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# 2011 OUTLOOK

FOR

**ONLINE LEARNING AND DISTANCE EDUCATION**

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## INTRODUCTION

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As he has successfully done in previous years, Dr. Tony Bates, a Contact North | elearnnetwork.ca Research Associate, provides an insightful and thought-provoking look at the developments in online learning and distance education in the year that just ended, shares his view of the challenges ahead, and lays out his predictions for 2011.

Thanks to his world-wide travels, his extensive professional experience, and his unmatched contacts with online learning and distance education experts around the globe, Dr. Tony Bates' 2011 Outlook – Online Learning and Distance Education is a must read for the post-secondary education and training field.

As I read through 2011 Outlook, I am struck by three things:

1. Overall, Tony reports progress has been made in a number of areas in 2010, providing a good foundation for the year that just started. Significant challenges and barriers continue to exist; however, progress is being made. As an example, Tony highlights that a lack of training in teaching for faculty is a barrier. Contact North | elearnnetwork.ca's [Emerging Technologies Training Program](#) is example of how we are working with our education and training partners to overcome this barrier.
2. Tony's extensive analysis of the phenomenal growth of 'for-profit' online learning institutions in the United States should be a call to action for the online learning and distance education sector. The 'for-profit' educational institutions are capturing a large market share in the United States and serving expanding markets that traditional

institutions are not currently serving. We need to learn everything we can from this phenomenon.

3. Tony is remarkably upbeat and optimistic about the prospects for online learning and distance education in 2011!

Much of the discussion and dialogue around online learning and distance education in Ontario over the past year focused on taking online learning to the next level in the context of the Government of Ontario's announcement of the Ontario Online Institute. The discussion will continue in earnest in the year ahead. 2011 Outlook is part of Contact North | elearnnetwork.ca's ongoing contribution to this important discussion in Ontario, and the broader discussion of online learning and distance education across Canada.

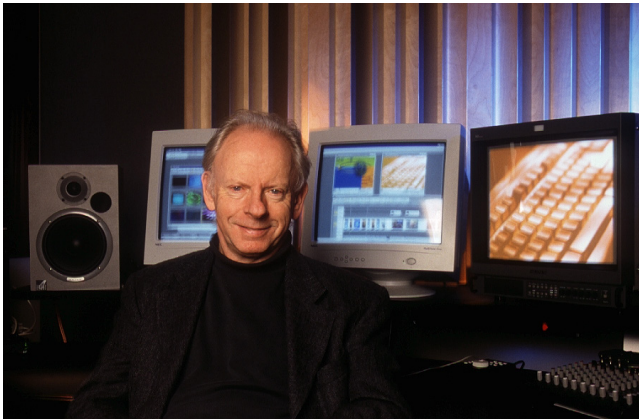
Good reading. I look forward to our continued dialogue on online learning and distance education.

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January 2011

## DR. TONY BATES

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Dr. Tony Bates is the author of eleven books, including his latest, 'Technology, e-Learning and Distance Education', 'Managing Technological Change: Strategies for College and Universities Leaders', 'Effective Teaching with Technology in Higher Education', and 'National Strategies for e-Learning' published by UNESCO. His latest book, on the integration of technology within higher education institutions, is due to be published by Jossey-Bass in 2011.

His research groups at the British Open University, the Open Learning Agency, and at University of British Columbia have published over 350 papers in the area of distance education and the use of technology for teaching. He is on the editorial board of six journals specializing in distance education and educational technology. He has worked as a consultant in over 40 countries.

In recent years, he has been Chair of the International Experts Panel for the Open University of Portugal, advisor to the Universidad

de Guadalajara's Maestría en Tecnologías para el Aprendizaje (Mexico) and to Universidad Tecnológica Metropolitana's Magíster en Educación a Distancia (Chile). He was also a member of the World Economic Forum's Global Advisory Council on Technology and Education between 2008 and 2009.

He was part-time Chair of Research in e-Learning at the Open University of Catalonia in Barcelona, Spain from 2003-2006, and was on the Academic Advisory Board of the Volkswagen AutoUni, based in Germany, 2003-2007. From May 2004 to September 2005, he was part-time Cisco Systems Chair of e-Learning at the Southern Alberta Institute of Technology in Calgary, where he led a strategic planning process for e-learning throughout the Institute.

He also tutors online, currently as a guest tutor for the Masters in Distance Education offered by the University of Maryland University College and Carl Ossiessky University, Oldenburg, Germany.

Dr. Bates has a Ph.D. in educational administration from the University of London, England. He was awarded the degree of Doctor HonorisCausa by the Open University of Portugal in 1995, Doctor of Letters, HonorisCausa, from Laurentian University, Canada in 2001, Doctor HonorisCausa from Athabasca University in June 2004, Doctor of Social Sciences, honoriscausa from the Open University of Hong Kong in December 2004, and Doctor HonorisCausa from the Open University of Catalonia, Spain in June 2005.

## EXECUTIVE SUMMARY

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Online and distance education continues to grow at a rapid rate throughout North America. There were several important developments during 2010, not the least of which was the announcement by the Government of Ontario of a new Ontario Online Institute; although at the time of writing, its structure and functions are not yet known.

### Major Developments in 2010

The major developments during 2010 were as follows:

1. Enrolment in fully online (distance) courses in the USA expanded by 21%, compared with 2% expansion of campus-based enrolments; no nation-wide figures exist for Canada, but many Canadian institutions report similar increases;
2. In the USA, much of the expansion into online learning is being driven by the for-profit education sector, which is moving more aggressively into online learning; nevertheless enrolment growth for online courses was much greater than for campus-based courses also in state universities; and
3. The for-profit sector in the USA is finding a large market that is not being served as well by the state system, in particular lifelong learners, learners with relatively low or any high school qualifications, new immigrants, and marginalized communities.

### Systemic Barriers to Online and Distance Education

Despite the rapid growth in online learning, there still remain major systemic barriers or limitations for distance learners:

1. **Faculty resistance** to online learning and/or distance education, which remains strong in many institutions;
2. **Lack of training** in teaching, which limits instructors' ability to imagine effective alternative technology-based models to face-to-face classroom teaching;
3. **Unambitious institutional goals** for technology-based teaching, focused more on enhancing the classroom model than finding new designs that allow for more flexible access and that use the affordances of new technology to develop skills needed in the 21st century;
4. **Failure to develop appropriate methods for costing online learning**; the costs are often unknown, as are the costs of face-to-face teaching, but generally technology is an added cost rather than used to replace less effective activities; and
5. **Lack of a system wide approach** to online learning and distance education, manifested by:
  - Restrictions on credit transfer, resulting in barriers to student mobility and difficulties in forming effective consortia;

- Over-restrictive admission requirements for non-traditional learners; and
- Lack of undergraduate degrees wholly available online and at a distance.

## Opportunities for 2011

Despite the barriers in the system, there is plenty of opportunity for growth and development in online learning. Some of the key developments anticipated during 2011 are:

### 1. Course redesign:

- To merge the best of face-to-face and online teaching as hybrid courses.
- To merge the best of learning management systems and web 2.0 tools.
- To apply more flexible instructional design methodologies to online courses.
- To encourage more learner-generated content using tools such as e-portfolios, allowing for more authentic and verifiable assessment and new course designs that encourage knowledge management, skills development and independent learning.

### 2. The future is mobile: 'the notion of class time as separate from non-class time will vanish.' (The Futurist)

- Mobile technology continues to improve.
- There are an increasing number of educational applications.
- Students are used to any time/anywhere communication and have the technology for it.

- But there is a lack of high quality instructional designs that exploit the affordances mobile learning.
- Mobile learning requires a radical shift in thinking from the concept of classroom teaching.

### 3. Open educational resources are a development that still falls far short of its promise. However, there will be an increase in:

- Whole courses that include student activities, feedback to instructors and students, examination questions and recommended readings, that can be taken and adapted by local instructors.
- Carefully selected 'open' course materials focused on specific target markets.
- 'Open' examples of course materials to recruit students to courses.
- Open publication of assessed and authenticated student work.

### 4. Multimedia materials, such as short video clips, animations, and simulations will increasingly be developed as part of online course materials, particularly for:

- Skills development in professional, technical and vocational education.
- Providing concrete examples of abstract concepts in humanities, social sciences, engineering and medicine.

### 5. Learning analytics will provide instructors and course directors with tools that will enable decisions to be made based on data analyzed in the form of graphs, pie charts, or

**tables extracted from an institution's various databases.**

6. **Shared services** between post-secondary educational institutions will provide large cost savings in upgrades and maintenance costs for high-end software such as student information, financial and learning management systems, particularly for small and medium sized institutions, while ensuring Canadian privacy laws and data security are safeguarded.

However, this is at least five to ten years away, and in the short term we will see continued growth in fully online distance education.

## Conclusions

Although the growth of fully distant online learning will continue over the next few years, the rate of growth of fully online courses is likely to decline as market saturation is reached, and as more flexible campus-based programs are developed that meet the needs of part-time students and lifelong learners.

## DEVELOPMENTS DURING 2010

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### Fully Online Learning, i.e. Online Distance Learning, Continues to Grow at a Rapid Pace

As in previous years, online learning continues to grow more rapidly than campus-based learning. Unfortunately, there are no national figures for Canada; but in the USA, growth in 2009 was even faster than in previous years. Allen and Seaman (2010) report:

- Enrolments in online courses increased by 21% between 2009 and 2010, compared with an increase of 2% for campus enrolments. (This compares with an average increase of between 12-14% per year in online course enrolments over the period 2003-2008);
- 63% of institutions surveyed said that online learning was an essential part of their future strategy; and
- Almost 30% of all enrolments now are in online courses.

A report from Ambient Insight Research (2009) goes even further, comparing 2009 with its predictions for 2014:

#### **2009: 27.04 million students in higher education programs in total**

- 1.25 million students took all of their classes online (4.6%)
- 10.65 million students took some of their classes online (39%)

- 15.14 million students took all of their courses in physical classrooms (54%)

#### **2014: 27.34 million students in higher education programs in total (an increase of 2% over 5 years)**

- 3.55 million students will take all of their classes online (12.8%)
- 18.65 million students will take some of their classes online (68.2%)
- 5.14 million students will take all of their courses in a physical classroom (19%)

In other words, they are predicting that over 80% of all post-secondary students in the USA will be taking at least some courses online by 2014, compared with 44% in 2009.

An Eduventures report (Garrett, 2009) states that Master's programs are the big growth area in online teaching. The report stated that:

*master's programs offer the best combination of student maturity, short length, career focus and institutional comfort with experimentation – hence often very high online penetration. The two most popular online master's subjects in terms of enrolments were business and education, although there was a 'long tail' of subjects at this level.*

It is difficult to transfer these findings from the USA to Canada, especially since much of the growth in the USA came from the for-profit sector (see below). Nevertheless there are still some gaps in the system, which are outlined below under 'Systemic barriers'.

Even allowing for the more conservative growth likely in Canada, it can be seen that online learning continues to expand rapidly, and is likely to continue to do so for the next few years at least, although as the market for online learning nears saturation, the rate of growth will inevitably decline.

### **Growth in Online Learning is Greater in the For-Profit Sector in the USA**

In the USA, the for-profit sector has a much higher proportion of the total online market (around 32%) compared with its share of the overall higher education market (about 7%), and seven of the top ten institutions in terms of the number of online enrolments in the USA are for-profits.

The Apollo Group's University of Phoenix has a total of 440,000 post-secondary enrolments and annual revenues of \$3.8 billion, generating a pre-tax profit of \$1.1 billion in 2009 (Apollo Group, 2010). Although it does not differentiate in its annual report between online and classroom based enrolments, at least half of all its enrolments (200,000+) are in University of Phoenix Online. Although its enrolments increased by 21% between 2009 and 2010, it should be noted that enrolments at the University of Phoenix (overall) suddenly dropped 40% in the last quarter, partly due to complaints and systematic investigation by the Federal government over its management of financial aid.

Meritus University (a wholly owned subsidiary of the Apollo Group) offers degree programs online to students throughout Canada and abroad, but to date its contribution to Apollo Group revenues is negligible. No enrolment figures for Meritus are currently available, but they are likely to be in the hundreds rather than thousands.

Kaplan University (owned by the Washington Post) has more than 68,000 students taking exclusively online courses. There are many other for-profit universities offering online programs in the USA, some of them of very dubious quality.

### **Why are the for-profit educational institutions doing so well in online learning?**

An Eduventures report (Garrett, 2009) argues that for-profit educational institutions offering 100% online programs such as University of Phoenix Online and Kaplan are much better placed to expand over the future than public and private universities, who, partly because of faculty resistance and partly because of a wish to exploit the benefits of a physical campus, have neither the desire nor the capacity to expand rapidly into fully online learning.

One major cost advantage of the for-profits is that they focus entirely on teaching, not research or public service. Secondly, with no students on campus, the online for-profits have much lower overheads than a campus-based institution, where non-teaching costs (building maintenance, libraries, and student facilities) can contribute up to half of all operating costs. The for-profit instructors also do not have the same protections and benefits as tenured faculty in universities, thus lowering the cost of instruction for the non-profits. The for-profits also avoid the more expensive subjects to teach, such as mechanical and civil engineering, medicine and applied sciences.

Because overheads are often 'fixed' costs (i.e. difficult to reduce), one result of reductions in state funding to public universities in the USA is that tuition fees are being increasingly diverted to covering overhead costs (Wellman, 2009), resulting in the hiring of more adjunct or contract instructors at lower cost than tenured professors, thus in a way

narrowing the difference between for-profit and state universities.

The reverse of this is that online courses enable both for-profit and public institutions to expand numbers without a proportionate increase in overhead costs, even allowing for the additional technology costs. However, few state-funded universities have really exploited this aspect of online teaching, compared with the for-profits.

Another factor holding back publicly funded campus-based institutions is faculty resistance to online learning. The for-profits have very few permanent or tenured instructors, and their contracted instructors are hired specifically to teach online.

For-profits also choose their markets very carefully. They aim particularly at working people who have reached a 'glass ceiling' in their occupation because of their lack of post-secondary qualifications. More than half the students at the University of Phoenix are 30 years or older, 28% are African-American, and 11% are Hispanic, above the average for most state universities.

On the other hand, the for-profits are still regarded as a group as being of low quality or status, although the University of Phoenix Online has well designed online courses with a cap of 30 students per instructor. At the University of Phoenix, approximately 35% of bachelor students graduate within six years, and a similar amount take longer, giving an 'eventual' graduation rate of around 70%.

In some ways, Athabasca University fills the same 'ecological niche' in distance education in Canada as the for-profits do in the USA (although Athabasca is a public, not-for-profit university). From 1997 to 2007, total course enrolment at Athabasca University increased by 415% (Madrell,

2008). Currently, there are 32,000 students enrolled (head-count). Approximately 37% of its enrolments (just over 10,000 individuals) come from Ontario (compared with 36% from Alberta). However, its growth rate has slowed considerably in the last year or so. From 2009 to 2010, it increased enrolments by 1.5%.

What the for-profits have shown is that there is a market in the USA for students who need more flexibility in both admission and teaching than is offered through the state-funded universities. In particular, the for-profit online programs can provide teaching at a lower cost per student than state universities, who have a wider and more comprehensive mission and mandate. The challenge for the for-profits is to convince the public of their quality, and the predatory and unscrupulous activities of some for-profit organizations have helped tarnish the reputation of the sector as a whole.

The message for Canadian institutions is that there is a market that is not currently well served by campus-based education, and that market is growing. Although Canadian public universities and colleges are moving into online distance learning, they are not doing it fast enough to meet market demand. If public institutions here do not step up to the plate, then the corporate for profit sector will.

## SEVEN SYSTEMIC BARRIERS TO ONLINE AND DISTANCE EDUCATION

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Despite the rapid growth in online learning, systemic barriers remain. Several publications during 2010 clearly identified these barriers.

### 1. Faculty Resistance

The main systemic barrier to online learning and distance education remains faculty resistance, which shows no sign of decreasing. The Campus Computing Survey for 2010 showed that approximately 75% of all respondents said that faculty resistance to online learning was a factor that impeded the institution in moving to online learning. In fact, this is a slight increase over the figures for 2009.

In the report's own words:

*In other words, the pace at which colleges expand their online arms now depends largely on internal politics and how much money administrators can wrangle from their depleted coffers. And if there is opposition, the call is likely to be coming from inside the house. 67 percent reported having growth plans fettered by "[s]tudent demand for online courses which exceeds capacity to provide these courses".*

It is difficult to know whether or not this applies to Canada. Experience suggests that resistance to online learning is probably mixed among faculty in Canada, with perhaps as many favourably inclined as hostile, but without reliable data this is pure speculation.

### 2. Lack of Training in Teaching for Faculty

One of the key reasons for faculty resistance to online and distance education is their lack of knowledge or understanding of pedagogy and theories of teaching and learning. This year, Christensen Hughes and Mighty (2010) (from the University of Guelph and Queen's University respectively) published: 'Taking Stock: Research on Teaching and Learning in Higher Education.'

One of their conclusions is that:

*research suggests that many faculty members teach in ways that are not particularly helpful to deep learning. Much of this research has been known for decades, yet we continue to teach in ways that are contrary to these findings.*

In the same book, Chris Knapper writes:

*'There is increasing empirical evidence from a variety of international settings that prevailing teaching practices in higher education do not encourage the sort of learning that contemporary society demands... Teaching remains largely didactic, assessment of student work is often trivial, and curricula are more likely to emphasize content coverage than acquisition of lifelong and life-wide skills.'*

Bates and Sangra (2011) make the case that faculty need training not just in technology skills, but also in teaching methods based on modern pedagogy, if technology is to be used well. Without

a grounding in empirically-based pedagogy, faculty and instructors have no alternative models of teaching other than the traditional classroom teaching they themselves have experienced. Instead of using technology to replace less effective teaching methods, they are in many cases merely adding it on to existing practice, hence increasing costs.

The Campus Computing Survey (Green, 2010) found in fact that faculty teaching online were much more likely to receive training than faculty teaching in classrooms (51% received some form of training for online teaching). Even then, nearly half of those teaching online in the Campus Computing Survey had no training at all in teaching.

### 3. Lack of Institutional Ambition for the use of Technology for Teaching

Bates and Sangra (2011), on the basis of literature reviews and 11 in-depth institutional case studies, argue:

*The intelligent use of technology should enable higher education institutions to:*

- Accommodate more students;
- Improve learning outcomes;
- Provide more flexible access; and
- At less cost.

*From our 11 case studies and a literature review though, we conclude:*

- Investment in learning technologies and support staff is increasing, without replacing activities, hence costs are going up;
- There is no evidence of improved learning outcomes; and

- *There is a failure to meet best quality standards for e-learning in some institutions.*

The authors conclude that while universities and colleges have increased flexible access, they have not been ambitious enough in their goals for the use of technology, focusing more on ‘enhancing’ the quality of classroom teaching (adding cost) rather than redesigning teaching to meet new needs (improving learning) or improving efficiency.

### 4. Lack of Adequate Costing Methods

Bates and Sangra also found that most institutions in their sample did not know or understand the costs of online learning, a finding supported by the Campus Computing Survey (2010):

*44% [of the 163 institutions in the survey] reported that online courses make a profit, 9% break even and 45% didn't know whether they made a profit or a loss.*

In 68% of the institutions surveyed, students paid the same tuition for online as for classroom teaching. In the rest, they paid more, although no clear rationale – other than to subsidize on-campus teaching – was given for higher tuition fees for online learning. Again, workshops for senior administrators on costing methodologies for technology-based learning would result in much more effective use of resources.

### 5. Lack of System-wide Provision for Distance Education Programs

Despite the large number of online courses available from Canadian universities and colleges, there are few places where students can take a whole undergraduate program online (Athabasca University in Alberta and Thompson Rivers

University in British Columbia are exceptions). It is even more difficult in many provinces for students to combine online courses from different institutions, or to transfer credits from a college into a university (although British Columbia has such a system, operated by the BC Council on Admissions and Transfer, that has been working well for years.)

This makes it difficult for instance for students moving from a university outside Ontario to receive credit for courses already done outside the province, or for students in Ontario who want to take a few courses online from outside the province towards a qualification in their own Ontario university. This is a particular problem for lifelong learners, who often want a 'tailored' package of courses for their particular needs that may be difficult to find from one institution alone. Special permission has to be requested and it is not always easy to get. It makes it impossible to organize a consortium of Ontario universities providing a combined online program if they are not prepared to recognize each other's courses.

This means that there is lack of flexibility in the system, leading to lost opportunities for learning, students taking longer to qualify or just giving up, and a failure to lever existing resources, such as combining courses from different institutions to provide a qualification that would not otherwise exist. Without some external body that can add value on top of what the institutions themselves offer, these barriers to access are likely to remain.

Lastly, there is almost no provision currently in Canada for open access to post-secondary education; in other words, allowing students without high school completion or the necessary grades established by individual institutions, to access credit programs and courses from Canadian universities and colleges. Ironically, this market

is being met by the private sector, which is growing rapidly, providing opportunities for new immigrants, landed immigrants, high school drop outs, and international students to study in Canada. Unfortunately, these qualifications are often not recognized by Canadian professional bodies, employers or the public institutions themselves. It would be better to have a publicly funded, accredited institution or organization that sets high standards for assessment and graduation, but allows open access, credit for prior learning assessment, and challenge exams.

It should be noted that other countries, such as Australia, the United Kingdom, and the European Union, are ahead of Canada in terms of system wide flexibility for open and distance learning. Indeed it is easier to move from a university in Slovenia to a university in France than it is to move between universities in Ontario and Quebec or Manitoba, or from an Ontario two year college to an Ontario university.

## 6. Poor Quality Offerings

There is some evidence (Smith, 2009; Figlio et al., 2010) that in the rush to get online, many public institutions, at least in the USA, have not followed best practice, hiring adjunct faculty without training in online teaching, setting up classes with large student to instructor ratios, and using poor online course design (such as using lecture capture, PDFs and PowerPoint slides, instead of creating interactive online materials and adapting classroom methods to the needs of online learners).

Although this probably applies to few Canadian public institutions, there is a tendency for all online education to be tarred with the same brush, especially by faculty resistant to change.

## 7. Lack of Data on Canadian Online and Distance Education

It is particularly problematic that there are no national or even provincial surveys in Canada comparable to those conducted by the Sloan Commission, Eduventures and the Campus Computing Project in the USA. Few provinces in Canada require institutions to report on their methods of course delivery; although Ontario has conducted such a survey in 2010 (its results have not been published yet). There is even less information about quality assurance processes or learning outcomes associated with online learning in Canada.

Without the need for reporting on online and distance education activities, many institutions simply do not collect this data, or if it is collected it is not published or available in a comparable form to data from other institutions. Without reliable data on enrolments in online and distance education, it is impossible to measure whether or not online and distance education is growing, declining or remaining stable in Canada.

The evidence in this report is drawn mainly from news reports, institutional websites, personal contacts and communications with colleagues, academic books and journal articles, and, most influential of all, attendance at local workshops and national conferences where participants demonstrate and discuss their activities in online learning and distance education. Despite the wide range of sources, this report is inevitably a personal and incomplete view of the current situation, given the lack of reliable national data.

## Summary

Although this section may make depressing reading, the encouraging point is that there is now a better understanding of the systemic barriers to improved use of online learning and distance education, which means that these barriers can now be tackled.

The following actions are needed:

- More and better training of instructors in modern teaching methods, and senior administrators in technology management;
- More ambitious institutional goals and strategies for learning technologies;
- Better costing methodologies;
- More flexibility in transferring credits and combining courses from different institutions;
- More open access and better prior learning assessment to enable those without the current necessary qualifications to be able to access Canadian post-secondary education; and
- Better tracking and analysis of data on online learning and distance education enrolments and the quality of online teaching.

These will all help improve the quality and effectiveness of online and distance learning.

## DEVELOPMENTS AND OPPORTUNITIES FOR 2011

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Despite the barriers in the system, there is plenty of opportunity for growth and development in online learning.

### New Developments in Online Learning in 2011

These are listed roughly in the order of immediacy and urgency, with the most immediate/urgent listed first, although inevitably there is overlap and synergy between many of the developments listed.

#### 1. Course Redesign

For reasons listed in the previous section, it is anticipated that we will see increasing efforts at redesigning courses to incorporate both online and face-to-face teaching. Indeed, there is evidence of this already in 2010.

##### *Stretching the LMS*

The wave of new web 2.0 technologies, such as student blogs, wikis, and especially e-portfolios, and open source content management software such as WordPress, are beginning to expose the limitations of commercial or 'off-the-shelf' learning management systems. In particular, these new web 2.0 tools enable students as well as instructors to create, load and edit content. This increases active learning, and provides means to collect, organize and assess student work in more authentic ways than tests or essays.

However, learning management systems still have major advantages, in that they provide an

institutionally secure environment, enable the management of learning, and integrate with administrative systems. Thus designers are looking for ways to integrate web 2.0 tools with learning management systems (Mott, 2010).

Also as students get more tools and more encouragement to use these tools for learning, there is the possibility of creating 'personal learning environments', software interfaces that the learner can add to or edit, to facilitate their learning. These might include access to their courses that would include access to an LMS, but would also include links to their blog, e-portfolio, and social networks such as Facebook.

Open source LMS, such as Moodle and Sakai, have an advantage here in that designers in large research universities with access to open source developers can build and integrate open source web 2.0 tools into the LMS more easily than can institutions locked into commercial providers such as Blackboard, although these too are increasingly building in web 2.0 'lookalike' functions.

##### *New models for instructional design*

The 'old' best practice instructional system design model of analyze, design, develop, implement, and evaluate (ADDIE) has served distance education well, but it is proving to be too rigid and cumbersome to handle the new, dynamic web 2.0 tools, and learner-generated content.

As a result, we are beginning to see some interesting, high quality design models that are developed 'on the fly', in response to changing input from

students, the arrival of a new technology mid-course, or breaking news in the subject area. This allows courses to appear more spontaneous and more authentic, grounded in the real world. These new developments are happening more in the area of training and vocational education than academia, although they have potential especially for professional programs.

One example comes from the Justice Institute of BC's Emergency Management Program, which created materials not only for the formal courses in emergency management offered by JIBC, but also made these materials publicly available over the Internet and through mobile technology, such as iPhones and iPads. These resources enabled all services involved in emergency response during the Winter Olympics in Vancouver to have common and shared information about procedures, contacts and terminology. Although these materials were created 'on the fly' in a short period, they were also embedded within an overall course design philosophy, working to a project management model and a tight budget.

### ***Learner-generated content***

Students now have access to mobile phones with camera and audio recording capabilities, access to low cost video cameras, and access to video editing through software on their laptops and video publishing through YouTube. Students now can collect data, organize and edit it, and publish it. In addition, through the Internet, they can access a multitude of resources far beyond the limits of a traditional class curriculum. They can do all this outside the confines of the classroom. This is resulting in new course designs focused on learner-generated content, but working to overall academic guidelines and principles established by the instructor.

One example is the use of e-portfolios for professional accreditation. The BC College of Teachers now requires students to provide an online portfolio showing evidence of their application of their personal philosophy of teaching during their teaching practica that meet the requirements set by the College (see Paul and Schofield, 2010).

These new developments are still occurring in a minority of institutions, and are mainly the result of innovative instructors working with professional instructional designers and media specialists. However, there was definitely a spike in these activities during 2010, and it is expected that these moves to new course designs will increase during 2011, affecting both campus and distance education programs alike.

## **2. The Future is Mobile**

As reported last year, the technology continues to improve. The major technology development this year was the launch of Apple's iPad. The iPad has yet to prove its worth as an educational tool. It is valuable for 'consumption', for example access to media and e-books (a key factor for students lugging textbooks across campus), but has more limitations on 'production', as it stands at the moment. Version 2 is expected in February, and it will be interesting to see if it includes more 'production' functionality, such as a camera, and software to facilitate multimedia creation. With the movement towards learner-generated content (see above) this is a major limitation of tablets so far for educational purposes. However, with Blackberry and Microsoft also moving into the tablet market, competition is increasing, so expect functionality of tablets to increase rapidly, and/or costs to drop substantially.

Also there were further improvements on the functionality of mobile phones, although

educational applications remain tiny compared with other areas, such as entertainment and publishing. One barrier to educational applications is the multiplicity of mobile operating systems; another is the lack of a clear model of design for mobile learning.

Despite these limitations and barriers, it is clear that the future of online learning is in mobile technologies. Laptops and desktop PCs will remain necessary for specialized computing applications for the next few years, but all educational institutions should be thinking of course design and teaching in terms of its transportability to mobile formats, although it is likely to be two or three years before mobile learning becomes a regular component of most post-secondary education programs.

### 3. Open Educational Resources

The principle of making available online educational materials for free use for educational purposes is hard to argue with. Projects to develop open educational resources have received substantial funding from the Hewlett Foundation, and support from both the World Bank and the Commonwealth of Learning. However, it is a development that still falls far short of its promise.

Supply remains much greater than the demand. In other words, there's lots of free educational content out there on the Internet, but not much use is being made of it, at least by the formal education system. (It is difficult to know how much use is made by students 'unofficially', i.e. not as a requirement or recommendation from their instructor.)

One reason is that although the content itself may be of the highest quality (such as MIT's OpenCourseware), its format (in MIT's case, 50 minute recorded lectures) is not appropriate

for independent study. Another reason is that instructors often prefer to use their own material.

We have seen though some interesting shifts this year in the approach to developing open educational resources. First, Carnegie Mellon's Open Learning Initiative offers not just chunks of content such as lectures, but pre-packaged courses 'based on the latest research into brain and cognitive science' that can be adapted for local use by instructors (these are aimed mainly at the two-year college market). These are whole courses that include student activities, feedback to instructors and students, examination questions and recommended readings. This initiative is being widened into a consortium of institutions through the HP Catalyst Initiative. To date though, there is no information on the take-up of these programs, although it has generated a lot of research on the design of online materials.

Another development that is less spectacular and less well funded, but even more promising, is to make significant (but carefully chosen) elements of regular courses freely available over the web. (The Justice Institute of BC Emergency Response Program mentioned earlier is a good example.) However, this works best when there is a clear target audience with a need for that content. Another option is to make parts of a credit online course open to the public. UBC has done this with a graduate course, where, as well as some of the core content, students' final work (after assessment) is posted for all to see. It would be a short step from here for institutions to make sample contents of courses available over the web, to help students making choices about future courses or programs.

Open content is most likely to be used in a context where courses are explicitly designed around the concept of open content. This would not be limited to 'official' OER sites, or pre-selected open content. Instead, students would be encouraged,

within certain guidelines and academic criteria, to search the Internet and to collect local data to create their own courses that would demonstrate their knowledge within a particular subject domain. However, until there are some strong design models that clearly demonstrate the benefits of open content, it is likely to remain an underused resource.

#### 4. More Multimedia

Another strong development in online teaching we are likely to see during 2011 will be the increased development and use of multimedia materials, such as video, animations, simulations and, to a much lesser extent, games.

The use of video in particular is growing. It is now very cheap and easy to use video in short 3-4 minute clips to demonstrate processes, equipment or real life contexts, mainly to support direct online instruction, but also sometimes to encourage analysis of the video material by students themselves, or to enable learners to master a technique or process by repeated playing of the video clip as they practice. For instance, Vancouver Community College uses video clips to demonstrate repair processes for auto body work as part of a mainly online course for apprentices. These video clips are easy to make, with a camera recording the instructor (or a master craftsman) demonstrating the process.

Low cost software such as Flash now enables quite high quality but simple animations to be developed at much lower cost than previously. Even high end simulations, such as 3D imaging, that used to cost millions of dollars, can now be done for under \$150,000. The main challenge here is not the technology or the cost, but getting instructors to think visually and hiring web developers with the skills to convert instructional ideas and abstract

academic knowledge into concrete images. Again in the VCC example, industry standard video developed by the automobile industry is also used in the courses. Once good quality animations are created, there is a large potential market for their use.

Simulations that require students to interact with digital materials and thus change the outcome are more expensive to develop, but again the cost is coming down as 'generic' software developed for games in the entertainment industry becomes available for re-use in other contexts. BCIT is creating more expensive simulations in partnership with Lockheed Martin for training aeronautical engineers and for health education.

However, developing multimedia materials is a high risk activity for a small or even medium sized institution. A collaborative media lab to support a consortium of institutions would provide economies of scale and sharing of knowledge.

#### 5. Learning Analytics

Businesses have been increasingly using business intelligence software to dig down into the vast quantities of data they accumulate to enable front-line personnel to make better informed decisions.

Learning analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs. In other words it is the application of business intelligence software to learning and learners.

Learning analytics is likely to be the next buzzword in online learning. Institutions accumulate a great deal of data about students. This is rarely used for the purposes of academic decision-making, mainly

because it has up to now required a huge effort to analyze such data in terms of specific decisions, and also because of privacy reasons. However, learning analytics is focused mainly on aggregate data, and does not identify individual students. It provides information for instance on the changing demographics of students, such as age, gender, and location. It would allow, for instance, a program director to analyze the demographics of students in the program over the last five years. A move to older, better qualified, more part-time students might indicate the suitability of moving the course online, for instance. It does this through software that 'sits on top' of the several different databases used in universities and colleges, such as student information systems, learning management systems, and financial systems. It provides the end-user with tools in the form of a dashboard on the desktop computer that allows the end-user to call up data and easily analyze it in the form of graphs, pie charts, or tables.

The main challenges to the use of learning analytics is making sure that data are collected and stored in ways that are useful for the kind of questions asked by end users (for instance, coding courses by the type of delivery, such as blended, hybrid and fully online), training end users such as faculty in the use of such tools, and ensuring that all concerns about privacy and data security are adequately addressed.

Athabasca University is organizing a conference on learning analytics at Banff between February 27<sup>th</sup> and March 1<sup>st</sup>, 2011.

## 6. Shared Services

The last development predicted during 2011 will be moves in some states and provinces toward shared software services between institutions. The rapid development of new technologies, the high cost of

upgrading mission-critical software such as financial, student information and learning management systems, and the high risk of changing from one supplier to another puts a particularly heavy burden on small to medium sized institutions.

The Alberta government is developing a plan, partly as a result of risk management, that will encourage sharing of services between its post-secondary educational institutions. In Pennsylvania, Drexel University has gradually accumulated the software services for a number of smaller colleges in the region. Thus as well as managing its own Banner student information system, it provides space and maintenance for several other colleges' student information systems on a subscription basis. It now also provides hosting and maintenance for other institutions' learning management systems (in this case, Blackboard.) Moving to an open source system such as Moodle is difficult for small institutions with limited access to open source development staff; it would be more feasible through a shared services agreement with a large university.

The alternative is outsourcing such services to private companies who would provide 'Software as a Service' (SaaS) through the Internet. For Canadian institutions, this is a very high risk activity though, since many of these services and servers are located outside the country, and are thus not subject to the same privacy and security requirements of Canadian institutions.

## CONCLUSION

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The growth of online learning continues, although as the market approaches saturation in the future, the rate of growth of fully online courses is likely not just to level off, but decline. One reason for this will be the move to more flexible campus-based

programs that will offer more options to part-time students and lifelong learners. However, this is at least five to ten years away, and in the meantime we will see continued growth in fully online distance education.

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