

**A NEW PEDAGOGY IS EMERGING...  
AND ONLINE LEARNING IS A KEY  
CONTRIBUTING FACTOR**

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## Major Changes in the Way We Teach Post-Secondary Students

What is clear is major changes, in the way we teach post-secondary students, are triggered by the sudden immersion of many into online learning as a result of COVID-19 and the new technologies that increase flexibility in, and access to, post-secondary education. Indeed, we can already see institutions exploring the implications of these developments for program and course delivery beyond the pandemic.

In looking at what is being learned and the implications for students, faculty, staff, and institutions, we highlight:

- Several key developments in online learning and how they impact our understanding of pedagogy;
- More than 100 examples of applications of these developments in innovations in colleges and universities in Ontario, across Canada, and internationally, selected from Contact North | Contact Nord's [Pockets of Innovations Series](#) on [teachonline.ca](#); and
- Seven questions for you to consider about the implications of changes in pedagogy and student learning.

This consideration of how technology is changing the way we teach and learn, leading to the emergence of a new pedagogy, continues to be the most popular feature on [teachonline.ca](#) since its posting in 2012, drawing in an average of 100 new and returning readers every week. This revised and updated 2020 version is intended to offer new angles and resources to readers and inspire new approaches.

We also developed two other resources to support the exploration of the emerging pedagogy, including: a [webinar series](#) featuring experts from around the world and an “[Ask An Expert](#)” resource where readers pose questions about teaching and learning and Contact North | Contact Nord research associates provide responses.

As the literature documenting examples of success in online learning during the pandemic emerges, new contributions will appear on [teachonline.ca](#).

But before we explore the specifics, it is helpful to understand context. The current and sudden exposure of so many to online teaching as a result of the pandemic accelerated developments already occurring.

## SEVEN KEY DEVELOPMENTS TRIGGERING THIS NEW PEDAGOGY

Changes in society, student expectations, and technology were already motivating university and college faculty and instructors to rethink pedagogy and teaching methods before the pandemic. Canada has thousands of online courses and programs – there are 20,000 online college and university courses for credit in Ontario alone. Their number has been steadily growing since 1994, when the first fully online graduate degree programs were launched in Canada. Now online programs and courses are seen as strategic investments by colleges and universities eager to increase access and flexible learning routes for their programs and students. Of all colleges, universities, polytechnics and CEGEP's in

Canada, [by far the greatest majority offer courses and programs online](#) with others offering a mix of online and on-campus programs.

### **New Demands of a Knowledge-Based Society**

There are a number of separate factors at work in the knowledge-based society. The first is the continuing development of new knowledge, making it difficult to compress all students need to know within the limited time span of a post-secondary program or course. This means helping students to manage knowledge - how to find, analyze, evaluate, and apply knowledge as it constantly shifts and grows.

To put this in context, between 2003 and 2016 the number of academic papers published world-wide doubled and have doubled again between 2016 and 2020. There are now over 1.8 million scientific papers published annually in over 28,000 journals. India alone published over 136,000 science and engineering papers in 2018 and the rate of Indian publications is growing at close to 11% per annum.

The second factor is the increased emphasis on applying knowledge to meet the demands of 21st century society, using skills such as critical thinking, independent learning, the use of relevant information technology, software, and data within a discipline, and entrepreneurialism. The development of such skills requires active learning in rich and complex environments, with plenty of opportunities to develop, apply, assess and practice such skills.

Thirdly, it means educating students with the skills to manage their own learning throughout life, so they can continue to learn after graduation. Life-long learning, especially given expectations about rapid developments impacting the future of work, is now an imperative of governments around the world committing to developing a skilled workforce. With the pandemic likely to induce a global recession, demonstrable and certifiable skills will become key to securing and retaining work.

As governments shift their funding models to outcome-based funding, giving emphasis to the connection between learning and employment, the “[global competencies](#)” needed for work and sustainable development coupled with the skills related to specific employment opportunities are being given new emphasis.

### **New Student Expectations**

Student demographics have been changing for some considerable time – more mature students, more students combining work and study, more students looking for flexible learning options. While school leavers are still an important segment of the college and university student body, they no longer are the dominant drivers of the strategies pursued by the institutions which look to broader markets, especially international markets.

Even the most idealistic students expect to find good jobs after several years of study, jobs where they can apply their learning and earn a reasonable income. This is especially true as tuition and other educational costs increase. Students expect to be actively engaged in and see the

relevance of their learning to the real world. Indeed, about [60% of all undergraduate students in Canada](#) are enrolled in one of four fields of study: social and behavioural sciences and legal studies (but not law), business, management and public administration; physical and life sciences and technology; and the humanities. Almost all college students are studying work-related programs.

Today's students grew up in a world where technology is a natural part of their environment. Their expectation is that technology is used whenever appropriate to help them learn, develop essential informational and technological literacy skills, and master the fluency necessary in their specific subject domain. This is one reason blended learning has grown in use across schools, colleges and universities and why some are now exploring a "flipped classroom" approach to learning.

Blended and online learning are a feature of most strategic plans for colleges, universities and polytechnics. The plans have been [given a new emphasis](#) as the pandemic forced online learning everywhere.

### **New Technologies**

Continuing advances in digital technologies, social media, and mobile devices such as smartphones and tablets, give the end user, the student, much more control over access to and the creation and sharing of knowledge. This empowers students, and faculty and instructors are finding ways to leverage this enhanced student control to increase their motivation and engagement. More recently, developments in [artificial intelligence for teaching and learning](#), [virtual and augmented reality](#) and [simulations and serious games](#) have further emphasized the importance of technology enabled learning

### **Fast Changing World of Work**

As the nature of work changes – more project-based work, flattened organizational structures, new human:technology relationships, more global networks and supply chains – then the need for skills development and learning "on the job" become clear. Given the expectation that these developments will each accelerate and impact between 30-40% of all jobs, then constant learning becomes a driver for anytime, anywhere learning.

Now that the pandemic has disrupted the global economy – [the IMF predicts](#) a 5% fall in global GDP with some industries disrupted for many years to come (e.g. hospitality and tourism, travel, banking and financial services, retail) and high unemployment for some time to come – upskilling and reskilling will become a strong focus for government investment in higher education. Already, [micro-credentials are being seen as a response to this challenge](#).

Work will [change significantly over the coming decade](#). Recent innovations and developments in [flexible, competency based learning](#) and [assessment](#) will give new impetus to online learning and work-related skill development.

## SEVEN KEY ELEMENTS ARE CONTRIBUTING TO THE DEVELOPMENT OF THIS NEW PEDAGOGY

As faculty and instructors become more familiar with digital technologies for teaching and learning, pedagogical responses and strategies are emerging. The seven developments listed below impacted on how teaching is structured and how and where learning happens.

### 1. Blended Learning

Until recently, there was a clear dichotomy between classroom-based teaching, often supplemented by technologies, a learning management system, and digital resources, and fully online teaching, in which an entire course is provided online.

Now there is a much closer integration of classroom and online teaching under the generic term of [blended or hybrid learning](#), where classroom time is reduced but not eliminated, with substantial time being used for online learning.

In the [‘flipped’ classroom](#), the instructor may record a lecture and/or provide access to videos, readings, open education resources, quizzes, and other resources which students work through prior to coming to class. Classroom time is spent on interaction among students and with the instructor, whether through discussion, problem-solving, case studies, practical exercises, or lab work. Materials are often designed to be used after class for review and assignments.

[Successful blended teaching and learning](#) require a focus on what may best be done on campus, such as face-to-face interaction between students and instructors, and what may best be done online, such as providing flexibility and wide access to resources and experts. This requires a re-thinking of teaching and learning practice, as well as classroom layouts, as more interaction takes place, involving the students, instructors, and outside experts who participate in-person or virtually. Teaching models for both classroom and online delivery must be reconsidered and recalibrated in response to new technological capacities.

### 2. Collaborative Approaches To The Construction Of Knowledge/ Building Communities Of Inquiry And Practice

From the early days of online learning, there was an emphasis on enabling students to [construct knowledge through questioning](#), discussion, sharing of perspectives and sources, analysis of resources from multiple sources, and instructor feedback. Social media encouraged the development of [communities of practice](#), where students share experiences, discuss theories and challenges, and learn from each other. The professor is no longer responsible for delivering all of the knowledge or even providing all of the sources for learning – but maintains a critical role as guide, facilitator, and assessor of the learning.

Some instructors encourage contributions and reflections from the wider public, to accompany formal courses that are ‘private’ to enrolled

students, thus opening up courses to external expertise, and providing students with important contacts and networks outside the institution.

Most instructors have not experienced learning, much less teaching, in such collaborative environments, especially when facilitated through technology. It requires a re-consideration of roles, authority, and how learning is achieved and measured.

Most recently, a model of how this [constructivist approach to teaching and learning](#) can occur has been developed which gives emphasis to the idea that the “class” is a community engaged in a serious inquiry into a body of knowledge, guided by the teacher. Known as the [community of inquiry model](#), it has garnered a lot of attention and is now an embedded idea in instructional design. It is built on a simple principle: [the more engaged learners are with their learning, the more likely they are to be successful](#).

### 3. Use Of Multimedia And Open Educational Resources (OER)

Digital media, YouTube videos such as [TED talks](#) or the [Khan Academy](#) and, increasingly, open educational resources in the form of short lectures, animations, simulations, virtual labs, virtual worlds and many other formats enable instructors and students to access and apply knowledge in a wide variety of ways. There are now many thousands of examples of stand-alone, open educational resources that can be downloaded free for educational use. Examples include [MIT's OpenCourseWare](#), [the OER Commons](#) and the UK Open University's [OpenLearn](#).

OER can be provided as core course content, or specifically targeted to helping students who struggle to keep up or have not fully mastered key concepts or techniques. OER also appeal to an increasingly large group of students, inside and outside post-secondary education, who are interested in a topic, but don't want to enrol in a formal program or course. Since we began capturing innovative developments a decade ago, [OER has become a major resource](#) for rapid course development and for lowering the costs of learning for many students.

Even text books are changing to incorporate video and audio clips, animations and rich graphics, as well as becoming more interactive, allowing both instructors and students to annotate, add or change material including assessment exercises and feedback. e-Texts are developed to take advantage of open source material as a way of reducing student expenditure on books and facilitating updating of content. These electronic texts are, of course, accessible via mobile smartphones, tablets, e-readers and other mobile devices.

Using multimedia for education is not new, but, with the Internet, the selection and integration of appropriate sources – by both instructors and students – raises questions of quality, timely and appropriate usage, multiple points of view, and packaging of a wide range of resources within the framework of course-specific learning objectives and assessment practices. Balancing the use of multimedia and open

educational resources with instructor-delivered content raises issues of course ownership and measurable learning outcomes.

#### **4. Increased Student Control, Choice, And Independence**

Students can now access a variety of content, free of charge, from multiple sources via the Internet. They can choose alternative interpretations, areas of interest, and even sources of accreditation. Students have tools, such as smartphones and video cameras, to collect digital examples and data can be edited and used in student work. Thus, strictly managing a set curriculum in terms of limited content chosen by the instructor becomes less meaningful. The emphasis shifts to deciding what is important or relevant within a subject domain.

Students within any single 'class' are likely to have multiple needs. Within the framework of the learning objectives, more flexible approaches to content choice, delivery, assessment, and other factors are emerging. Equally important is educating students to take responsibility for their own learning and approach this as a skill to be taught and learned.

This approach challenges the instructor to move away from selecting and transmitting information in large blocks or chunks, such as a one-hour lecture, or providing a single textbook, to guiding students to find, analyze, evaluate, and apply information relevant to a particular subject domain. This 'relevance' becomes more negotiated between instructor and student. Indeed, the term 'instructor' becomes misleading in this context, as the role moves more to that of facilitator with less control over where and how learning takes place, and often entering into negotiation over exactly what the content is.

#### **5. Anywhere, Anytime, Any Size Learning**

The development of 'any size' learning is seen in the creation of smaller modules, such as those offered through the ['Learn on Demand'](#) program at the Kentucky Community and Technical College System, that can be built or aggregated into certificates, diplomas or even full degrees, and which can also be used as stand-alone, free, open resources. These smaller modules fit the needs of many full-time students who are working part-time, as well as those needing greater flexibility or additional help with their learning.

There is growing demand from students for short, 'just in time' learning modules that fit an immediate learning need. The creation and aggregation of these modules for credit requires reconsideration of course structure and the crediting of learning that is not equivalent to a full course completion. In the evolving world of open access to learning, students who successfully complete such modules may be awarded ['badges'](#) or [microcredentials](#), with the possibility of credit transferred at a later time into a more formal program. For example, a continuing education microcredit may be transferred as an elective course into a graduate degree. Now that governments in Canada and Singapore, for example, have introduced training and learning tax

credits, such short courses (especially if they can be “stacked” to form a certificate or diploma) will become a growing feature of education beyond school.

[Mobile learning](#), with smartphones, tablets and other devices, is the basis of the anywhere, anytime learning provided through online learning. Offering content, quizzes, multimedia resources, and connections among students using mobile devices requires a new look at course design, content packaging, and a consideration of limitations of data packages. How to best integrate mobile devices into course delivery and assessment is a field of continuing exploration.

## 6. New Forms Of Assessment

Digital learning can leave a permanent ‘trace’ in the form of student contributions to online discussion and [e-portfolios](#) of work through the collection, storing and assessment of a student’s multimedia online activities. [Peer assessment](#) involves students in the review of each other’s work, providing useful feedback that may be used in revision of documents and a better understanding of issues.

[Learning analytics](#) facilitate tracking of learning demonstrated through student digital activities easier and more scalable. Such analytical feedback to students can be continuous throughout a course, resulting in early diagnostics that enable students to focus on areas of weakness before a final assessment. Instructors can also use analytics to assess the quality and usefulness of course resources and track student participation, providing opportunities for intervention if necessary. [Work in artificial intelligence](#) looks at guiding students through programs of learning with resources and at a pace that matches their needs, interests and capacities. New [accreditation methodologies based on competencies](#) foster greater clarity and ease for transferability and recognition of credits and learning.

The accessibility of such demonstrations of learning offers many advantages both to students and instructors, compared with traditional forms of assessment. New challenges also arise concerning what type of learning to assess, student support in using technology for sophisticated demonstrations of learning, and issues of security for exams. Not all students are as fluent and secure in their use of technology for learning and assessment as their continuous texting may indicate.

There are many [new developments in assessment of student learning](#), which are captured in a recent contribution to teachonline.ca

## 7. Self-Directed And Non-Formal Online Learning

While a minority of students may be fully capable of managing their own learning and have a long history of self-directed and non-formal learning in adult education, recent developments such as OER and MOOCs provide many more potential students with support and encouragement for self-directed or non-formal learning. The availability of free open educational resources, combined with social networking

(especially You Tube and LinkedIn learning), enables large numbers of students to access knowledge without the necessity for meeting institutional prior admission requirements, following a set course, or having an instructor. Computerized marking and peer discussion and assessment provide, in some cases, students with support and feedback on their learning.

Opportunities for self-directed and non-formal online learning are likely to play an increasingly important role in learning, especially in the emerging post-COVID-19 economy.

### THREE EMERGING PEDAGOGICAL TRENDS

Clearly indicated in these developments are some common factors or trends:

1. A move to opening up learning, making it more accessible and flexible. The classroom with information delivered through a lecture is no longer the unique centre of learning.
2. An increased sharing of power between the instructor and the student. This is manifest as a changing instructional role, towards more support and negotiation over content and methods, and a focus on developing and supporting student autonomy. On the student side, this can mean an emphasis on students supporting each other through new social media, peer assessment, discussion groups, even online study groups but with guidance, support and feedback from learning and content experts.
3. An increased use of technology, not only to deliver teaching, but also to support and assist students and to provide new forms of student assessment.

It is important to emphasize these are emerging pedagogical trends. More experience, evaluation, and research are needed to identify those that will have lasting value and a permanent effect on the system.

### HOW THIS NEW PEDAGOGY IS TRANSFORMING TEACHING AND LEARNING

Faculty, instructors, and teaching and learning specialists in post-secondary institutions are rethinking pedagogy and designing resources, programs and courses that benefit from new approaches to teaching and learning. More than 100 selected innovations, featured in Contact North | Contact Nord's [Pockets of Innovation Series](#), from over 100 post-secondary institutions in Ontario, across Canada and around the world illustrate each of the seven key elements outlined above. Links are provided to the full description of each innovation.

#### 1. Blended learning

Students at [Niagara College](#) in Ontario can enrol in iLearn, a course focused on becoming independent technologically-literate and effective learners. They learn in a variety of delivery modes – face-to-

face, in a blended format and fully online to facilitate the development of flexible skills.

At [Canadore College](#) and [Durham College](#) in Ontario, blended learning was designed for apprenticeship programs, so students can learn and apply their skills in their workplaces, allowing them to stay close to home, with short and intense sessions in college labs.

The Faculty of Arts and Science at Queen's University in Ontario developed a [Blended Learning Initiative](#) to encourage more active learning, especially in first-year and large enrolment classes. Differing designs in blended courses in [Sociology](#), [Calculus](#), [Classics](#) and [Psychology](#) match content with student needs and engagement strategies.

The School of Nursing at [Lakehead University](#) in Ontario offers blended programs for admissions preparation, nursing degrees and post-graduate education, serving students across northwestern Ontario and allowing them to stay in their communities to learn.

A blended learning course on the integration of technology into teaching at [the Université du Québec à Trois-Rivières](#) in Canada uses synchronous technology to encourage student interaction and to ensure the content is always current.

At the [University of Iceland](#), students in the Faculty of Education choose a MOOC with content related to their program to follow as part of their course. In their assessments, students describe the MOOC, analyze its pedagogical structure and use of technology, and consider its implication, both for them as students and prospective teachers and for the University.

## **2. Collaborative approaches to the construction of knowledge/ building communities of practice**

To ensure students are aware of and able to use the latest professional software, students in a Graphics Design course at [George Brown College](#) in Ontario work in groups to explore, assess and report on the latest online versions to their classmates, as well as preparing documentation for future students.

Experience at the [University of Toronto](#) in Ontario highlights the structure, functioning and outcomes of online communities of practice among students in a medical visualization program, end-of-life care physicians, and a cultural competence program for health care professionals.

In graduate degree courses in the Faculty of Education at [Nipissing University](#) in Ontario, students share and create knowledge through carefully assessed participation in discussion boards, as well as peer and self-assessments.

Using synchronous learning strategies, graduate students at the [University of Ontario Institute of Technology](#) work together to learn share and create knowledge. The teacher provides enough information, guidance, and structure to allow students to build their

knowledge and skills, while, at the same time, not being the dominant presence in class.

An online course in Aboriginal Literature at [Memorial University of Newfoundland](#) in Canada uses Talking Circles, a foundational approach in Aboriginal pedagogy that encourages dialogue, respect, the co-creation of learning content, and social discourse.

The [Center for Technology, Education and Cultural Diversity](#) in Israel offers online courses bringing together students from Jewish religious, Jewish secular and Arab Muslim teacher education colleges, using a pedagogical model integrating educational discussion and cooperation to build mutual trust and respect.

The essential characteristic of an online Ed.D. program at the [University of Florida](#) in the United States is building an academic community of practice for learning and support throughout and even after the program, based on the [Community of Inquiry](#) framework that incorporates faculty, social, cognitive and learner presence.

### 3. Use of multimedia and open educational resources

Georgian College and Loyalist College in Ontario integrate virtual reality and simulations in Programs, including [Child and Youth Worker](#) for practice in dealing with difficult clients, [Justice Studies](#) with a simulation for border security training, and [clinical practice for health care students](#).

At [Seneca College](#) in Ontario, social media tools are used in courses in the School of Marketing, not only to share content and insights, but also for increased student engagement, responsibility for learning, and skills for independent and interdependent learning.

Digital Education Strategies (DES) in The G. Raymond Chang School of Continuing Education at [Ryerson University](#) in Ontario produces a wide variety of educational resources for use in courses at Ryerson and open to other institutions, including documentaries to generate discussion, present multiple viewpoints, and encourage students to take action.

An Ethics in Sports course at the [University of Windsor](#) in Ontario involves students in debates on controversial topics in sports, followed by very active exchanges of reflections, opinions, and comments on Twitter. Input is often received from people outside the class who follow the debate and discussion.

At the [University of Toronto](#) Mississauga in Ontario, the professor, a learning technology specialist and students work together to determine which software is most effective for the various aspects of language learning and practice.

The [Justice Institute of British Columbia](#) in Canada created a decision-making simulation for use in its Emergency Preparedness Program, with participants working in small groups in real-time, with carefully monitored activities and ongoing delivery of information.

The Ministry of Higher Education and Research in France supported

the development of eight [Digital Thematic Universities](#), organizations through which member institutions cooperate to develop OER. A single portal provides access to the 34,000 OER from all digital universities on one site.

[Dublin City University](#) in Ireland developed the Student Success Toolbox, a suite of OER tools for adults considering attending post-secondary education to help them through the decision stage, prepare to begin a program, and take on the first few weeks of attendance.

#### 4. Increased student control, choice, and independence

Support for student choice and independence is central to delivery, support and assessment models in numerous colleges in Ontario, including [Collège Boréal](#), [Cambrian College](#), [Canadore College](#), [Confederation College](#), [Northern College](#) and [Sault College](#). Courses are offered in varying combinations of face-to-face, synchronous and asynchronous, with online access to resources and support, so students can choose the mode and timing that best suits their circumstances.

In the Faculty of Education at [Western University](#) in Ontario, a graduate course features collaborative learning, with the instructor functioning as a co-learner. Each student researches, writes, illustrates, presents, and self-assesses the effectiveness of an online module, as well facilitating a productive and focused discussion.

A blended learning course in Organic Chemistry at [Wilfrid Laurier University](#) in Ontario stresses the development of independent learning, with the instructor using learning analytics on student activity prior to each class and their formative assessments to guide the content of the face-to-face lecture and practice sessions.

Self-study quests, based on a mobile app used in forestry and soil science courses at the [University of British Columbia](#) in Canada, take students into forest environments to find, classify and report on findings based on set questions.

The [University of Barcelona](#) in Spain provides free access to non-credit language learning online for students, faculty and staff, with support through the Self-Access Language Centre. More than 5,000 students, faculty and staff, completing more than 100,000 hours of study, took advantage of this resource.

A MOOC developed at the [Norwegian University of Science and Technology](#) offers students flexibility in learning resources, pace of learning, contribution to online discussions, timing of assessments – and the opportunity to register in the course for credit after the successful completion of three of the fifteen modules.

#### 5. Anywhere, anytime, any size learning

[Algonquin College](#) in Ontario developed an e-textbook initiative in cooperation with major publishers with the goal of providing 100% of students with 100% of their resources 100% of the time - all online and accessible to mobile devices so learning is when and where the

students choose. The online texts are enhanced with multimedia, quizzes and other features to make learning more engaging and available at costs significantly lower than print texts.

[Confederation College](#) in Ontario combines online courses from its multiple campuses to expand student options, as well as offering courses, developed at and offered through other colleges in the [OntarioLearn](#) consortium, which were assessed for equivalency to Confederation courses.

The [University of Ottawa](#) in Ontario offers two open source mobile applications suitable for students and a wider public. One app, called Nature Watch, provides tools for active monitoring and reporting of species and other environmental change indicators. The second supports health care workers in clinics to gather information from, and provide care, to migrants and refugees.

To provide enhanced access for online and face-to-face students in anatomy courses, [Western University](#) in Ontario offers a virtual slide set, available as OER, which includes two-dimensional anatomy slides and interactive 3D depictions of the brain. Students can interact with these specimens as they would with the ones in the lab, with additional capacity for magnification.

Many programs at the [University of Waterloo](#) in Ontario include cooperative education work terms. As part of this experience, students are required to complete online courses that stress skills, such as team work and communication, considered by employers. Lectures, theory, and best practices are provided online, while the active learning is through practice, participation, and reflection in the workplace.

To better serve its online students across Canada and beyond, [Yorkville University](#) in Canada devised strategies for assessing, instructing and communicating with their students during extended practicum sessions in workplace settings, regardless of their location. Assessments include lengthy reviews of videotaped interactions with clients, shared in a secure environment.

At the [University of the Highlands and Islands](#) in Scotland, programs and courses are offered in multiple formats and locations to best suit the content and the students. The designs include local programs, learning in the field supplemented with online content, networked programs for multi-campus delivery and fully online degree programs, all supplemented with extensive online resources.

## 6. New forms of assessment

To better serve its many students on work sites in remote communities and mining sites, [Northern College](#) in Ontario offers an e-proctoring service that can be used for online exams and for hand-written tests as well.

Various versions of e-portfolios are used in Ontario colleges and universities, reflecting the content of the program and the nature of

the student assignments: Creative Learning Portfolios in the Pilon School of Business at [Sheridan College](#); cuPortfolios used in multiple settings at [Carleton University](#); recording and assessing practice sessions, among many other uses in the Faculty of Music at [Wilfrid Laurier University](#); and documenting learning in Visual Arts and Built Environment at the [University of Windsor](#).

Peer assessment is supported through software designed at institutions in Ontario, including peerScholar at the [University of Toronto](#) and Peer Evaluation, Assessment and Review (PEAR) at the [University of Guelph](#).

Peer assessment is integrated into a graduate business diploma program at [Simon Fraser University](#) in Canada, so small groups of students provide marks and comments on each other's work. The purpose is formative, to encourage team interaction and consensus building and to help develop skills of reflection and synthesis.

The [Beuth University of Applied Sciences](#) in Germany offers a program to aid immigrants and refugees with IT skills in finding employment. Online modules and coaching help develop the eight key skills outlined by employers – such as team skills and language abilities relevant to the IT field. Participants earn appropriate badges by demonstrating their competencies.

## 7. Self-directed and non-formal online learning

Interest in exploring the potential of MOOCs to reach new students in new ways at [Fanshawe College](#) in Ontario led to the development and careful assessment of a MOOC on sustainable development. Four levels of achievement are part of the design with a certificate awarded for completion at each level.

SPARK (Student Papers and Academic Research Kit) at [York University](#) in Ontario is an open source resource supporting students in the development of research, writing, and learning skills. Interactive modules, divided into topics such as note taking, academic integrity and presenting arguments, offer guides, examples and further resources.

Students at [McMaster University](#) in Ontario have access to two sets of modules to increase their skills in information and geospatial literacy. Each module is divided into segments, so students can focus on their areas of greatest difficulty, using video, audio, text, and images for learning content and quizzes to assess progress and understanding.

At [Cape Breton University](#) in Canada, a course shares the oral history and traditional knowledge of the Mi'kmaq, a First Nation in Canada, as presented by the knowledge keepers of Mi'kma'ki. The course could be taken for credit and was also available as an open, free access course, presented globally through live streaming.

The in Canada offered two MOOCs that achieved completion rates of over 20%. Each was offered over five weeks; one on personal financial and tax literacy and the other on play in early childhood education.

Dual purpose MOOCs are developed and offered through the Business School at [Karlstads University](#) in Sweden. Students can register at the University and take MOOCs for credit or follow the open networked courses online for a certificate of participation. As all course materials are available under Creative Commons licensing, they can be re-packaged and re-used, such as the use of videos in on-campus courses.

Students are offered the possibility of learning about the ancient writing system of Babylonian cuneiforms through a MOOC from the [Università Ca' Foscari](#) in Italy. The MOOC was also offered on EduOpen, a network of 15 Italian academic institutions offering free access to more than 60 MOOCs. Some of the MOOCs can result in credits by paying a fee and taking an exam with the partner university.

## IMPLICATIONS AND QUESTIONS

There is a groundswell of change taking place in teaching methods. As Contact North | Contact Nord's [Pockets of Innovation Series](#) reveals, across Ontario, Canada and around the world, innovative applications of technology to teaching and learning are being developed, researched, and evaluated. The experience of remote teaching in the pandemic is also being closely watched for examples of innovative and for failures from which we can learn and already some insights are [beginning to emerge](#), especially as it relates to [design](#).

Some questions related to your experience in adapting the new pedagogy are listed below. Given your experience of teaching through a synchronous platform (Zoom, Adobe Connect, Google Meet) and an asynchronous platform (Blackboard, Canvas, Moodle, D2L's Brightspace), these are intended to encourage thoughtful reflection on your practice.

### Impact on Teaching and Course Design

A new pedagogy is intrinsically linked to teaching practice and strategies for course design, delivery and assessment.

- What new factors do you take into account in your teaching and course design and what elements of classroom practice do you maintain?
- What have you learned about student's needs, preferences, concerns, and success rates with online learning? What surprised you? What delighted you?
- How are you leveraging the emerging research on how students learn and the importance of students co-creating knowledge through project-based and group-based learning into your learning design?
- What specific strengths and limitations for online delivery are linked to the subject matter, which you teach or for which you prepare resources?
- What new approaches to assessment are you looking to explore and adopt – are these new designs focused on [continuous](#) and [authentic](#) assessment?

### **Impact on Student Learning**

Student learning is the other key component of an emerging pedagogy, with their success as the goal of all our efforts.

- What new demands are students making in terms of how they want to be taught and assessed and what are your responses?
- What are students saying about the conditions under which they experience online learning? Are their limits to access, use of technology and their technological skills which impacts their learning?
- What new roles are students taking in their online or hybrid learning and how has this changed your teaching practice?
- What new areas of student support are being built into course structures to facilitate effective online learning and what new strategies are developed to deliver them?

### **Technological Choice**

Aligning pedagogy, subject matter, assessment, and student access and success with appropriate technologies, software, and online strategies is the ongoing challenge of online teaching and learning.

- Which technologies are you using and what strengths and challenges do they present for online and hybrid course design delivery, assessment, student interaction, and student support?
- What technologies do students use to undertake research, practical work, lab work and other activities over and above the technology provided by the college or university?

Technology allows us to teach differently, to meet new needs as well as old ones. Students can also learn differently, with access to digital content, mobile delivery, new forms of assessment, learning analytics to guide choices and progress, and interaction and communication with peers around the world. As outlined above, students can now take active roles in the sharing of knowledge and shaping their own learning.

As shown in the examples above, technology helps drive innovation in teaching and learning. But equally important are the decisions faculty and instructors make about how best to use technology for what purposes and how they define their roles as teacher, guide, facilitator and/or learning participant.