophone Africa in partnership with the African Virtual University. It has also developed its own Francophone learning management system, called ENA.
- Mount Saint Vincent University (Nova Scotia), which offers a range of courses online, mainly in the form of lectures delivered by webcasting (as does Dalhousie University).
- The University of New Brunswick (New Brunswick), which offers a degree completion program online, a Bachelor of Integrated Studies, a Masters in Education and several certificates.

Increasingly, Canadian institutions are offering their programs Canada-wide and internationally. We can think of these as dual purpose institutions – using both classroom-based learning and distance education with e-learning to create greater flexibility for learners.

Ontario has some 1,000 programs offered by its 24 public colleges and 20 public universities available online, ranging from college programs to doctoral degrees, with many of these available to non-Ontario residents.

One strategy being pursued by both colleges and universities across the country is to increase non-resident enrolment, especially from international students. All provincial fee regulations permit international students to be charged a higher fee for study at a Canadian university or college and education is not recognized as a service under the North American Free Trade Agreement (NAFTA), a free trade agreement between Canada, United States and Mexico, despite several efforts to secure this recognition and open the Canadian post-secondary market to "level playing field" competition[8].

Canadian Virtual University (CVU) is a consortium of 13 English and French universities across Canada collaborating in online and distance education in order to facilitate student mobility, increase flexibility for learners, and encourage joint program development. As demonstration of their commitment to facilitate student mobility, CVU members waive fees for admission and for letters of permission for students enrolled in any of their over 300 distance programs.

Members of CVU also cross-promote each other's offerings when their institution doesn't offer what a student is looking for. Members all commit to promoting the message, "If we don't have what you're looking for, visit our partners at CVU" through their advisors, their websites, and their print calendars. This is done as a demonstration of their collective commitment to provide more options for those who are trying to earn a university degree completely through distance education.

College and Technical Education

Across the country, with the exception of the work of universities dedicated to online and distance education, it is colleges and technical institutes which have committed to online

11 For an account of the NAFTA issue with respect to educational services, see http://www.jstor.org/discover/10.2307/29767165?uid=3737432&uid=2129&uid=2&uid=70&uid=4&sid=56147273263.

learning at scale.

In several jurisdictions, colleges initiated the creation of shared service networks to deliver courses and programs in their jurisdictions so as to reduce costs, duplication and complexity. OntarioLearn and e-Campus Alberta began as college-focused networks and now offer courses and programs in partnership with some universities (e.g. university transfer programs) or their own applied undergraduate degrees.

There are some colleges with a strong and dedicated focus to online and distance education including:

- Assiniboine Community College (Manitoba)[9]
- British Columbia Institute of Technology (British Columbia)
- College of the North Atlantic (Newfoundland and Labrador)
- Northern Alberta Institute of Technology (Alberta)
- Southern Alberta Institute of Technology (also known as SAIT Polytechnic) (Alberta)
- Saskatchewan Institute of Applied Science and Technology (Saskatchewan)
- Algonquin College (Ontario)
- Northern College (Ontario)
- George Brown College (Ontario)
- Collège Boréal (Ontario)
- Confederation College (Ontario)
- Loyalist College (Ontario)
- La Cité collégiale (Ontario)

But by far, the largest involvement is through specific programs, often undertaken in partnership with industry, which use online learning to deliver courses required for professional accreditation or development. For example, following guidelines and the work of the Department of Transport (a federal government department), colleges across the country support the provision of logistics, supply chain and transport related skills and education, including aviation and health and safety components[10].

There have been some limited developments with respect to apprenticeship, with British Columbia developing and then pausing work on an e-apprenticeship strategy. Ontario is revising its guidelines for the provision of private vocational college education to permit more online and distance education in the hope of stimulating more innovation in that sector.

12 The college has temporarily suspended some of its distance education programs, pending a review. See http://moodle.assiniboine.net/.

13 As an example, see http://www.tc.gc.ca/eng/civilaviation/opssvs/training-strategy-768.htm.

As in other jurisdictions, the Canadian Forces (Canada's army, navy and air force) is also very engaged in the use of online learning in support of their servicemen and women world-wide. For example, the Canadian Army Command and Staff College offers a number of courses online for those seeking promotion through the ranks. The Department of National Defence has a strong program of synchronous and asynchronous learning opportunities available world-wide.

The private sector in Canada also makes extensive use of online learning. For example, the Hudson's Bay Company is a major user of e-learning as are most of the oil and gas and utility companies. Certified General Accountants Association of Canada (CGA Canada) has an extensive online program for accountants. There is a vibrant Canadian Society of Training and Development which is fostering collaboration and best practices amongst these corporate users.

Student Success

No reliable, systematic data exists for the number of students studying online in Canada. Each provincial and territorial ministry responsible for the post-secondary sector collects its own data and uses its own definitions, except for all of the Maritimes provinces (New Brunswick, Nova Scotia, and Prince Edward Island) which use the common data base, Postsecondary Student Information System (PSIS) from Statistics Canada, and use the Maritimes Provinces Higher Education Commission (MPHEC) to review and offer analysis of these data. Statistics Canada occasionally seeks to reconcile these data but has not done so with respect to online learning since 2009.

Using proxy data (estimates provided by a variety of different organizations and a standard measure of full-time equivalent student set at 9.5 course registrations per FTE), we can estimate that there are between 875,000 and 950,000 registered online students in Canada (approximately 92,105 – 100,000 full-time students) at college and universities studying a purely online course at any one time. No estimate for the number of students working on a program with the intent to complete that program online exists.

One feature of these numbers is that many students are taking one or more online courses to add to their credit bank so as to secure the required courses for their program of study. These students, who may obtain a course from a university or college on a "letter of permission," take such courses when they are not available at their own institution or to accelerate the completion of their degree. The number of students at, say, Athabasca University studying an undergraduate course, should not be taken as an indicator that these students intend to complete a degree at that institution.

Online Learning Technology in Canada

Canada has a long history of developing software and other technologies for online learning. In the mid-1980s, the University of Guelph developed CoSy, software that facilitated

asynchronous discussion forums on the Internet.

FirstClass, developed in 1990 by a company called SoftArc in Toronto, was a predecessor of learning management systems and in its modern form is now incorporated in OpenText's range of products.

WebCT was the first learning management system to see widespread adoption in higher education. This was developed in 1995 by Murray Goldberg at the University of British Columbia and later purchased and adopted and further developed by Blackboard Inc., the primary commercial LMS today. However, Blackboard's position in the LMS market is being challenged by the fast growing Desire2Learn, a company based in Kitchener, Ontario. Université Laval has developed its own francophone learning management system, called ENA.

In Alberta, staff at Faculté St-Jean at the University of Alberta developed a range of software for online language teaching, and developed a range of services for supporting the Moodle learning management system on a commercial basis, bringing them into direct competition now with Blackboard, which has acquired two leading Moodle support companies.

Elluminate, based in Calgary, was a product that enabled synchronous web conferencing, although it has recently also been purchased by Blackboard Inc. and integrated into Blackboard's suite of services.

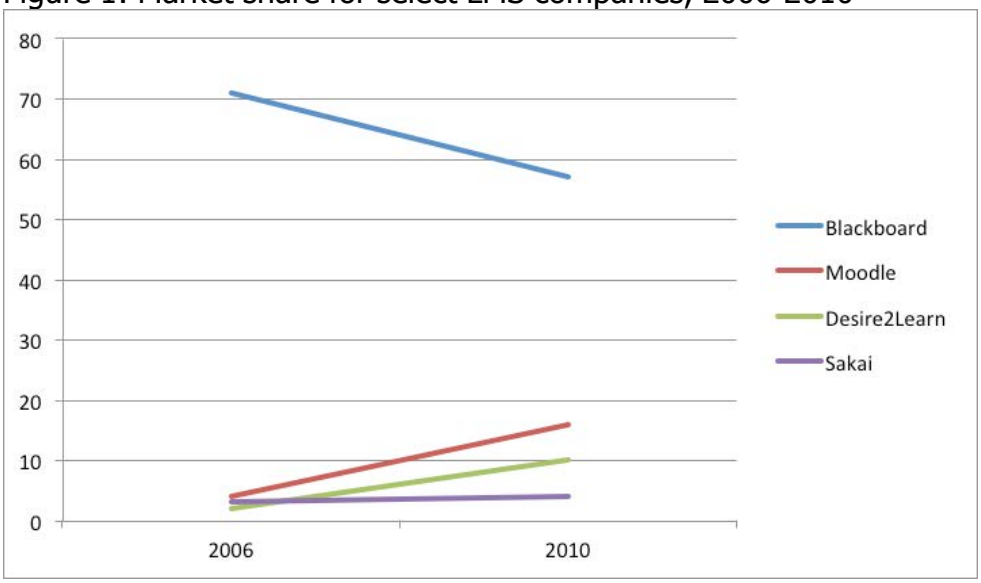
Lastly, SMART Boards, also based in Calgary, is the widest-selling electronic whiteboard used in classrooms.

Although there is a tendency for these small Canadian companies to eventually be bought out by larger, and in particular American, companies, nevertheless Canada has a strong history in online learning technology development, despite being a relatively small country in terms of population.

Another area where Canada shows some differences from the US is in its adoption of LMSs.

Figure 1 on the next page shows the adoption of different learning management systems in the US.

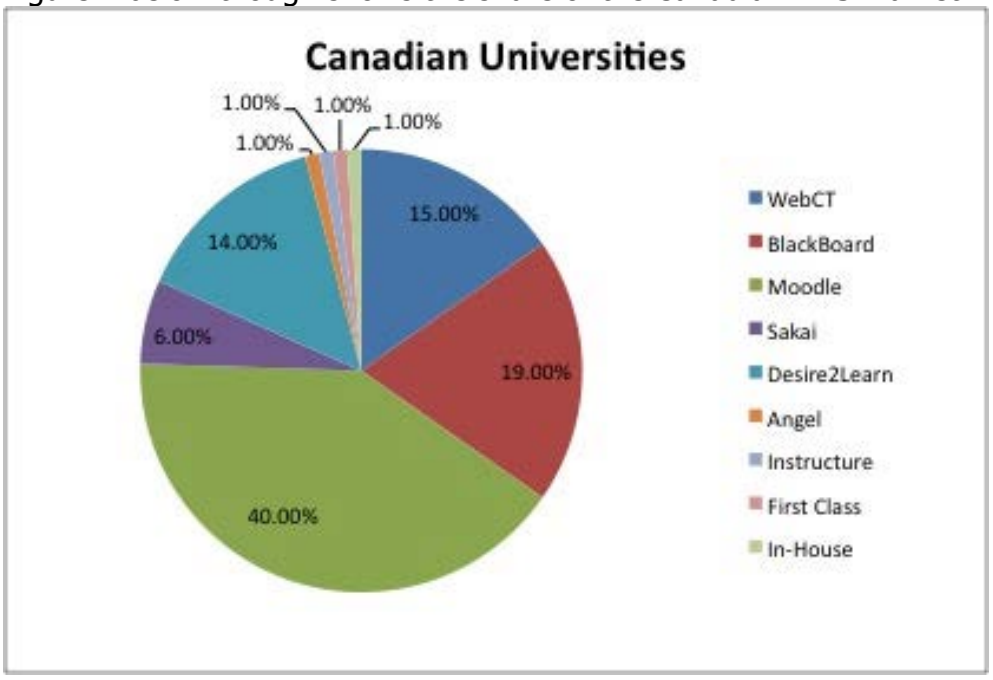
Figure 1: Market share for select LMS companies, 2006-2010



Source: Campus Computing Survey, 2010

It can be seen that while Blackboard's market share has been declining, commercial systems, which include Desire2Learn, constituted almost 75 per cent of the higher education market in the US.

Figure 2 below though shows the share of the Canadian LMS market in 2011:



It can be seen that open source LMSs (Moodle and Sakai) constitute 46 per cent of the market compared to 34 per cent for Blackboard products (including WebCT and Angel) and 14 per cent for Desire2Learn. Thus, there is greater use of open source products in Canadian universities than in the US, and this is particularly strong in Western Canada (for instance, only three of the 25 post-secondary institutions in BC do not use Moodle).

Challenge and Opportunities for Online Learning Developments in Canada

There are six major barriers to the development of online learning in Canada:

1. The absence of broadband technologies in larger areas of Northern Canada, particularly in Aboriginal communities.
2. The digital divide and the lack of digital knowledge of both some students and the professoriate.
3. The lack of strategic focus on online learning in some post-secondary institutions.
4. The poor design and quality of some early stage online courses and the low level of student engagement these engendered.
5. The lack of investment by some governments and institutions in instructional design, faculty capacity and infrastructure.
6. Difficulties in inter-institutional and cross-provincial credit transfer, especially in Ontario.

Let us explore each of these in turn.

1. The Absence of Broadband Technologies in Larger Areas of Northern Canada, Particularly in Aboriginal Communities

Access to broadband, especially for content rich courses which use multimedia resources (audio, video, simulation, CAD-CAM, etc.) is a pre-requisite for many courses and programs. While the majority of the population of Canada, which live close to the US border, are well served by commercial broadband providers, certain areas of rural Canada and northern regions do not have broadband service or reliable, affordable service. This especially affects the fastest growing young population in Canada – Aboriginal communities.

While some jurisdictions, such as Ontario, British Columbia and Alberta, have made a variety of attempts to get broadband service to communities, no province has found a solution to the "last mile" (connecting remote communities to a major broadband pipeline over the last few miles) and have relied on private internet service providers (ISPs) to make these connections. British Columbia has developed a provincially-funded network, known as Provincial Learning

Network (PLNet), which aims to solve this problem through a flat rate subsidised fee structure that links libraries and educational institutions throughout the province – similar to Alberta's SuperNet – but this still does not deal with home-based connectivity to the workplace.

An annual review of Canada's performance globally in being ready for e-commerce and e- learning, conducted by The Economist Intelligence Unit in partnership with IBM, suggests that Canada is slipping in its ability to provide service to its communities in comparison to others. Canada now ranks 9th from a list of 70 countries - it used to lead this league table. Scandinavian countries now lead this table, with Finland, for example, establishing that access to broadband is a citizen's right – something Canada has not done.

One related challenge here is the high costs of mobile data in comparison to other countries[11] - Canada is the most expensive country for the costs of roaming data transfer in the OECD. This will inhibit the speed at which mobile learning grows in Canada.

2. The Digital Divide and the Lack of Digital Knowledge of both Students and the Professoriate

Canada has a growing population of those unable to afford access to computer and smartphone or mobile technology. Inequality between the rich and poor in Canada has grown significantly in the last decade, and the total share of pre-tax income held by the rich is at the highest it's been in the last 66 years.

While some have suggested that the current generation in school are digital natives, there is compelling evidence that this is not the case.

In addition to having a growing digital divide and a significant number of students with no or low level skills in the use of technology, Canada's professoriate reflects Canadian demographics and is only slowly adopting technology for blended learning or online learning. The low adoption rate – some estimates suggest that just 30-35 per cent of the professoriate regularly use technology for blended learning and that closer to 11-15 per cent use online technologies for fully online learning – reflect the age structure of the sector.

As this gradually changes, so the adoption rates will improve. In a 2012 series of interviews with Ontario College and University Presidents, Contact North | Contact Nord discovered that when it comes to online learning, presidents of both colleges and universities are understandably preoccupied with the experiences of their primary student population, full-time students between the ages of about 18-24. From this perspective, most presidential interest is in what the interviewees call "blended" or "hybrid" learning whereby a course is delivered primarily by face-to-face instruction with specific components offered online. Institutional support should help improve adoption rates.

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14 For example, see http://www.cbc.ca/news/technology/story/2011/06/08/technology-mobile-roaming-wireless-oecd.html.

There is some irony here. Canadian institutions are at the forefront of many developments in online learning, supported by a vibrant research community focused on online learning (the National Research Council, for example, has a group dedicated to this work[12]) which is highly engaged in standards development, the development of open education resources (OER) and designs for the effective design, development, deployment and delivery of online learning. Canada has been and continues to play a significant role globally.

One consequence of the low adoption rates for online technologies is the lack of appropriate service standards. In one recent research study of the experience of online learning at a small university which prides itself on being student focused, 85 per cent of students had not received any feedback on assignments submitted during their studies before they sat the final examination. A further 65 per cent reported that the average time to secure a response to a query sent via e-mail was between five and ten working days. Poor service standards are an inhibitor to student acceptance of online learning.

3. The Focus on Growth of Traditional Learning Models

One of the findings of the Sloan Consortium studies of online learning in the US is that institutions which see online learning as core to their strategies for growth and development attract significantly more students to their online offerings than those who see online learning as an adjunct to their core business. Until recently, many institutions saw online learning as an "adjunct" to their core business rather than core to their strategies for growth and development. This is now changing, with more colleges and universities seeing online learning as mission critical for their development.

As more colleges and universities see online learning as a strategic opportunity and begin to invest in the needed infrastructure, faculty development and instructional design support, then the range and number of online programs and courses will increase, as will the adoption rates by faculty and student volumes.

4. Rich Content, Instructor-focused Design now Being Replaced with Designs Based on Student Engagement

Many online courses, which were developed in the first blush of development, were based on a model of rich content developed by a local faculty member, supported by text, with teleconferencing or audio support. As new tools, like PowerPoint and low cost video recording, emerged, then a greater number of faculty started to use these tools to provide "instructional material" to their students. Design was sometimes, but not always, supported by an instructional designer and quality was assured through internal review of course outlines rather than a comprehensive review of the course or program materials.

The result is uneven course quality, with some courses involving no peer-to-peer interaction and only limited levels of student engagement, while some courses are simply excellent, and

15 See http://www.nrc-cnrc.gc.ca/eng/programs/iit/collaborative-technologies.html.

others are essentially PowerPoint supported by audio or video conference. As new technology emerges – Apple's iBook Author enabling rich multimedia course material to be created on the fly, open educational resource banks, focused problem-based social networks, project design tools and online learning "apps" as well as mobile technology – new and more engaging learning designs are now beginning to emerge. But it takes time to "give up" old models and adopt new ones. As technology changes, the adoption curve is reset to zero.

The range in quality, from very poor to very good, is not so great in Canada as in the US. In most provinces and territories, online programs have to follow best practice guidelines as a result of degree approval processes. We are also beginning to see increasing pockets of innovation in the design of online learning in Canadian post-secondary education, with examples of virtual worlds, course wikis and blogs, mobile learning, learner-centered teaching using content management systems such as WordPress, open educational resources, and e-portfolios. The challenge though is to disseminate such innovations beyond individual instructors or courses – something Contact North | Contact Nord is doing with its Pockets of Innovation Series.

One of the factors aiding the development of more engaging designs is the emergence of focused technologies enabling such things as immersive learning (simulations and gaming) or more engaging uses of applications ("apps").

5. The Lack of Investment by Governments and Institutions in Instructional Design, Faculty Capacity and Infrastructure

Whenever new resources are made available for post-secondary education in Canada, the first instincts of government and institutions is to increase capacity through conventional means. If the requirement is to significantly increase the number in the workforce with a post-secondary qualification, then more classroom spaces must be provided. Ontario is currently planning the development of three additional satellite campuses and has significantly expanded its conventional infrastructure over the last decade.

The other instinct, evident in British Columbia and Alberta, is to convert effective community colleges into universities. British Columbia converted six and Alberta two. Ontario converted one polytechnic into a university (Ryerson University). The initial premise is that these new universities will continue to maintain their broad focus, will be teaching universities, not research universities, and that they will remain nimble and close to the communities they serve.

The experience elsewhere, particularly in the United Kingdom, is that these institutions soon compete with established universities for scarce faculty members, research dollars and students. So as to be effective in such a competitive market, the "new" universities begin to develop programs and a research agenda which differentiates them from their well established peers, but also begins to mirror them. All then require expansion of their facilities and begin to see online learning as a secondary rather than core strategy for their development.

Despite these developments, online learning has been boosted in several jurisdictions by targeted investments in infrastructure. For example, Newfoundland and Labrador made a substantial investment in infrastructure by partnering with Desire2Learn to offer a province-wide system that supports distance education for students regardless of their location. The system enables ease of transition and access between institutions for students; supports rural-based education development and delivery; and, contributes to a province-wide learning culture. Others have encouraged the establishment of collaborative networks (e.g. BCcampus in British Columbia, e-Campus Alberta, OntarioLearn and Contact North | Contact Nord in Ontario), innovation and faculty development has been noticeable. In the sections which follow, specific developments will be highlighted in the cross-country check-up.

Each of these challenges is being responded to creatively and effectively across the country. More institutions are seeing online learning as strategic, more courses are being developed around models of student engagement and more attention is being paid by governments to investing in online and technology enhanced learning. Canada is truly at a tipping point and has the potential to emerge as a global leader in the design, development, deployment and delivery of online learning.

Some have suggested that the lack of a federal presence in education, especially post-secondary education, is an impediment to a coordinated strategy for the future of online learning and innovative approaches. It is also seen as an impediment to such things as a national system for quality assurance or a national credit transfer system. This was the view taken by the Canada Council on Learning in its final report on the future of learning in Canada[13].

Ironically, despite its plea for a federal strategy, this federally created organization has been closed, partly because the current government of Canada has a policy of respecting provincial responsibilities, and clearly sees education as a provincial jurisdiction. Thus there is a trade-off between the diversity which can occur in a wholly provincial system and the control that can arise in a centralized system. Canada has yet to find an effective trade-off between these two policy solitudes.

Attempts at creating national collaborative institutions – e.g. Canada Virtual University or Human Resource Development Canada's Campus Canada[14] - have stalled or failed, especially in their attempt to secure collaboration aimed at such things as e-portfolio development[15],

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16 See http://www.ccl-cca.ca/pdfs/CEOCorner/2010-10-11WhatistheFutureofLearningin-Canada.pdf.

17 Campus Canada was an agency of the federal government that focused activity on employees in the workforce and adult learners who are preparing to enter the workforce. It ceased operations in 2005-2006. See http://www.google.ca/#hl=en&sclient=psy-ab&q=e-portfolio+Campus+Canada&oq=e-portfolio+Campus+Canada&aq=f&aqi=&aql=&gs_nf=1&gs_l=serp.3...55261.58669.0.59061.9.8.1.0.0.1.205.1082.0j7j1.10.0.fAfII5yN8pw&pbx=1&bav=on.2,or.r_gc.r_pw.r_qf.,cf.osb&fp=e19d74c3290f92e7&biw=1920&bih=988.

18 ibid

course coordination so as to avoid duplication or the development of shared approaches to prior learning assessment.

Cross-Country Check-Up

In this section, we will review key developments occurring across Canada, highlighting just those most significant for an understanding of the current state and opportunities for online learning in Canada.

British Columbia

The University of British Columbia (UBC), Thompson Rivers and Royal Roads universities have shown considerable leadership in distance and online learning in British Columbia, building on the legacy of the Knowledge Network, the Open College and the Open University of British Columbia (closed in 2001 so as to enable the creation of BCcampus). While many of the Thompson Rivers courses are still distance education (print) based, innovation has been shown in course design and development by UBC and Royal Roads.

The British Columbia Institute of Technology (BCIT) is also in the forefront of online and distance education in BC delivering 40 fully online or distance certificates, diplomas and degrees as well as a blended learning Bachelor of Science in Nursing. Online program development is integrated into its regular curriculum development processes and program delivery is handled by the six schools. Program development, instructional design and faculty development are supported by one of the largest Learning & Teaching Centres in the province. BCIT has also invested heavily in the development of 3D simulation learning objects for use in online, blended and face-to-face programs.

However, the most significant support for online learning in the province has been the creation in 2002 of BCcampus. This is an organization which uses information technology to connect the expertise, programs, and resources of all post-secondary institutions in the province under a collaborative service delivery framework. It also identifies, acquires, develops and implements innovative technologies and services that facilitate system-wide connection points for student services and provide collaborative educational models for faculty and instructors.

Since 2003, BCcampus' Online Program Development Fund has invested $9 million resulting in the following outcomes:

- 144 grants awarded (2003-2010);
- 100 per cent participation across the post-secondary system;
- 83 per cent partnerships - mostly inter-institutional but also with K-12, health authorities, not-for-profits, professional associations, e-learning companies, Aboriginal communities, foundations, amongst others;
- 47 credentials developed;

- 355 courses, 12 workshops, 19 web sites/tools and 396 course components (learning objects, labs, textbooks, manuals, videos) developed across almost all academic fields of study; and
- 100 per cent licensed for open free sharing and reuse by all post-secondary institutions in British Columbia.

All post-secondary institutions make extensive use of blended learning.

Alberta

Athabasca University dominates the university sector's provision of open access, flexible registration and completion for courses and programs at the undergraduate level in Alberta. It also has a large graduate student population, dominated by the MBA, Masters of Distance Education, Masters of Nursing degrees and Masters of Arts in Integrated Studies and its doctoral degrees in distance education and business administration.

Mount Royal University and Northern Alberta Institute of Technology (NAIT) also offer online programs, with the former having eleven such programs available.
The college sector, working through e-Campus Alberta, offers some 700 courses and over 60 fully online programs and currently has some 3,000 students. It uses Moodle as its core platform.

The provision of online learning in Alberta is greatly aided by the existence of the Alberta SuperNet – a major and substantial broadband network connecting every community in Alberta in which there is a public building of any kind and enabling "last mile" connectivity to this pipe through local ISPs.

The Prairies – Saskatchewan and Manitoba

Saskatchewan established the Virtual Campus in 2000-2001 which was intended to integrate the online learning offerings of the universities, colleges and SIAST Polytechnic. This work has now been fully integrated into the activities of each post-secondary institution.

Campus Manitoba (CMB)[16], whose partners are the University of Manitoba, the University of Winnipeg, Brandon University and the Collège universitaire de Saint-Boniface, is a virtual campus whose mandate is to respond to the administrative and pedagogical needs of Manitoba learners. CMB offers and supports post-secondary courses in numerous communities throughout Manitoba. In addition, CMB provides logistical support for students at Red River College, Assiniboine Community College, and University College of the North's distance learning courses.

While CMB does offer an online catalogue, most courses are face-to-face. Very few courses are offered completely at a distance. Other uses of technology within the CMB include courses supported by related websites and courses that use LearnLinc interactive audio and videoconferencing conferencing technology software. At the current time, the Nursing program

19 Campus Manitoba (2001). [On-line]. Available: http://www.campusmanitoba.com/.

is the only collaborative program at CMB that uses both on-campus and distance delivery leading to an accreditation. To date, little exists in the CMB collective to support courses at the graduate level.

CMB's Department of Library Services features a supportive 'researching from a distance' tutorial and provides a personal contact for additional library support. CMB also maintains an 'On-line Writing Centre', which has publications for student support and provides an e-mail service for students with specific questions on writing.

Ontario

Ontario has invested heavily in the development of a world-class post-secondary education and training system – it has one of the most intense concentrations of post-secondary institutions in the world. With a foundation of twenty universities and twenty four colleges and a vibrant training sector, Ontario sees post-secondary education as a strategic investment for its future. Ontario intends to increase the number of highly qualified people in its workforce to improve productivity and competitiveness and develop its creative economy.

Ontario has set the target of achieving a rate of post-secondary attainment in the workforce of 70 per cent - moving from the current level of 59 per cent[17].

It is helped by having one of the world's leading systems of compulsory education, ranked amongst the top education systems in the world. It also has a knowledge-based economy, with a strong focus on information technology and technology-rich service sector, which is demanding more and more skilled employees, entrepreneurs and leaders. Ontario's health care system and public service are other significant areas of employment which demand skilled knowledge workers.

Key to enhanced attainment rates are issues of access, affordability, equity and quality. Ontario is working on all of these issues to increase access through expanding the post-secondary system, offering support for students to make their education affordable, working on specific strategies to promote equity (especially in relation to access and outcomes for Aboriginal learners) and quality.

- Ontario currently has approximately 500,000 online course registrations - over twice that of any other Canadian jurisdiction.
- 18,000 college and university online courses and 1,000 fully online programs.
- The overall number full-time equivalent learners studying online in Ontario is 52,500.
- In the college sector, completion rates for online learning are between 70-79 per cent (median of 76.1 per cent) and for universities between 85 per cent and 95 per cent (median is 89 per cent).

20 Based on the review by the HEQC – see http://www.heqco.ca/SiteCollectionDocuments/FINAL%20PSE%20Attainment%20Research%20Note%20ENG.pdf, especially at page 2.

- A public commitment, made in 2010, to the creation of the Ontario Online Institute (OOI) and a framework proposal for the design and deployment of the work of the OOI.

Ontario has invested in significant online learning infrastructure. We will now briefly review these investments.

OntarioLearn is a consortium of 24 Ontario colleges who have partnered to develop and deliver online courses. Each partner college selects courses from the OntarioLearn.com course inventory that will complement its existing distance education offerings. This partnership approach has allowed member colleges to optimize resource use, avoid duplication and, more importantly, increase the availability of online learning opportunities for their students. Through this virtual classroom environment, students can pursue their educational goals - whether that be the completion of a single course or the fulfillment of a college certificate or diploma. Students can take courses from their home or office, accessing their course at their convenience. Learning is facilitated by an instructor who is available to answer questions, encourage discussion on course topics, and provide feedback. Course instructors and fellow classmates may live anywhere in Canada, the US or somewhere else in the world (boundaries are endless on the web).

The Ontario Research and Innovation Optical Network (ORION) is an advanced technology, "ultra-fast" fibre optic network, owned and operated by a not-for-profit organization dedicated to supporting and advancing research, learning and innovation. ORION connects all of Ontario's universities, most colleges, several teaching hospitals, other public research facilities and a growing number of school boards to one another and to the global grid of research and education (R&E) networks. As Ontario's advanced R&E network, ORION is a critical tool that supports and facilitates research, education, collaboration and innovation benefitting Ontario's researchers, educators and learners. Stretching 5,800 kilometres, it is one of the largest R&E networks in the world.

Ontario Council for University Lifelong Learning (OCULL) is a professional association for administrators and practitioners who develop and deliver degree and non-degree continuing education programs in Ontario universities. OCULL is an advocate for adult learners at Ontario universities, a collegial network, and a vehicle for professional development for its members.

The Independent Learning Centre (ILC) is mandated by the government of Ontario as the province's designated provider of distance education and GED Testing. The ILC offers Ontario credit courses in English and French for Grades 9 to 12, as well as the Ontario Secondary School Diploma (OSSD) and the GED Testing Program. In addition, the ILC has English-as-a-second-language courses, and a variety of student services.

ILC's outstanding credit and non-credit courses and educational services enable students to earn a high school diploma or equivalent, upgrade their skills, and achieve their academic and career goals. The ILC's flexible and accessible courses allow students to pursue their education, their way - anytime, anywhere.

Contact North| Contact Nord is a distance education and training network serving the entire province, and is unique in North America in terms of its reach (covering a geographic area of

over 1 million square kilometres and a population of over 13 million) and the large number of public education and training providers supported (24 public colleges, 20 public universities and over 250 public literacy and basic skills and other training providers). It has 112 staffed online learning centres in communities across the province creating local hubs where students can use audioconferencing, videoconferencing and web conferencing technologies to access synchronous courses delivered by the education and training providers.

Students can also use computer workstations and Internet connectivity at the centres to participate in online courses, and have access to a host of support services and information. Its primary focus is on supporting the education and training needs of Ontarians in small, rural and remote areas of the province where the online learning centres are located. It also focuses on supporting the needs of Aboriginal learners with 26 of the 112 centres in Aboriginal communities and a Centre of Excellence in Aboriginal Distance Education & Online Learning to support Aboriginal communities and training organizations.

The organization plays a significant role in supporting the delivery of literacy and basic skills training across the province through Ontario's e-Channel literacy initiative. Contact North | Contact Nord provides the web conferencing platform for synchronous delivery of these training courses, provides technical support for the platform, delivers coordination services to the training providers and hosts the e-Channel website, the gateway for students to access the web conferencing platform and information.

To support students and prospective students, Contact North | Contact Nord offers the only province-wide student portal with information on over 1,000 online programs and over 18,000 online courses from Ontario's education and training providers. The organization also supports the post-secondary education and training sector to build capacity for online learning through its faculty portal which provides resources and information for faculty, instructors, administrators, distance education and online learning staff and instructional designers.

In 2012, Contact North | Contact Nord marks its 25th year of continuous operation. Services are available in Canada's two official languages, English and French. Contact North | Contact Nord supported almost 34,000 registrations for Ontario's public education and training providers in 2010-2011. The organization, with its headquarters in Thunder Bay, ON, is a not-for-profit corporation governed by a volunteer Board of Directors and funded by the Ontario Ministry of Training, Colleges and Universities.

Québec

In addition to the TÉLUQ programs, degree level programs are available from Dawson College, Laval University, Concordia University and University of Montréal. There is also a collaborative network of community colleges and universities, known as Comité de Liaison Interordres en Formation à Distance (CLIFAD), which coordinates college programs in both French and English offered throughout Québec. The focus of much of this work is undergraduate studies, though selected professionally-focused graduate programs are also increasingly being made available in French.

KnowledgeOne is a Québec-based an online educational services company that provides e-learning services, infrastructure and support in a learner-centric environment customized for virtually any type of learner. The company develops online learning courses for Concordia University.

Atlantic Canada

Some colleges and universities in the Atlantic provinces offer both fully online programs and others offer programs which are available in part online and in part through classroom-based activity.

For example, Cape Breton University (Nova Scotia) offers an MBA in Community Economic Development in several locations across Canada, with elective courses available online. Dalhousie University (Nova Scotia) also offers an MBA online.

New Brunswick actively encouraged the development of online learning and sought to attract private online universities to the province. The University of New Brunswick offers several programs online and the private universities – Yorkville University and University of Fredericton – have developed focused strategies on graduate programs which has enabled their survival.

Memorial University (Newfoundland and Labrador) offers a variety of programs at the undergraduate, graduate, certificate and diploma levels. Fifteen of Memorial's programs can be fully completed online, while 10 programs can be partially completed online with some on-campus coursework required.

The University of Prince Edward Island (Prince Edward Island) offers continuing education courses online in a range of subjects as well as some certificate programs. None of the college programs and none of the academic degree programs are available online.

The Future

First, the bad news.

Canada is home to major companies with a vested interest in growing online learning. These include the major telephone and multimedia companies (Telus, Bell, Rogers, Shaw, Research in Motion, Desire2Learn, Open Text, CAE and several others) including companies building learning apps for mobile learning devices.

What is not occurring, at least yet, are serious and focused public: private partnerships aimed at expanding the reach and improving the quality of online learning. These partnerships, such as that between the Kentucky Community and Technical College system and Pearson in the US, can be transformative. There is a general hesitancy in the public sector about partnering with the private sector but its lack of involvement in post-secondary education in Canada is likely to slow the pace of innovation.

So too are the general conditions of austerity and fiscal prudence which are appearing in a variety of jurisdictions. Budgets in all of the populous provinces see a reduction in real terms of funds available to colleges and universities (public sector investment is generally below the rate of inflation and cost increases at these institutions) and increase in student fees. Some see this as an opportunity to change their institutions and offer more online learning as part of the strategy for the future. This is not helped by the preoccupation of governments with capital investment and physical infrastructure.

A third inhibitor is the persistence of the Carnegie unit as the basis of funding of post-secondary education. This measure, developed in the 1920s, seeks to link time on task and time in class to the funds made available to support student learning. While this funding model persists, innovation and change will be inhibited by trying to fit 21st century learning processes into a 19th century funding model.

A fourth inhibitor is the state of technology management in post-secondary institutions. Senior academic administrators often lack the knowledge needed to support the use of learning technologies, and sometimes rely too heavily on the IT specialists regarding decision-making in this area. However, for all sorts of good reasons, the CIOs of post-secondary institutions or their counterparts have been preoccupied by standards, privacy and security. These are proper concerns. But to many who wished to make use of innovative technologies, such as mobile learning or social networks, they have found their IT service to be an inhibitor rather than an encourager. At one community college, the iPad was seen as recently as February 2012 as a "passing fad" by the CIO – this despite the evidence that tablets will outsell PCs by 2014 and that the iPad is the fastest selling technology of all time.

A final inhibitor is the lack of incentives provided to faculty to develop engaging, effective and successful online courses. At many colleges and universities (but not all) faculty are given minimal release time from their normal duties to design, develop and deploy online learning courses and programs. In some institutions, skilled and experienced instructional design capacity is available to support them in this work, but in others they are "on their own." Some institutions have appropriate and effective faculty development programs to support this work; in others such investments are limited. The basic assumption has been to support faculty who wish to develop online courses "where this is possible." Until institutions see this work as core to their future, faculty will see it as marginal to their workload.

And now some good news.

There are signs of more institutions seeing online learning as critical to their strategy and core to their business plans for the future. Despite the constraints, they are beginning to identify programs and investments which could increase registrations, reach and success rates for their programs. Such institutions include universities (including some of the "new" universities) and colleges. This is part of the global trend towards seeing online learning as a core strategy for the next phase of development of post-secondary education.

Specific areas of interest are ancillary health services – especially eldercare, care in the community, education, leisure and tourism and apprenticeship. Professionally oriented online masters programs targeted at lifelong learners, especially in business and health, have proven to be popular, with some of these relying entirely on tuition fees to cover costs.

Most Canadian post-secondary institutions are now beginning to work with faculty to identify the supports they need and are making new investments in technology and instructional design capacity. They are also leveraging their access to OER to accelerate course and program development. Systematic faculty training, particularly in the pedagogy needed to fully exploit the application of technology, though, remains a challenge.

Some institutions, such as the University of British Columbia, the University of Guelph, Memorial University and several universities in Québec, have integrated their faculty development units, learning technology support, and distance education units into a single, integrated faculty and student support unit, called Centres of Teaching, Learning and Technology, or something similar. These are often not just support units for faculty, but centres of innovation and development for online teaching, and provide a critical role in moving innovation from isolated pockets into cross-institutional developments. One example is UBC's course wikis, where more than 100 different courses have 'open' wikis that enable faculty and students, from both within and outside the university, to develop specialist topics or 'nodes of excellence' related to specific courses.

Similarly, there are increasing examples of the integration of web 2.0 technologies into both classroom and online learning. One outcome is the greater participation and engagement of learners in developing content and demonstrating their knowledge through multimedia e-portfolios, wikis and blogs. Examples from Ontario can be found in Contact North | Contact Nord's Pockets of Innovation Series.

These developments are still limited to individual instructors or at most single courses. The next step - another indication that Canada has reached the tipping point - will be when whole programs begin to move towards a sophisticated mix of online and face-to-face teaching that focuses on the unique benefits that the campus can bring while online learning at the same time fully engages learners in the creative use of technology within specific disciplines. Some Canadian institutions, such as UBC, University of Ottawa, McMaster University, and Memorial University are already close to doing this.

New institutions are emerging. The Ontario Online Institute could well be a flagship for a new approach to online learning in Canada. A renewed focus on quality for online learning is also evident in the work of the quality assurance agencies across Canada, most of whom have now adopted specific quality assurance standards for online learning, based on both internally developed standards (British Columbia) and also the guidelines adopted by many US accrediting bodies developed by the WICHE Cooperative for Educational Technologies, a member-driven network dedicated to online learning development and best practices in the US.

There are healthy and significant developments outside the institutional arrangements for public education such as the development of the Canadian Society for Training and Development (the voice of workplace professionals in Canada), significant adoption of online learning by corporations and private providers of vocational education and the adoption of online learning by the government of Canada, especially for its military and the professional development of the public service[18].

What these positive signs suggest is that lighthouse examples of innovative practice are likely to appear across Canada ranging from innovative use of mobile learning (University of Ontario Institute of Technology, corporations and Canada's military), the powerful use of OER for credit transfer and recognition (OER University), and innovative programming from a variety of institutions and organizations. As more organizations see online learning as mission critical for their future, then these developments will accelerate. As governments move away from core funding based on Carnegie units to outcome-based funding for public education, as the government of Alberta is now promising to do, then more innovation can occur.

Some institutions will determine that online learning is not for them. This will especially be the case in small liberal arts institutions whose core strategy is the development of personal relationships with their learners. Even for these, blended learning will be the norm for all courses, as it is already in many institutions in Canada.

Online Learning in Canada at a Tipping Point

This review of the current state of play of online learning in Canada suggests that we have reached a tipping point. Canada has a robust online learning community which has secured its gains despite the absence of a strategic focus on online learning by governments and some institutions. Most courses have been developed by the early adopters and first followers and to reach the next level, some changes in the supports available to faculty and a new basis for funding post-secondary education are required for Canada to "leapfrog" to a stronger adoption rate and registration rate for online learning. Also required for such a leapfrog strategy is the widespread institutional adoption of online learning as a core strategic requirement for their growth.

In the absence of changed financial arrangements, strategic focus and faculty supports, online learning in Canada will continue to grow slowly, with innovation depending on individuals and small teams rather than institutional strategy. Given the demographics of Canada, its economic challenges and the competitive position of the nation, this may not be good enough for online learning to make the contribution it could to the socio-economic development of the country. Key to the future will be more collaboration between institutions within Canada – more joint programs, more shared open education resources, and more pooling of faculty development. Also critical will be expanding partnerships and alliances internationally, with Canadian institutions offering programs in partnerships with institutions from around the world.

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21 See a listing of available online courses for the public service at http://www.csps-efpc.gc.ca/cat/oco-eng.asp.