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MICRO-CREDENTIALS AND THE SKILLS AGENDA

Twelve Fundamental Questions

November 2020

In an era of uncertainty punctuated by massive job loss and unprecedented economic fallout from the COVID-19 global pandemic, micro-credentials represent a real opportunity to make lifelong learning accessible to all.

In this overview, we address 12 fundamental questions about micro-credentials.

We outline the basics: what micro-credentials are, who they're designed for, who develops them and the standards that define their value.

We explore how micro-credentials help people acquire the skills they need — quickly — for the kinds of jobs that are in demand.

We examine why micro-credentials matter and how they differ from long-form learning.

We review the supports for this type of learning, what people are looking for, what's on offer, and the implications for the future of higher education.

We also examine the challenges and issues associated with the growth and development of these credentials.

QUESTION 1: WHAT ARE MICRO-CREDENTIALS?

Despite being a relatively new development in the learning marketplace (since 2013), micro-credentials such as nanodegrees, MicroMasters and digital certificates are quickly gaining prominence.

There is no Canadian agreement around the exact definition, but micro-credentials are typically short courses, varying in length, that:

- Offer a quick pathway to new employment — mostly in the private sector — for workers who lost their jobs as a result of the COVID-19 pandemic and other factors
- Are delivered in a various ways (face-to-face, online, blended, hybrid)
- Focus on a specific skill or capability in a very specific field such as health care, technology, business
- Include a rigorous, formal assessment of the learner's demonstrable competence of that specific skill
- Can be a badge, certificate, nano-degree, professional certificate, or MicroMasters recorded in a digital wallet or e-portfolio

In Ontario, micro-credentials are "transcriptable" meaning they are qualifications or certificates that a college or university can include on a learner's transcript.

QUESTION 2: WHO ARE THEY DESIGNED FOR?

Anyone can study to earn micro-credentials, but they are mainly geared toward:

- Unemployed or laid-off workers who need to **reskill** to get back to work with skills that are in demand
- People who have a job but need to **upskill** to help improve productivity and performance
- **Gig workers** such as independent contractors, online platform workers, contract firm workers, on-call workers and temporary workers who are part of a fast-growing labour market characterized by short-term contracts or freelance work rather than permanent jobs

QUESTION 3: WHO DEVELOPS THEM?

- Companies such as IBM, RBC and Google
- Professional bodies or associations, non-profit organizations
- Colleges, universities or training organizations or combinations of these organizations
- Massive Open Online Course (MOOC) providers

QUESTION 4: WHAT ARE THE STANDARDS THAT DEFINE THEIR VALUES?

Although other countries have statements of National Vocational Qualifications (NVQs), Canada does not. Red Seal apprenticeship varies by province, but each has a common, nationally agreed core. Standards will emerge over time, and transferability into a credit program or portability across Canada is expected to become a significant opportunity for learners.

QUESTION 5: WHY DO THEY MATTER?

COVID-19 accelerated patterns and trends that were already having an impact on the future of work and learning, especially the introduction of time and labour-saving technologies, and the adoption of green technologies.

The pandemic is affecting parts of Canada differently, with rural and remote communities experiencing unique challenges and the provinces being affected in different ways.

The disruption has created uncertainty for many people about their **job security** while pushing more into the fast-growing gig economy: a labour market characterized by short-term contracts or freelance work rather than permanent jobs.

About 40% of Canadian millennials and 8.2% of the Canadian workforce (1.7 million workers) are engaged in the gig economy, which is growing by about 14% a year worldwide — faster than any other form of employment.

This is no surprise. Of Canadians aged 16-24, the unemployment rate is 13.2% and many Canadians aged 25-65 (approximately 6.2 million people are in this age group) opted out of job seeking and do not appear in the unemployment numbers. To better prepare for the future, learners are engaging in learning activities on a significant scale to **upskill, reskill, retrain or develop their knowledge, understanding and capabilities** — and micro-credentials can be helpful as a relatively quick and affordable path to do these things.

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QUESTION 6: WHAT ARE THE BENEFITS?

Micro-credentials are seen as a response to the need to upskill existing employees and reskill people who are looking for work or who are unemployed. They provide professional development and lifelong learning opportunities for people working in the gig economy or in a sole proprietorship. And they can be used to enhance personal learning and support the learning agendas of individuals, teams or communities.

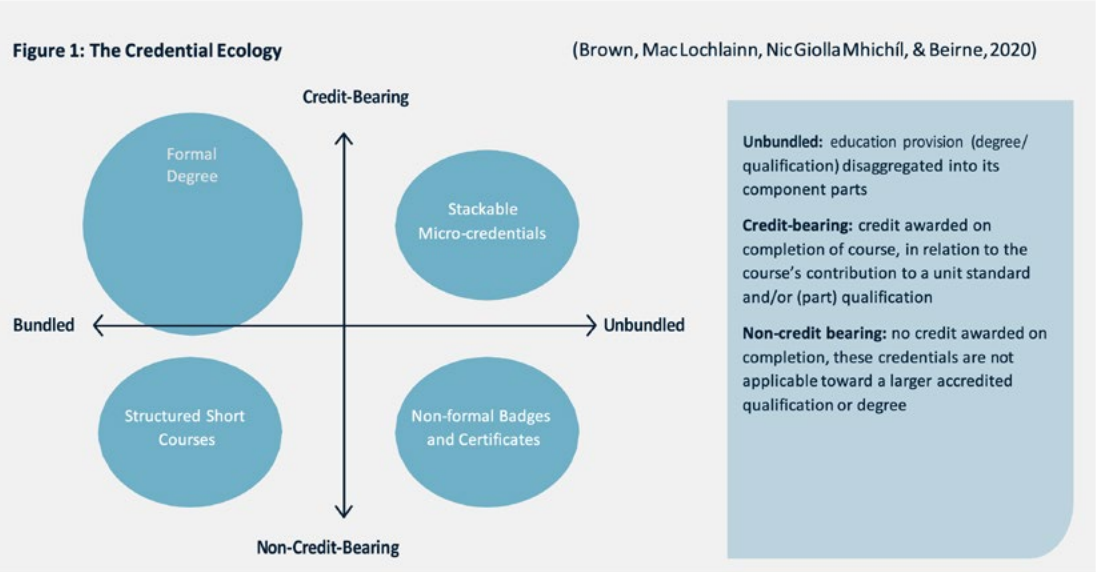
Different participants seek different outcomes from micro-credentials, as the following table shows.

The Learner	• Fast access to learning on demand • Ability to reskill and upskill conveniently and quickly • Lower costs for learning, enabled by tax credits • Flexibility • The ability to map a personal learning program by mixing and matching opportunities from different providers to create a unique program of study • Learning choices from institutions and organizations around the world • The ability to demonstrate competencies and capture these competencies • The ability to build a skills portfolio • Having skills and competencies recognized

The Training Provider	• New sources of revenue • New markets and learners for rapid return on investment • The ability to experiment and take risks with models for teaching, learning, assessment and delivery • Leveraging local expertise • Stronger links with employers, community organizations and professional bodies • The ability to explore new jobs and work opportunities without complex admission processes
Employers	• Ability to address the skills gaps among existing employees • Smarter recruitment through competency-based hiring • Employee retention and a high return on learning investments • Stronger collaboration with colleges, universities and training providers • Ability to rapidly deploy training linked to new technology, new business processes and new markets
Government	• Faster response to emerging social and economic needs for training/learning • Focused opportunities for reskilling in areas of high unemployment • Lower costs to deployment than degrees or diplomas • Existing capacities and infrastructure leveraged for faster learning outcomes

QUESTION 7: HOW DO MICRO-CREDENTIALS DIFFER FROM LONG-FORM LEARNING?

Several attempts have been made to explain the differences and connection between micro-credentials and traditional qualifications such as diplomas and degrees. Brown *et al* (2020) offered a visual statement of the landscape of credentials:



Brown, M., Mac Lochlainn, C., Nic Giolla Mhichíl, M., & Beirne, E. (2020) Micro-credentials at Dublin City University [Paper presentation]. EDEN 2020 Annual Conference, Timisoara.

Although helpful, this framework underplays some related developments. For example, some institutions permit modular approaches to micro-credentials not part of degree or credit-programs, allowing a learner to "stack" several micro-credentials into a certificate and then to transfer the certificate into a degree or diploma program. This is referred to as "modular, stackable credentials."

QUESTION 8: WHAT SUPPORTS ARE REQUIRED FOR MICRO-CREDENTIALS?

A variety of developments in Canada better position the marketplace for micro-credentials, including:

- **Tuition Credit** – Claimable since 2017 for skills-related courses and programs of study offered by a recognized educational institution or training provider.
- **Canada Training Credit** – From 2019, Canada provides a tax credit for tuition costs for learning activities provided by a legitimate provider. $250 is available in a given year is available (and can be accumulated) to a lifetime limit of $5,000. This is separate and distinct from the existing tuition credit.
- **Skills Canada** – A federal organization with a mission to "encourage and support a coordinated Pan-Canadian approach to promoting skilled careers in trades and technologies to youth and their communities" so Canada can "lead the world in skills development." However, Skills Canada does not create national vocational qualifications (NVQs) and assessments.

- **Digital credentials** – All colleges and universities in Canada are now partnering with Digitary to create a national blockchain-enabled digital credentials service. All 3 million learners in Canada will be able, once the system is in place, to access their digital credential wallet and add any credentials they earn to it. Where credentials are time-limited (the skill needs updating given new requirements or is automatically outdated due to changes in technology or new developments in that skill or competency), an existing credential can be revoked by the provider.
- **Online learning platforms** – A variety of the platforms that support online learning can be used to support the design, development and delivery of micro-credentials whether in blended or fully online modes. Competency-based assessment technologies that make use of video-based assessment or other direct evidence of demonstrable skills and competencies are critical. The leading platforms in North America — Canvas, Sakai, Moodle, Blackboard, Brightspace — are all being used to offer micro-credentials.
- **Future Skills Centre investments** – The Future Skills Centre (a federal agency investing in disruptive educational innovation) has made several strategic investments to grow interest and capabilities in micro-credentials in Canada. These include an investment in Humber College's modular stackable credentials targeting racialized peoples, people with essential skills gaps and youth newcomers and an investment in Bow Valley College's AI-enabled learning platform for competency-based learning. Its most recent call for proposals focused on reskilling the newly unemployed as a result of COVID-19.
- **Provincial supports** – Ontario now leads Canada in investment in micro-credentials ($59.5 million over three years as announced in the 2020 Ontario Budget) as part of a strategic response to the economic consequences of the pandemic. A competitive process will be used to support specific new credentials and the Ontario Student Assistant Program (OSAP) will be modified to permit its use to support learners studying micro-credentials.

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QUESTION 9: WHAT ARE PEOPLE LOOKING FOR IN MICRO-CREDENTIALS?

Not all learning relates to traditional credentials such as certificates, degrees and diplomas. Some is informal, self-study using freely available learning resources, short courses available on platforms, such as LinkedIn Learning, FutureLearn, edX and Coursera.

In high demand right now are courses in health and well-being, and information technology. Learners are also seeking specific skills related to current or future occupational intentions and personal interests and passions.

Some 644,000 Canadians enrolled in a Massive Open Online Course (MOOC) between March 1 and August 15, 2020. There were 32 million MOOC registrations in courses offered by just three MOOC providers (Coursera, edX and FutureLearn) between January 1 and August 1, 2020, with more people registering in April alone than in all of 2019.

In the early months of the pandemic, employees used some of their lockdown time for learning and development activities suggested by their employers. In addition to basic courses on virtual teamwork and effective project management for virtual teams, many employers asked their colleagues to catch up on courses dealing with changes to health and safety related to COVID-19, the impact of specific technologies like artificial intelligence (AI) and augmented/virtual reality on work processes, and web-based marketing and sales.

Many are seeking very specific, competency-based skills they need to improve their performance and profile in their current or intended future work.

The uptake in some corporate learning centres was equally dramatic, with more learning opportunities shifting to online platforms.

The notable feature of these developments is that some learners are leveraging learning platforms that are "on demand" systems. They are also looking for short learning experiences, rather than long-form credentials, and they want flexibility.

Some learners are enrolling in long-form programs — certificates, diplomas and degrees — while others are interested in "modular, stackable credentials," which when added together, contribute to a certificate, diploma or degree. Many are seeking very specific, competency-based skills they need to improve their performance and profile in their current or intended future work.

QUESTION 10: WHAT'S AVAILABLE?

The major MOOC providers currently offer more than 850 micro-credentials, with Coursera leading the way. Between mid-March and the end of July 2020, Coursera added 16 million new registered users. In the same period, the top three MOOC providers — Coursera, edX and FutureLearn — added 32 million new users. 644,279 of these were Canadian. Key areas of demand were courses in IT, health, business, languages and personal development.

Class Central has been tracking the development of micro-credential MOOCs since 2013. 73% of all micro-credential MOOCs available as of December 2019 were in business, finance and technology.

Class Central notes there is little consistency between providers or by program area in terms of what, exactly, constitutes a micro-credential. Different providers use different terms for their micro-credentials:

Provider	Terms used to describe micro-credentials
Coursera	Specializations, MasterTrack Certificate, Professional Certificate
edX	XSeries (38), MicroMasters, Professional Certificate, Professional Education
FutureLearn	Program, Graduate Certificate, Graduate Diploma

Companies such as IBM, Google, Amazon, CISCO, Siemens, Microsoft, and Ernst & Young are also offering micro-credentials, using badges and micro-certification for employee and supplier training. There are a growing number of micro-credentials for teaching professionals. Wellness Works Canada, a non-profit organization, is using competency-based assessment for the certification of workplace health and performance practitioners.

The costs to the learner vary, depending on who is offering the micro-credential, how substantial the learning activity is and what the perceived market value of the awarded credential is. For example, an edX Micro-Masters can cost $540-$1,500, while a Coursera MasterTrack can cost $2,000-$3,474, depending on the track chosen. Wellness Works Canada practitioner certification costs $450-$650.

QUESTION 11: HOW ARE COLLEGES AND UNIVERSITIES RESPONDING?

A significant response to these developments from colleges and universities is to explore offering micro-credentials and how these can relate to their existing programs through modular stackable learning.

In some countries, the government's strategic response to economic recovery amid the significant disruption of certain industries is to invest in the rapid development and deployment of micro-credentials. Australia, for example, has done just that, investing $4.3 million to support the growth of micro-credentials and to create a marketplace for them.

There is no single repository of micro-credentials created and delivered by Canadian training providers. Many micro-credentials are now emerging, with a strong emphasis on technology, leadership, digital transformation and occupational health and safety. Athabasca's Power-Ed and LMD suites, Humber College's REVIT

Canada does not yet have a National Qualifications Framework or an agreed national quality assurance regime for skills-based credentials.

As micro-credentials have emerged over the past 15 years, six stumbling blocks dominate current discussions.

information modelling certificate and McMaster University's use of badges for specific skills are all examples of the emerging offerings. There are many more in the pipeline.

Canada does not yet have a National Qualifications Framework or an agreed national quality assurance regime for skills-based credentials. Quality assurance is a provincial matter and, as can be seen from attempts to create portability of credit through credit transfer regimes, Canada has much yet to do to enable true learner course and skills portability.

QUESTION 12: WHAT ARE THE STUMBLING BLOCKS?

As micro-credentials have emerged over the past 15 years, six stumbling blocks dominate current discussions:

1. **Value and acceptance** – Is a micro-credential worth the paper it's printed on?

   How "portable" is it? Is a College X micro-credential on cybersecurity and privacy, for example, the same as a similarly named credential from University Y? There must be a national and international understanding of what competencies are required for certification, just as there is for a Microsoft certification or nursing. For a credential to be valued and accepted by all employers that seek the skills it represents, there must be common standards.

   Consider whether a certificate in customer service based on the Royal Bank of Canada's service-competency framework would be acceptable to Scotiabank, ATB, TD, Barclays, HSBC and other financial service organizations around the world. If employers are co-designing these certificates with partner post-secondary institutions, how portable are they within and between countries?

   There are no efficient and effective mechanisms, at least in Canada, for such standard setting. The market will need to decide whether College X is equivalent to University Y, which in turn makes the market for micro-credentials complicated.

   To complicate matters further, when organizations like Harvard and MIT collaborate on a MOOC-based micro-credential available on demand worldwide, how can a small college in Canada compete?

2. **How will capabilities be assessed so employers can be assured the holder of a micro-credential has the necessary skills?**

   A micro-credential must verify, in legally defensible ways, that the holder has the knowledge, capabilities and competencies the credential represents. The term "legally defensible" is important. An employee with a specific micro-credential, for example,

must be able to perform the relevant skills properly and safely. Failure represents legal risk to the employer. For example, a pilot who receives an upgrading to certification to be able to fly a specific aircraft, but who then crashes that aircraft, could pose a significant legal and economic risk to the airline.

For micro-credentials to be "game changers", assessment practices at colleges and universities must change. But for micro-credentials as a movement to be successful, there must be multiple ways of assessing capacity (text, video, testimonials, e-portfolios of work) for the student to demonstrate their capabilities under varied conditions and verified by an authenticator.

For micro-credentials to be "game changers, assessment practices at colleges and universities must change.

3. **Who specifies the competencies and capabilities within a specific micro-credential? How portable and transferable are they?**

   For a degree or diploma, the college or university is responsible for establishing the curriculum, its objectives, teaching mode and assessment. Many college and university programs have advisory boards, but these do not normally define or determine what is taught to whom and how.

   If micro-credentials are to close the skills gap and be attractive to employers, then employers need to be much more directly involved in defining the credential's scope, required competencies and capabilities and assessment strategy.

   Linked to these questions are concerns about transferability and portability. If employers and colleges in one province agree on standards and structure for a set of micro-credentials, will they be accepted by similar employers elsewhere? How portable and transferable will these be?

The fastest-growing component of the North American workforce is the freelance or "gig" worker who offers services to those willing to pay market rates. To stay competitive, gig workers need to demonstrate competence. They also need to continuously learn.

4. **Are micro-credentials effective in closing the skills gap?**

   Potential employers are looking for qualifications — degrees, diplomas or micro-credentials — as they search for and hire work-ready employees. They can look at sites such as Portfolium, RIIPEN, the blockchain-enabled Skills Passport, Credly or Valid-8. Some employers are ignoring formal qualifications like diplomas and degrees from candidates' CVs in order to focus solely on experience, skills and capabilities. Others are now requiring skills-based portfolios instead of CVs. Automated search-and-find systems such as Indeed, ZipRecruiter, Glassdoor and LinkedIn Job Search all access these kinds of evidence systems to find suitable candidates. Even more no longer require long-form credentials for occupations such as risk managers and accountants.

The fastest-growing component of the North American workforce is the freelance or "gig" worker who offers services to those willing to pay market rates. To stay competitive, gig workers need to demonstrate competence. They also need to continuously learn. Technology workers, for example, recognize that many of the skills required for technology work are new and emerging. Upwork, a site that connects gig workers to those looking to hire, reported in 2018 that 70% of the skills sought in any given year were new skills at that time. Further, few of the skills in demand required a degree or diploma.

As students question the value of long-form education in terms of cost, debt management and employability, micro-credentials look to be an alternative to skills based learning for employment: cheaper, faster and stackable. But will they close the skills gap?

The answer is simple: it depends.

It depends on what skills employers are looking for, how long it takes to acquire the skills and the level of experience the employee needs to see. Some employers are suggesting a degree or college diploma is a foundation qualification — an entry "ticket" into a field or profession — and that micro-credentials are "add-on" skills and competencies to these "base" qualifications that demonstrate both a commitment to lifelong learning and capability in specific skills. To become an IT practitioner, for example, a degree or diploma "enables the individual to enter the profession." A micro-credential in, for example, DaVinci Resolve, Py Torch, Keras, Caspio or other very specific competencies might be what closes the skills gap for very specific jobs.

5. What about quality assurance?

The model for quality assurance used for college and university credit programs is based on an understanding of what long-form credentials are and what teaching and learning for these qualifications look like.

Given the "newness" of micro-credentials, their variability and the focus on competencies, quality assurance must be different.

Given the "newness" of micro-credentials, their variability and the focus on competencies, quality assurance must be different. It is partly about market acceptance of the qualification. Will it deliver on competency? Do all forms of delivery result in the same outcome? What about the integrity of competency-based assessment?

Canada could leverage the same processes it used to create the Red Seal apprenticeship program covering 56 trades. It could imagine new mechanisms under section 7 of the Canada Free Trade Agreement (formerly the Agreement on Internal Trade) to establish a national mechanism for quality assurance, but this

will take considerable time. More likely, industry association and professional licensing bodies will initially recognize micro-credentials as meeting industry needs for skills, especially if they were closely involved in their development.

6. **"Stackability" and laddering: Can micro-credentials be stacked for credit and laddered into diplomas and degrees?**

   Micro-credentials are generally (although not exclusively) non-credit. In Kentucky, for example, some micro-courses carry some credit (0.5, 1. 1.5 etc.) and can be "stacked" to create a three-credit course, which is then transferable from the college system to the university system. There are several examples around the world, including here in Canada, in which a micro-credential can be recognized and transferred into a degree or diploma. Athabasca University's Certificate in Leadership, Manufacturing Management and Supply Chain Management is transferable to the Athabasca MBA program.

   The distinction between credit and non-credit is linked to a variety of factors, most notably how funding flows to colleges and universities. Governments traditionally fund a portion of the cost of offering credit programs (degrees, diplomas and certificates) but do not fund continuing education, except through targeted grants.

   Recognizing continuing education courses for credit was a controversial issue in the 1980s. Over time, however, it became less of an issue as more institutions are "blurring" the boundaries and using prior learning assessment and recognition mechanisms to accept learning undertaken through continuing education into for-credit programs.

   In the US, there are specific mechanisms that learners can use to achieve credit recognition for non-credit courses, including the National College Credit Recommendation Service (National CCRS), the American Council on Education (ACE College Credit Recommendation Service – CREDIT), and the Center for Lifelong Learning. Canada has no such national mechanisms. Each province has its own mechanisms for recognizing prior learning and transferring credit. The rules and standards differ between provinces.

MICRO-CREDENTIALS AND HIGHER EDUCATION: THE LONG VIEW

Given the commitments of ministers responsible for higher education in Canada, the US, Europe and Australasia, micro-credentials look set to grow in terms of presence and range. They are seen as an affordable, fast response to the work challenges

created by the pandemic and other factors. They are helping shift the focus, especially at the college level, from long-form to short-form skills-based work and are building on many years of experience of competency-based learning.

They also represent a challenge for colleges and universities, since on-demand courses offered over short periods of time —– courses that are competency-based, industry recognized and available in blended and online formats — all require a rethink in terms of some aspects of the institutions' business models. Continuing education departments are prepared for these developments, but departments within the colleges and universities that normally manage long-form credit programs will need to rapidly adjust. Micro-credentials represent a significant blurring of the lines between credit and non-credit. In doing so, they raise issues about the boundaries between the traditional functions of continuing education departments and the faculties in a college or university, especially when it comes to the idea of micro-credentials being stackable and transferable to degrees and diplomas.

Micro-credentials represent a significant blurring of the lines between credit and non-credit.

The big shift is from colleges and universities offering courses as suppliers to an education system in which industry and students create demand, which needs to be responded to rapidly, with the nature of the demand also changing frequently.

New providers — large companies, industry associations, licensing bodies — will begin to offer these credentials as the market-place expands. Faster and smarter course design, new models of assessment and new ways of forging courses through partnership all pose challenges and require agile institutions to respond rapidly to market demand and emerging opportunities.

It is not a question of if we want to offer micro-credentials, it is a question of how fast we can get to market with credentials that are supported by industry, which students are willing to pay for.

Given the decisions being made by governments to invest significantly in micro-credentials as a response to the impact of the pandemic and other factors on work and employment, it is not a question of if we want to offer micro-credentials, it is a question of how fast we can get to market with credentials that are supported by industry, which students are willing to pay for. Once this happens, there will be significant Canada-wide growth of these short-form learning activities and they will be welcomed by learners, employers and educational providers.