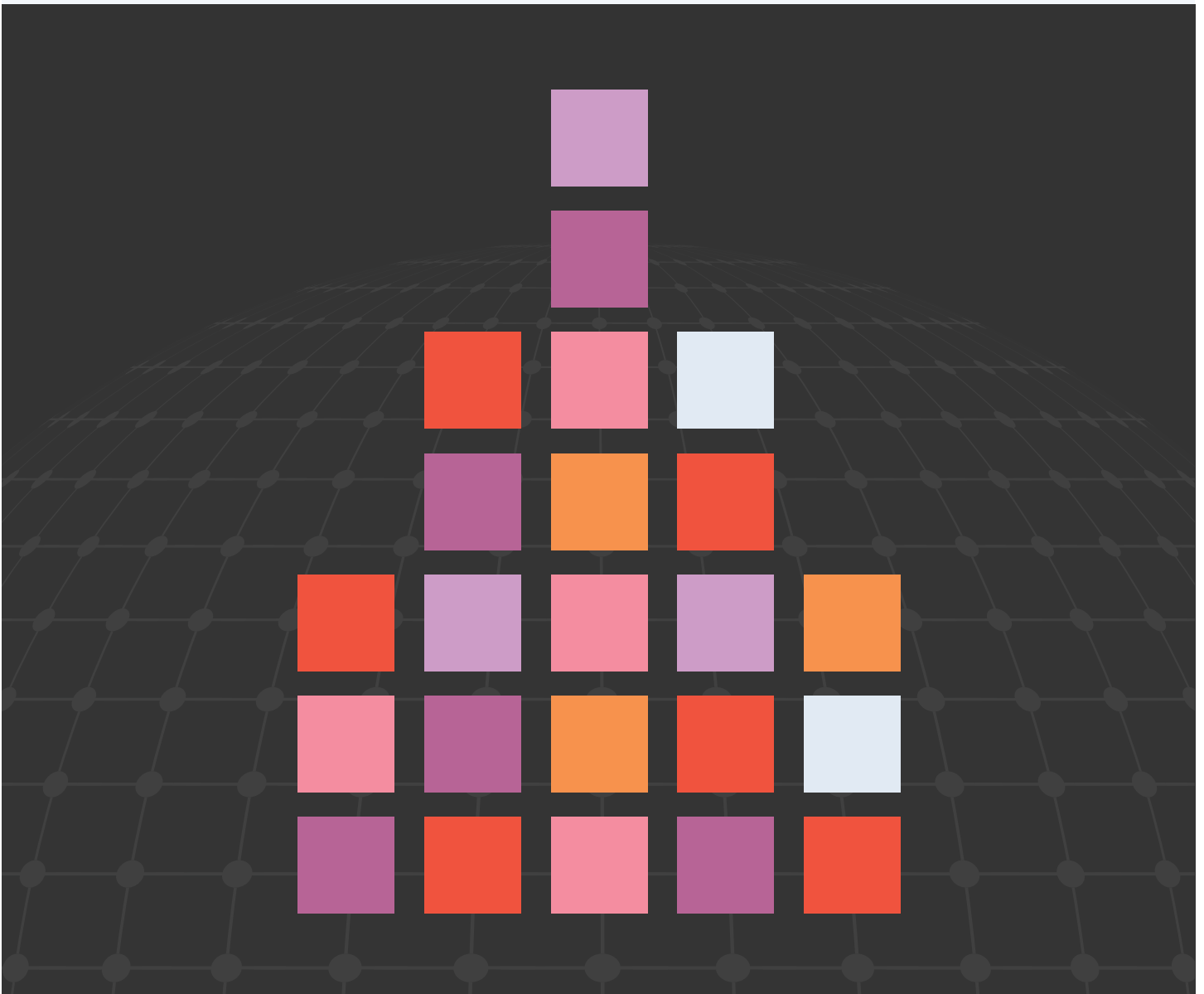


A Global Perspective on the Potential and the Complexities of Micro-credentials

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Goals of This Study

Are micro-credentials set to disrupt professional and higher education to the same extent that Netflix disrupted the entertainment industry? Given the rapid acceleration of technology use and changes of work practices across many areas of employment during the pandemic – we are facing a world where learning, skill and knowledge agility and adaptability are key. There is a rush toward micro-credentials globally to meet these new employability and other learning needs. While micro-credentials offer a great deal of potential, there are also complexities regionally and globally. What are the opportunities and what can we learn from those at the front of the race? How do we design micro-credentials that have credibility?



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This global whitepaper is a 'must read' for any institution or professional entity that is exploring or thinking about starting a micro-credential initiative. Its foci are the challenges and considerations that are key to success in vocational, university & professional micro-credential learning market. This whitepaper describes trends and developments from around the world that explores the following questions:

- | **What is the potential of micro-credentials?**
- | **What do we really mean by micro-credentials?**
- | **How are micro-credentials quality assured and accredited?**
- | **How do we architect an effective micro-credential ecosystem?**
- | **What are 10 critical things we need to do to get started with micro-credentials?**

What is the potential of micro-credentials?

Micro-credentials represent part of a global shift toward the ways we can equitably access life-long and life-wide learning, flexibly upskill and reskill, choose our own learning journeys and pathways, and shorten the time required to achieve our specific learning goals. Scanning the headlines of global publications and websites would suggest that micro-credentials have taken professional and higher education by storm. However, we need to keep in mind that short competency or outcomes focused courses have been an essential part of adult, vocational and professional education for many decades¹. How and why are micro-credentials different and why are they such a hot topic globally?

At the heart of the storm around micro-credentials is the significant disruption and unbundling of traditional education. Analogies could be made with the disruptive innovator Netflix which revolutionized the ways people could access entertainment through its game-changing subscription video streaming service. Are micro-credentials set to disrupt professional and higher education to the same extent? Certainly, micro-credentials are paving the way to a new tertiary & professional education landscape that is likely to continue to evolve based on demand.

Flexibility versus constraint

A global narrative is emerging around micro-credentials that suggests they will solve a range of problems that have long constrained traditional education models – particularly from the perspectives of learners and employers. For example, Cote and White² (2020, p.8) highlight some of the key pain points of traditional education that micro-credentials have potential to address:

- The long duration of study (and thus commitment)
- The relative inflexibility of programs that are more configured toward institutional, rather than learner needs
- Often inadequate recognition of prior learning
- Slow or limited innovation in pedagogy
- Insufficient and opaque approaches to supporting students for career-readiness
- Often weak alignments with the current and future workforce needs
- The reluctance to commit to online and digitally-enabled learning.

¹ Brown, M., Mhichil, M. N. C., Beirne, E., & Mac Lochlainn, C. (2021). The global micro-credential landscape: Charting a new credential ecology for lifelong learning. *Journal of Learning for Development*, 8(2), 228-254.

² Cote, A. and White, A. (2020) 'Higher education for lifelong learners: A roadmap for Ontario post-secondary leaders and policymakers', Ontario 360, 17 December. <https://on360.ca/policy-papers/higher-education-for-lifelong-learners-a-roadmap-for-ontario-post-secondary-leaders-and-policymakers/>

Conversely, micro-credentials can be offered with much more flexibility for learners, workers, businesses and industries.

- The duration can be short
- They can often be commenced at any time, often online, and at a time that suits the learner
- They can offer 'just-in-time' or 'on-demand' learning—for individuals seeking to reskill or upskill in specific areas and achieve specific career goals and shifts
- They can be designed to recognize and certify prior learning
- Pedagogical innovation is still emerging—but could arguably be applied quite quickly
- They are often targeted toward specific career skills, knowledge and capabilities based on industry and workforce needs
- While they can be offered online, face-to-face or in hybrid modalities—there is a distinctly 'digital' aspect to micro-credentials—especially when it comes to badging and verifying achievement

Rapid reskilling & upskilling

Together, all this flexibility for learners means no waiting for a subject to be offered 6 months or even a year later. No need to take a whole degree to acquire in-demand skills, knowledge and know-how that you need now. Many around the globe are realising that micro-credentials, like Netflix, are beginning to revolutionize the ways people can access learning and can respond rapidly to the in-demand and emerging changing career and learning needs that have come about due to technology-acceleration and business model pivots that occurred before and throughout the COVID-19 pandemic.

A spoiler alert though, as with many innovations the impact of micro-credentials is still under the microscope (think Gartner Hype Cycle). For example, Boud and Jorre de St Jorre³ found that, as yet, 'few studies have examined the impact of short-courses or micro-credentials on skills or employment outcomes' (2021, p.18).

³Boud, D., & Jorre de St Jorre, T. (2021) The move to micro-credentials exposes the deficiencies of existing credentials. *Journal of Teaching and Learning for Graduate Employability*, 12(1), 18-20.

More equitable and accessible learning

Globally, the interest in micro-credentials is also based on broader claims around more equitable and accessible learning such as:

- They widen participation in education — particularly for equity groups who have had limited access to traditional education⁴
- They are better positioned to support lifelong learning, and inclusion¹⁵
- They offer more agile and personalized ways to upskill or reskill — thereby enhancing employability prospects for learners
- They offer greater flexibility in terms of learning entry and exit points⁵
- They offer more flexibility for professional and part-time students with work and/or care responsibilities¹⁵

Micro-credentials can be designed as on-demand 'bursts of learning' that can be completed at a pace that works with, not against, other priorities of individuals and businesses. That means learners themselves can prioritize what to learn, when to learn and how long to learn, to align with their other life, career or business needs. Potentially, learners can speed learning up, binge learn, or slow it down. Micro-credentials can be untethered to a timeline, and certainly to seat-time, and may be non-credit or credit bearing. This is all quite a revolution compared to most traditional models of higher and professional education.

Micro-credentials can be designed as on-demand 'bursts of learning' that can be completed at a pace that works with, not against, other priorities of individuals and businesses

However, like Netflix, there are critics too. Brown and Mhichil (2021)⁶ caution that untethered micro-credentials could just be 'a wolf in sheep's clothing'. Some tension is centred on the central philosophical question of the true purpose of higher education. That is, should higher education primarily serve the vocational and economic needs of a nation or should it be more liberally focused on the whole individual and their personal development? As an example of this critique, Ralston⁷ (2021) argues that micro-credentials focus on a discourse of employability that erodes the higher value and intent of higher education. Others like Wheelahan and Moodie⁸ (2021, p.1) see micro-credentials as trumped up 'gig qualifications for a gig economy' that focus higher education narrowly toward vocational or employability outcomes.

⁴Nuffic. (March 2022). The rise and recognition of micro-credentials: Stacking modules and the future of qualification. Nuffic. <https://www.nuffic.nl/sites/default/files/2022-03/The%20rise%20and%20recognition%20of%20micro-credentials.pdf>

⁵French, S. (2015). The Benefits and Challenges of Modular Higher Education Curricula. The University of Melbourne. <https://melbourne-cshe.unimelb.edu.au/resources/categories/occasional-papers/the-benefits-and-challenges-of-modular-highereducation-curricula>

⁶Brown, M., & Mhichil, M., (2021). 'A wolf in Sheep's clothing'. Higher education: Ireland's Education Yearbook, 315, p.314-321.

⁷Ralston, S. J. (2021). Higher education's micro-credentialing craze: A post-digital-Deweyan critique. Post-digital Science and Education, 3, 83-101. <https://doi.org/10.1007/s42438-020-00121-8>

⁸Wheelahan, L. and Moodie, G. (2021) 'Gig qualifications for the gig economy: Micro-credentials and the "hungry mile"', Higher Education. DOI: 10.1007/s10734-021-00742-3.

This kind of critique sidelines a growing body of research and advocacy for a 'student first' approach to higher education. Paul LeBlanc's book⁹ 'Students first: Equity, access and opportunity' (2021) provides a compelling argument for why the traditional constraint of time and credit hours is leaving so many potential learners behind, and in doing so, creating barriers to their future financial and social success. LeBlanc advocates for micro-credentials as a logical way that learners, not systems, can control how much they learn, when they learn, what they learn and how much time it takes to certify their knowledge. The inequities of affordability and access due to traditional models of education are described elegantly throughout the book and seem highly pertinent to the complex world we are all now navigating.

Additionally, this short piece from Anthology's Dr Justin Louder, makes the case for institutions of higher education to consider how they could invest in micro-credentials in order to respond to equity groups that have been underserved whilst also mitigating the predicted enrolment cliff in the USA.

Institutions of Higher Education Need to Diversify Offerings to Counteract the Enrollment Cliff and Increased Program Competition.

Dr Justin Louder (Associate Vice President, Academic Innovation, Anthology)

According to the National Center for Education Statistics (NCES) IPEDS data, the number of master's degree programs offered in the United States swelled by 24% between 2012 and 2020, growing from 32,148 to 39,840 programs. That is over 900 new programs per year on average or a 24% growth rate in supply. In addition, we know that starting in 2025 the number of college-aged students (18–24) is predicted to decline by more than 400,000 students.¹⁰ Therefore, if institutions will have fewer undergraduate students starting in 2025 it would mean that there will be fewer students looking for a graduate degree program. Add this enrollment shift and increased competition to post-pandemic education where there is a larger population of students who are economically challenged, and institutions of higher education have three distinct areas that could cause them to face significant enrollment challenges in the coming years.

One option to counter-act these enrollment challenges is to diversify programmatic offerings away from the traditional degree and offer micro-credentials, short courses, and badges. These short programs can help students reskill or upskill for the new job market without having to take on a significant tuition burden.

⁹ LeBlanc, P. (2021). Students first: Equity, access and opportunity in higher education, Harvard Education Press, Cambridge, Massachusetts

¹⁰ Bransberger, P., Falkenstern, C., & Lane, P. (2020, December). Projections of high school graduates (Knocking at the Door). Western Interstate Commission for Higher Education.

We know that sixty-two percent of Americans that looked at reskilling options during the pandemic looked to non-degree and skills training programs to prepare for new roles. Only 16% of individuals looking at additional educational programs looked at bachelor's degrees, 10% at graduate degrees, 12% looked completing an associate degree.¹¹ This shows us that students are looking more to non-degree educational programs to help them compete in the job market.

We also know that these students looked to competing these non-degree options outside of traditional higher education providers. Fifty-one percent of the non-degree options were awarded outside of higher education. This 51% can be broken out into professional organizations (15%), businesses (10%), governmental organizations (17%), and other providers (9%).

Only 49% of the skills trainings came from institutions of higher education. This data shows that students are looking outside of the traditional model of education for skills, which means that institutions will need to identify areas that will serve students outside of a degree. Non-degree and skills training options offered by institutions of higher education could also lead students to stack credentials together into multi-disciplinary degree programs.

So, can micro-credentials live up to all our expectations? Well, potentially yes, if we truly focus on understanding learner and industry needs and preferences, if we truly adopt innovative pedagogies, and if we design intentionally for 'micro-credentials' that offer meaningful, flexible learning with a great learner experience (think 'bingeable') and if they can be clearly understood and 'adopted across the economy as a whole, not only by credentialing institutions, but also by employers and industries at an everyday level'.¹² So let's explore some of the global complexities around micro-credentials, starting with the twisty ambiguities around defining micro-credentials.

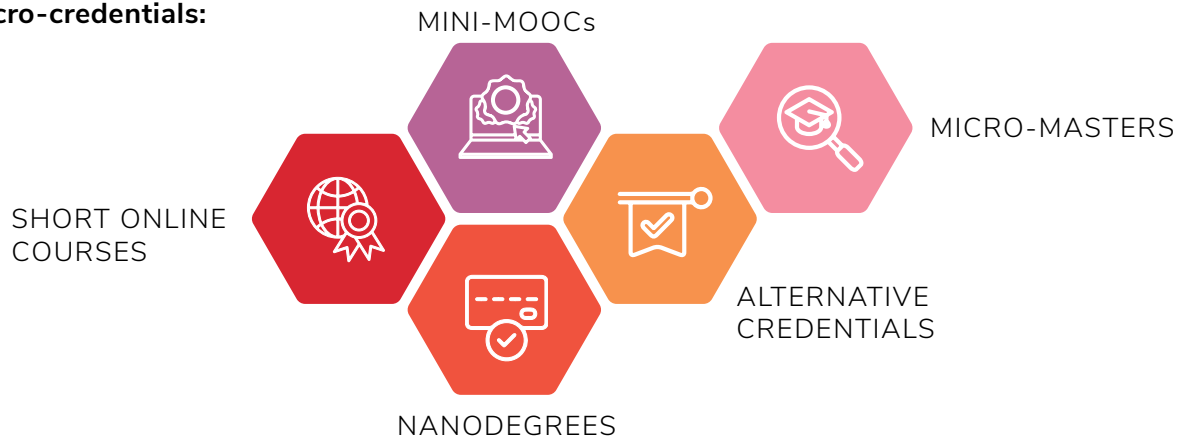
¹¹ Hanson, A. (2021, July 28). Examining the value of nondegree credentials. Center for Education Consumer Insights. Retrieved February 15, 2022, from <https://cci.stradaeducation.org/pv-release-july-28-2021/>

¹² Cuenco, M. (2022). Micro-credentials in flux: Challenges, opportunities and insights from FSC's portfolio, Micro-credentials Learning & Insights Bulletin March 2022, Future Skills Centre, Canada.

What do we really mean by micro-credentials?

Across the globe, a common point of confusion about micro-credentials is in defining just what they are. A difficult part of the issue here is that the term micro-credentials is often used interchangeably with other terms for short-form courses or degrees that have emerged across the globe, particularly in the past two decades. For example, micro-masters, nanodegrees, alternative credentials, digital credential, and digital badges.¹³

Examples of micro-credentials:



The conceptual confusion about what micro-credentials are extends to the emergence of a plethora of definitions for different regions and institutions across the globe. That is, in recent years, different countries, regions, industries, organisations and institutions have attempted to define micro-credentials, articulate standard micro-credential elements, and provide principles for designing and issuing micro-credentials. But has all this work been aligned? The short answer is 'no'.

Despite surging popularity with learners, micro-credentials currently lack a globally accepted definition.

So a pervasive problem is that we (still) have no globally accepted definition of micro-credentials (Oliver, 2022).¹⁴ This conceptual ambiguity means that the recognition and portability of micro-credentials across countries, regions, industries, organisations and institutions is all the more complex and thus limits the potential of micro-credentials to respond to the needs of a global workforce and global education industry.

¹³ Brown, M., Mhichil, M. N. C., Beirne, E., & Mac Lochlainn, C. (2021). The global micro-credential landscape: Charting a new credential ecology for lifelong learning. *Journal of Learning for Development*, 8(2), 228-254.

¹⁴ Oliver, B. (2022) Towards a common definition of micro-credentials. Paris: UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000381668>

Agreements and ambiguities of global definitions

Table 1 below details a few recently adopted definitions around the globe in different countries or institutions (alphabetical order) to give the flavour of both the commonalities and differences in their descriptions.

Australia	Micro-credentials are a certification of assessed learning or competency, with a minimum volume of learning of one hour and less than an Australian Qualifications Framework (AQF) award qualification, that is additional, alternate, complementary to, or a component of, an AQF award qualification. (National Micro-credentials Framework, November 2021) ¹⁵
Canada	A micro-credential is 'a representation of learning, awarded for completion of a short program that is focused on a discrete set of competencies (i.e., skills, knowledge, attributes), and is sometimes related to other credentials' Higher Education Quality Council of Ontario, Canada: (Pichette, 2021): ¹⁶
Europe	'Micro-credentials certify the learning outcomes of short-term learning experiences, for example a short course or training. They offer a flexible, targeted way to help people develop the knowledge, skills and competences they need for their personal and professional development. They form part of a culture of lifelong learning, which helps people thrive in society, the labour market and their personal lives.' Council of the European Union (16 June, 2022) ¹⁷
Malaysia	'Micro-credential is defined as digital certification of assessed knowledge, skills and competencies in a specific area or field which can be a component of an accredited programme or stand-alone courses supporting the professional, technical, academic and personal development of the learners.' ¹⁸
New Zealand	<p>'A micro-credential is an award that is not a qualification. NZQA quality assured micro-credentials:</p> <ul style="list-style-type: none"> • are listed on the Qualifications and Credentials Framework • are delivered by registered tertiary education providers • can be up to 40 credits in size and at any level of the framework • have learning outcomes • have evidence of need from employers, industry, workforce development councils, iwi, and/or communities, as appropriate. <p>Micro-credentials are part of New Zealand's regulated education and training system.'¹⁹</p>

¹⁵ Australian government Department of Education, Skills and Employment (Nov, 2021) National Micro-credentials Framework, PWC. <https://www.education.gov.au/higher-education-publications/resources/national-microcredentials-framework>

¹⁶ Pichette, J., Brumwell, S., Rizk, J., Han, S. (2021). Making sense of micro-credentials. Toronto, Higher Education Quality Council of Ontario.

¹⁷ European Commission (14 Jul 2022), 'European council approves measures to standardize micro-credentials'. <https://education.ec.europa.eu/news/european-council-approves-measures-to-standardise-micro-credentials#:~:text=Micro%2Dcredentials%20certify%20the%20learning,their%20personal%20and%20professional%20development>

¹⁸ Malaysian Qualifications Agency. (2020). Guidelines to good practices: Micro-credentials.

¹⁹ <https://www.nzqa.govt.nz/providers-partners/approval-accreditation-and-registration/micro-credentials/>

<p>New Zealand</p>	<p>A micro-credential is an award that is not a qualification. NZQA quality assured micro-credentials:</p> <ul style="list-style-type: none"> • are listed on the Qualifications and Credentials Framework • are delivered by registered tertiary education providers • can be up to 40 credits in size and at any level of the framework • have learning outcomes • have evidence of need from employers, industry, workforce development councils, iwi, and/or communities, as appropriate. <p>Micro-credentials are part of New Zealand's regulated education and training system.¹⁹</p>
<p>UK</p>	<p>Micro-credentials have a key role to play in upskilling and re-skilling the workforce as short, credit-bearing courses that support a learner-led engagement in higher education which could be spread over many years. Micro-credentials would not normally constitute an award in their own right, but they have standalone value and could also contribute to a recognised qualification. They also widen access to learners who might not have considered a more traditional approach to achieving a qualification, as well as potentially assisting with meeting skills needs for employers and learners. QAA's Micro-credentials characteristics statement, May 2022²¹</p>
<p>USA (not adopted across the USA)</p>	<p>Micro-credentials 'verify, validate and attest that specific skills and/or competencies have been achieved; are endorsed by the issuing institution; having been developed through established faculty governance processes; and are designed to be meaningful and high quality' (State University of New York, 2019)²²</p>

Adopted definitions from across the globe

Recently, Emeritus Professor Beverley Oliver (2022),²³ known for her early leadership of micro-credential initiatives in Australia, was commissioned to craft a common definition of micro-credentials in a commissioned paper by UNESCO. She drew on the contributions of a large global expert panel (50 representatives) from a wide range of countries, education providers, quality and qualification authorities, professional associations and others. Using an approach adapted from the Delphi Method, the panel of experts contributed feedback on three versions of definitions. Her 'Version one' definition distilled the key characteristics of micro-credentials from 15 definitions that had been recently published in global policy documents. The characteristics were (in order of most frequently mentioned):

1. Certification
2. Relation to other credentials
3. Outcomes and assessment
4. Standards and quality assurance
5. Purpose
6. Duration
7. Ownership, portability, shareability
8. Providers of micro-credentials
9. Security
10. Mode of delivery

²⁰ Kato, S., V. Galán-Muros and T. Weko (2020), "The emergence of alternative credentials", OECD Education Working Papers, No. 216, OECD Publishing, Paris

²¹ QAA (30 May 2022), Micro-credentials characteristics statement. <https://www.qaa.ac.uk/quality-code/characteristics-statements/micro-credentials#>

²² <https://www.suny.edu/microcredentials/program-development/>

²³ Oliver, B. (2022) Towards a common definition of micro-credentials. Paris: UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000381668>

Oliver's fourth and final definition (for the commissioned work) is still not officially UNESCO endorsed, but rather, considered as 'an outcome of the preliminary study'. It is as follows:

A micro-credential: Is a record of focused learning achievement verifying what the learner knows, understands or can do.

- Includes assessment based on clearly defined standards and is awarded by a trusted provider.
- Has standalone value and may also contribute to, or complement, other micro-credentials or macro-credentials, including through recognition of prior learning.
- Meets the standards required by relevant quality assurance.²⁴

However, some critical aspects were omitted that do not help the complexity of micro-credentials. For example, duration, ownership, portability, shareability and security. Oliver (2022) concedes that consensus was not achieved in some areas. The OECD²⁵ also highlights tensions in achieving consensus on the following:

- How micro-credentials fit with other short-form certified offerings in different education systems
- The variation in study load and certification process itself
- How micro-credentials will be recognized and situated within existing qualifications frameworks and models
- The lack of standing of micro-credentials in the International Standard Classification of Educational Qualifications (ISCED) places limits on the portability internationally

While there are clearly tensions about what Micro-credentials are, another area of global complexity is accreditation and Quality Assurance.

How are micro-credentials quality assured and accredited?

All of these tensions around how we define micro-credentials are central to global thinking around Quality Assurance and Accreditation. The need to articulate validating frameworks is a most critical issue^{26 27} Compared to traditional education where qualification systems are already defined, micro-credentials are in a more uncertain state. How will learners know whether their learning will be recognized by employers (regionally, nationally, internationally)? Will learners be able to stack micro-credentials to serve as a pathway into future studies? How will employers and other institutions know whether particular micro-credentials are valid and trustworthy and that duration and effort are proportionate to earned credit? The great variation in micro-credentials that we are now observing is making these questions even more complex.²⁸ In turn, they are limiting the potential of micro-credentials including their portability across professions, regionally, nationally and internationally.²⁹

²⁴ Towards a common definition of micro-credentials - UNESCO, <https://unesdoc.unesco.org/ark:/48223/pf0000381668>.

²⁵ OECD Policy Perspectives (no.39), 2021

²⁶ OECD Policy Perspectives (no.39), 2021

²⁷ Oliver, B. (2019). Making micro-credentials work for learners, employers and providers. Melbourne: Deakin University. <http://dteach.deakin.edu.au/wp-content/uploads/sites/103/2019/08/Making-micro-credentials-work-Oliver-Deakin-2019-fullreport.pdf>

Across the globe, different regions are dealing with the question of validating frameworks, quality and accreditation differently. For example, New Zealand, Malaysia, Australia and Europe are quite advanced in providing specific micro-credential frameworks and guidelines aligned with qualifications frameworks—to bring more surety, coherency and quality assurance and consumer information to the micro-credential ecosystem.

Table 2 below provides an overview of the Australian National Micro-credentials Framework (Nov, 2021).

National definition	A micro-credential is a certification of assessed learning or competency, with a minimum volume of learning of one hour and less than an AQF award qualification, that is additional, alternate, complementary to or a component part of an Australian Qualifications Framework (AQF) award qualification (https://www.aqf.edu.au/).
What constitutes a micro-credential?	✓ Vocational Education and Training (VET) skill sets or units of competency.
	✓ Modularised, assessed components of existing higher education curriculum or subjects.
	✓ Industry learning that is assessed (such as vendor certifications, professional learning).
	✓ Other forms of assessed learning or competencies (e.g. Vocational Education/ Higher Education/Industry courses not currently accredited by a regulatory authority, and those by other providers).
What does not constitute a micro-credential	✗ Unassessed learning or courses, including work-integrated learning without an assessment.
	✗ Badges which are obtained through participation only (i.e. without an assessment).
	✗ Formal qualifications within the AQF and macro-credentials, including diplomas, certificates and masters degrees.
Unifying principles	<ul style="list-style-type: none"> • Outcome-based. • Driven by industry-need. • Tailored to support lifelong learning. • Transparent and accessible

²⁸ Cowie, N., & Sakui, K. (2022). Micro-credentials: Surveying the landscape. In T. Cooper & J. York (Eds.), *Remote Teaching and Beyond 2021*. Proceedings of the JALTCALL 2021 Conference (pp. 15-27). <https://doi.org/10.37546/JALTSIG.CALL.PCP2021-02>

²⁹ Oliver, B. (2021, September). A conversation starter: Toward a common definition of Micro-credentials. Paris, UNESCO.

<p>Critical information requirements</p>	<ul style="list-style-type: none"> • TITLE (in plain English) • PROVIDER (including partner providers, co-branding partnerships & industry endorsers) • CONTENT/DESCRIPTION (structure, summary of content/ topics taught) • LEARNING OUTCOMES (knowledge, skills and competencies acquired) • LANGUAGE (of instruction) • DELIVERY MODE (onsite (incl. location), online, blended, and whether synchronous or asynchronous engagement required) • DATE OF DELIVERY (start/end with outline of schedule or whether self-paced) • INHERENT REQUIREMENTS (physical resources required to undertake the micro-credential) • PRICE AND FINANCIAL ASSISTANCE (cost to learners including taxes, discounts, government funding and payment mechanisms) • ASSESSMENT (method and type of assessment, location if onsite) • CERTIFICATION (proof of learning outcomes being met) • CREDIT/OTHER RECOGNITION (type of recognition – e.g. credit toward award courses or vendor/industry certifications, pathways or other recognition) • QUALITY ASSURANCE (statement of quality assurance processes applied such as provider or CRICOS codes, regulator, and approach to academic integrity) • PRE-REQUISITES (prior micro-credentials or level of experience that must be completed prior to the referenced micro-credential)
<p>Recommended elements</p>	<p>→ EXPIRATION OF THE MICROCREDENTIAL</p> <hr/> <p>→ DEPTH OF LEARNING</p> <hr/> <p>→ JURISDICTION</p> <hr/> <p>→ INDUSTRY SUPPORT</p> <hr/> <p>→ RECOMMENDED PRIOR</p> <hr/> <p>→ STACKABILITY</p> <hr/> <p>→ INDUSTRY/ OCCUPATION</p>

Minimum standards	1. Learning outcomes must be clearly stipulated.
	2. When describing foundation or general capabilities, providers will consider the descriptors contained within the Australian Core Skills Framework. Note that additional capability taxonomies will be considered in a future version of this framework.
	3. Micro-credentials require assessment/s. This assessment/s must assess the attainment of learning outcomes. For transparency reasons, the type of assessment/ assessment method must be clearly stated.
	4. Micro-credentials are required to stipulate volume of learning and to have a minimum of one hour of volume of learning and less than that of an AQF award qualification.
	5. Micro-credentials will consider signifying the mastery achieved by a micro-credential, where the primary purpose of a micro-credential is not credit-bearing. This can be a best-fit or estimate.
	6. Where applicable, micro-credentials will clearly stipulate industry-recognition, where the micro-credential is recognised by a professional body, satisfies or aligns to an industry standard or professional development requirement, or constitutes recognition towards an industry or vendor certification.
	7. Where applicable, micro-credentials will clearly stipulate credit-recognition, where the micro-credential is recognised by an education institution for the provision of specified or unspecified credit or advanced standing. This stipulation should outline the nature of the credit and the AQF level/s of the qualifications that the micro-credential leads to (rather than mapping to the AQF level outcomes). Where the micro-credential is recognised for credit only when "stacked" with other micro-credentials, this should be clearly stipulated.
	8. Where an issuing authority has not applied a regulated standard (i.e. the standards and academic integrity processes applied to award courses or components within a training package) to a micro-credential, they must provide a statement of assurance of quality on the marketplace— e.g. a profile of the provider/ institution, a description of the quality assurance processes undertaken, and the process for review/ updating the micro-credential.

For more details: <https://www.education.gov.au/higher-education-publications/resources/national-microcredentials-framework>

Table 2: Example: Australian National Micro-credentials Framework (Nov, 2021)

In Canada, provincial and pan-Canadian standards for micro-credential accreditation are in very early stages and provincial governments are exploring micro-credentials with great interest and support.³⁰ In the USA, this kind of national approach is more complicated by the fact that different regional accrediting commissions exist and these do not oversee non-credit programs. McGreal & Olcott Jr³¹ surmise that it is likely that the specialized agencies that oversee professional programs are better positioned to ensure quality of both credit and non-credit micro-credentials in the US. In Japan, whilst there is very limited focus on micro-credentials and no national qualifications framework, Cowie & Sakui³² report some precursors to micro-credentials exist such as MOOCs, digital badging projects and industry-related upskilling projects using micro-credentials — pointing to the need to start thinking about a national approach.

We are also starting to see the emergence of micro-credential Quality Assurance policies and procedures at different institutions around the globe. For example, Macquarie University in Australia, have created their micro-credentials policy to 'set out the principles and procedures for quality assurance of the University's micro-credentials including but not limited to design, approval, delivery, monitoring, and review'.³³ At the State University of New York (SUNY), a taskforce was formed to create a policy that would ensure their micro-credentials 'would carry the same quality and rigor as any degree program offered'.³⁴ This extended to articulating a SUNY definition of micro-credentials, guiding principles and implementation support. Canada's eCampus Ontario has constructed a micro-credential toolkit that includes a section on quality assurance and another advising on policy and regulation of micro-credentials (highlighting on global practices).³⁵ And in Ireland, the Irish Universities Association (IUA), in partnership with seven Irish universities, is working to:

... be the first European country to establish a coherent National Framework for quality assured and accredited micro-credentials. IUA project partner universities are collaborating to develop, pilot and evaluate the building blocks required for a transformation in lifelong and life-wide learning through micro-credentials. Micro-credentials developed at partner universities will set the standard for excellence in flexible and agile learning.

*We are working in partnership with learners and our Enterprise Advisory Group, comprising senior enterprise members from business representative organisations, enterprise agencies, private sector companies and state bodies with responsibility for skills to change thinking about and engagement structures with university learning. We are focusing on learners who are seeking to up-skill, re-skill, return to employment or change careers.*³⁶

So there are significant efforts in play to articulate validating frameworks for quality assurance and accreditation of micro-credentials and to change how higher education can be offered to meet the needs of learners and industries. These important efforts will help to shape the ways this still-emerging and disruptive innovation can reach potential. However, global portability of micro-credentials will remain complex and unrealized until we can truly join up global thinking and efforts around quality assurance, qualification levels and accreditation.

³⁰ Cuenco, M. (2022). Micro-credentials in flux: Challenges, opportunities and insights from FSC's portfolio, Micro-credentials Learning & Insights Bulletin March 2022, Future Skills Centre, Canada.

³¹ McGreal, R., & Olcott, D. Jr. (2022). A strategic reset: Micro-credentials for higher education leaders, Smart Learning Environments 9(9), <https://doi.org/10.1186/s40561-022-00190-1>

³² Cowie, N., & Sakui, K. (2022). Micro-credentials: Surveying the landscape. In T. Cooper & J. York (Eds.), Remote Teaching and Beyond 2021. Proceedings of the JALTCALL 2021 Conference (pp. 15-27). <https://doi.org/10.37546/JALTSIG.CALL.PCP2021-02>

³³ <https://policies.mq.edu.au/document/view.php?id=181#:~:text=Section%20%20%2D%20Policy,provide%20credit%20towards%20formal%20qualifications.>

³⁴ <https://system.suny.edu/academic-affairs/microcredentials/suny-launches-new-micro-credential-policy/>

³⁵ <https://ecampusontario.pressbooks.pub/microcredentialtoolkit/chapter/policy-and-regulation-of-micro-credentials/>

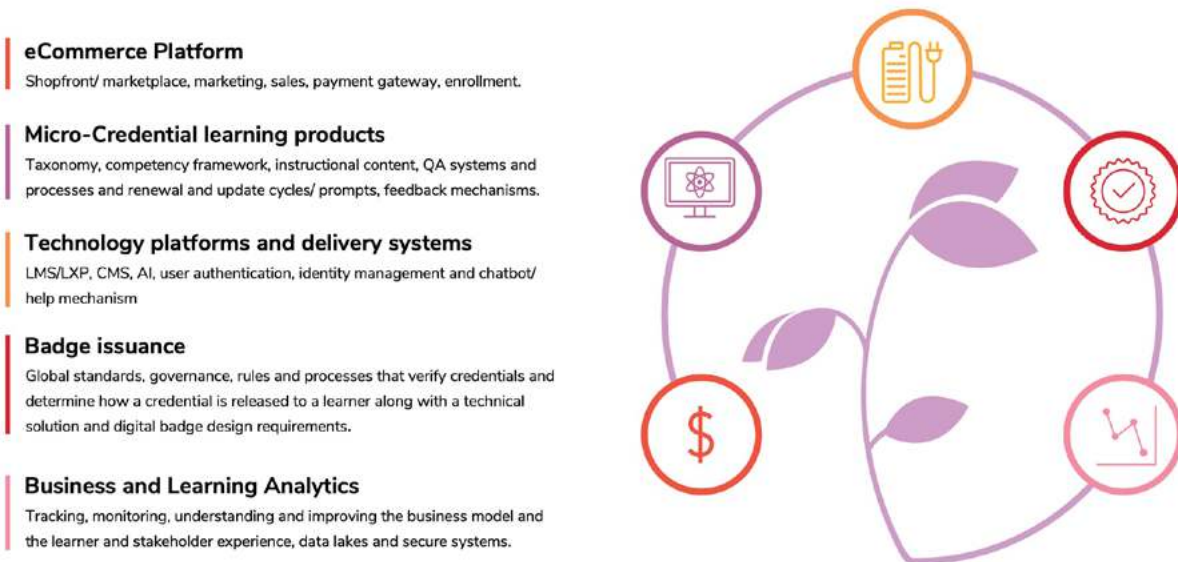
³⁶ <https://www.iua.ie/ourwork/learning-teaching/microcreds/microcreds-project-overview/>

How do we architect an effective micro-credential ecosystem?

Micro-credentials have digital components that require a digital ecosystem. The diagram below offers a high-level view of key elements of the micro-credential ecosystem. Some elements may differ depending on your region, quality requirements, business models, and available technologies.

The diagram starts with an ecommerce platform. Potential learners and employers need to discover your micro-credentials and so you need a shopfront with some kind of marketing or branding, a secure payment gateway and a mechanism for learners to enrol. Next, is your micro-credential learning products. You need to be able to digitally manage your curriculum, competency frameworks and continuous improvement processes. Then, to the technology platforms and delivery systems. Various systems will be required to support user authentication, to house instructional content, to offer secure assessment and learner support etc. These are foundational. Badge issuance is of course key to micro-credentials. Badges need to be designed, adhere to global standards, be verifiable and secure and be released to learners. And finally, from both a business and continuous improvement perspective, business and learning analytics can offer important ways to understand what's working and what needs refining from a business and learning design perspective.

Micro-credential Technology Ecosystem



Micro-credential Technology Ecosystem (Steel, 2020)

This short opinion piece from Anthology's Yvette Drager, elaborates on some of the key technologies to consider when architecting your Micro-credential ecosystem.

Delivery platforms along with badge issuance technologies form an important part of an organizations technology ecosystem when implementing micro-credentials and need to go through a rigorous review and audit to ensure that the choice is fit-for-purpose. Organizations should leverage the global standards as a framework starting point when reviewing technologies and need to be mindful of interoperability and portability of the proposed micro-credentials delivery system and badge issuance technologies being considered.

Key technologies to be considered by an organization as part of their technology audit when implementing micro-credentials which will form the backbone of the technology ecosystem are:

- Learning Management System (LMS)
- Curriculum Management System
- Digital Badging technology
- Ecommerce solution

1. Learning Management System (LMS)

An LMS, such as Blackboard Learn Ultra³⁷ is a web-based server software which features course management, customizable open architecture, and scalable design that allows integration with student information systems and authentication protocols. Blackboard Learn Ultra and other LMS are the delivery platform.

2. Curriculum Management System (CMS)

It is important that a CMS integrates with an organizations LMS creating a seamless course and assessment design, approval, and delivery environment as well as being able to support a contemporary program architecture, which will aid in the stackable nature of the micro-credentials.

³⁷ <https://www.blackboard.com/learnultra>

3. Digital Badging technology

Digital Badging technology must produce a credential or badge that is not only verifiable but also be tamper proof. One digital badging technology is the Anthology Milestone³⁸ platform provides all the functionality required to deliver micro credential digital badges and is Open Badges 3.0 compliant. In other words, in addition to the image-based design Anthology Milestone Badges contain detailed metadata about achievements for anyone wishing to verify it or learn more about the context of the achievement it signifies.

- Who received the badge?
- Who issued the badge?
- What was the criteria for issuing the badge?
- Does it expire?

The data is all inside the badge. The Anthology Milestone platform provides all the functionality required to deliver micro credential digital badges including verifiable credentials. Verifiable credentials are simply a high-level packaging standard which contains data governed by other standards. It is important to mention that a verifiable credential may use blockchain-based methods to ensure the authenticity of ownership of its contents when a digital document is presented to a 3rd party which demonstrates the validity of the presented digital badge.

4. Ecommerce solution

A final, but extremely important, component of the technology ecosystem that an organization must implement to assist in building market awareness as well as being the shopfront is an eCommerce solution that integrates with the other systems. An eCommerce platform is simply an end-to-end software solution that allows education providers to manage their business with marketing and sales.

The other area that has not been touched on is data analytics and how user data is to be used, stored and destroyed. This is part of a much larger discussion given the data breaches that we have seen in Australia recently in major commercial companies and needs to be considered and have distinct internal policies and procedures written to ensure end users data is protected by all the platforms that an organization uses.

One final thought, these technology solutions come with the caveat that they must fit within your organizations current digital landscape and, where practicable, organizations should try to utilize their existing systems and processes. Not only will this help support the implementation phase of micro-credentials to the marketplace but it will improve the understanding of your internal stakeholders that micro-credentials are not just a limited lifespan project but are fully integrated into your current system workflows.

Opinion piece from Yvette Drager

So now we have explored the following questions:

- What is the potential of micro-credentials?
- What do we really mean by micro-credentials?
- How are micro-credentials quality assured and accredited?
- How do we architect an effective micro-credential ecosystem?

We have one final question to complete this whitepaper...

³⁸ <https://www.anthology.com/products/lifecycle-engagement/career-development/anthology-milestone>

What are 10 critical things we need to do to get started with micro-credentials?

Our recent scan of the global micro-credential market revealed a remarkably diverse range of offerings to the extent that it left us wondering whether some of the offerings were just branded as micro-credentials because they were on-trend or met other agendas. This uneven micro-credential landscape makes it very challenging for learners to navigate the marketplace. So here we offer ten critical things you need to do if you are thinking about getting started with Micro-credentials:

1. Scan the micro-credential market

It's a good idea to know what's happening in the micro-credential market. Take a good look around and even consider enrolling in a few different micro-credentials to understand what it looks and feels like from a learner perspective. Find some micro-credentials that have great reviews to understand what their edge is.

2. Define your user and stakeholder personas

Who is your target market? Are you looking to offer a different kind of educational opportunity to those who want to upskill, reskill or who are generally underserved by institutions? Are you looking to entice learners into your degree programs with alternate pathways or more of a 'try before you buy' approach? Or perhaps you are focusing on employability with particular career ecosystems in mind. Consider doing some research to generate user and industry personas to guide your process and decision-making from the perspective of your audience. For example, what are their pathway needs (entry and exit points)? Is stackability toward a macro-credential important? Do they require on-demand learning or regular start dates? Is recognition of prior learning important? What will help them make the career moves they seek? What modality of learning? Is work integrated learning important?

3. Define your micro-credential opportunities and purpose

Be clear on why you are getting into micro-credentials. What is the opportunity and value to your business? How do you know? What would success look like? What's the value to your audience? Why now? Why is it logical for your education business to take this direction? Is it to mitigate the enrolment cliff in coming years? Does it make sense to widen participation or support lifelong learners more than your current business model? How will you differentiate from your more traditional offerings—will your micro-credentials offer more flexibility to learners and/or industry?

4. Define your micro-credential constraints and potential barriers and mitigation strategies

Be clear on your constraints and potential barriers. Learn from the mistakes of others (do some research). There is a tremendous amount of hype around micro-credentials but now is the time to conduct a gap analysis of where you currently are compared to where you want to be. Have you got the right talent, the right processes, the right technology ecosystem and analytics and the right culture to get you to your desired state? If not, then how can you resource and make the changes that could become barriers to your intent?

5. Consider participatory co-design of your micro-credential

Involve stakeholders (like industry and potential learners) in the design of your micro-credentials. A designing 'with' people approach offers a powerful pathway to productive, collaborative co-design partnerships to build meaningful product—rather than a 'build and they will come' approach. Participatory co-design can also include industry partners or co-investors in your micro-credential initiative.

6. Define your micro-credential quality assurance approach

Ensure that you are set to comply with any current (or emerging) micro-credential frameworks relevant to your region and education business. Evaluate them carefully – again assessing your current state against what is needed. Form a task force to articulate definitions, policies, procedures, guidelines and parameters for quality assurance.

7. Recruit change champions, innovators and advocates

As with any change, recruiting change champions, innovators and advocates help to ensure your communication and project succeeds. You need a great team of people who can influence others, spread the message, invite engagement in the change, share news and gather feedback from across and beyond your organisation to future learners and relevant industry players. Work with your change team to set smart objectives about what you want stakeholder to know, think and do in relation to your micro-credential project. Kotter's dual operating system³⁹ offers a powerful way to accelerate change in more traditional organisations.

8. Purposefully design your curriculum, assessment strategies and learner experience for micro-credentials

A real pitfall that we have observed is when organisations have gone to all the trouble of investing in micro-credentials only to neglect to purposefully re-design their curriculum, assessment and learner experience (and workload) for a micro-credential format. Even if you have a great curriculum, competency or professional framework (which we recommend you do have), you still need to break down those learning outcomes or competencies and ensure they well-written and can be validly assessed.

Assessment needs to be valid, reliable, rigorous and inclusive. Academic integrity needs to be addressed. While many institutions jump to multi-choice, timed online tests or exams (sometimes proctored), this approach does not suit all learners, nor does it adequately demonstrate the achievement of many employability skills or prior learning. It is worth considering ePortfolios (such as Anthology Portfolio⁴⁰), video interviews and other assessment strategies that make for convincing evidence of application and achievement.

³⁹ Kotter, P. (2014). *Accelerate: Building Strategic Agility for a Faster-Moving World*, Harvard Business Review Press.

⁴⁰ <https://www.anthology.com/products/teaching-and-learning/assessment-management/anthology-portfolio>

There is also clear need to focus on 'designing for learning' and 'learner experience design'(LXD). This lesson was a key learning from global reports of students' experience of learning through the pandemic:⁴¹ During the pandemic we saw many institutions simply transferring existing face-to-face learning to online to what became known as 'emergency remote learning'. However, the lack of intentional design for the online modality led to poor student experiences, and poor learner retention and outcomes. A similar situation is emerging with Micro-credentials.

Designing for learning and capability development involves a clear and transparent focus on learning outcomes and thinking through 'what we are asking the learner to do' to grow their knowledge and capabilities to standards we need to verify. Given that Micro-credentials should be short in nature, the design approach needs to remove barriers (like learner confusion) and equip them with the tools and strategies to succeed. The lens of learner experience design (LXD) is a "process of creating learning experiences that enable the learner to achieve the desired learning outcome in a human-centred and goal-oriented way".⁴² Remember that content is no longer king — it is the human experience that matters.

9. Ensure your micro-credential technology ecosystem aligns with global standards

Your micro-credential technology ecosystem is another complexity that needs thorough exploration. Global standards are important here. A recent and important development is the release of Version 3.0 of the Open Badges Specification.⁴³ This version is aligned with the Verifiable Credentials Data Model v1.1. (W3C) for the use cases such as 'Defined Achievement Claim' and a 'Skill Claim'.

Using the Open Badges Specification V3.0 means that learner credentials can be easily bundled into Comprehensive Learner Records (a set of assertions that can be packaged as a verifiable credential) and Verifiable Presentations (a tamper-evident presentation of one or more Verifiable Credentials of which cryptographic verification can be used to determine the trustworthiness of the authorship of the data) which improves portability and learner data privacy. Technology platforms like Anthology Milestone offer the functionality required to design and deliver Open Badges compliant digital badges.

The Comprehensive Learner Record (CLR 2.0) Standard™ is free, open standards from 1EdTech Consortium that offers a technical specification to support the capture and communication of learners and workers achievements in a verifiable digital format.⁴⁴ While Open Badges are a visual and shareable form of recognition, they are just one type of achievement that can be included in a CLR. The CLR is recommended by the American Association of Collegiate Registrars and Admissions Officers (AACRAO).

⁴¹ Steel, C. (2021). The impact of the pandemic on higher education learners: Why institutions need to focus on 'designing for learning' and 'learner experience design'. Blackboard. <https://www.timeshighereducation.com/hub/p/impact-pandemic-higher-education-learners>

⁴² Floor, Niels (2017) What is learning experience design? {blog} <https://lxd.org/fundamentals-of-learning-experience-design/what-is-learning-experience-design/>

⁴³ https://msglobal.github.io/openbadges-specification/ob_v3p0.html#abstract-0

⁴⁴ <https://www.msglobal.org/activity/comprehensive-learner-record>

10. Conduct agile 'learning' pilots of your first micro-credentials

Finally, use low fidelity prototypes to conduct 'learning launches' of your micro-credentials. Think agile test sprints and invite stakeholders into the conversation in an active, hands-on way, to actively learn and make improvements based on testing and feedback. This approach avoids the traps of over-investing in a factory-approach to developing micro-credentials without first testing the resonance of your design and decisions in market.

Conclusion

This paper has taken us around the world to explore why micro-credentials have become such a hot topic. Global trends and perspectives highlight both their potential and their complexities. As with the disruptive innovator Netflix, Micro-credentials are unsettling the status quo of traditional models of professional and higher education. However, they are offering more choice to learners and employers, more access to those previously underserved, and potentially, a way to diversify higher education offerings to counteract the enrolment cliff that some institutions are set to experience. And there are significant global efforts to make sense of micro-credentials and the ways they can fit with qualifications frameworks and the broader education ecosystem. We are seeing the emergence of thoughtful, validating frameworks, efforts to address quality assurance and new technologies like blockchain that offer more secure verification methods.

So, can micro-credentials live up to all our expectations? Well, potentially yes, if we truly focus on understanding learner and industry needs and preferences, if we truly adopt innovative pedagogies, and if we design intentionally for 'micro-credentials' that offer meaningful, flexible learning with a great learner experience (think 'bingeable'). Equally, there is still work to be done to ensure Micro-credentials are clearly understood and valued. As Michael Cuenco, Research Associate at Future Skills Canada, suggests:

For micro-credentials to fulfill their expectations, they must be adopted across the economy as a whole, not only by credentialing institutions, but also by employers and industries at an everyday level. Without this wider adoption, their utility will necessarily be limited and their potential will remain untapped.⁴⁵

⁴⁵ Cuenco, M. (2022). Micro-credentials in flux: Challenges, opportunities and insights from FSC's portfolio, Micro-credentials Learning & Insights Bulletin March 2022, Future Skills Centre, Canada.

Methodology

This whitepaper was developed via an analysis of recent global research, policies, handbooks and related papers and draws on the experiences of the author working with Anthology clients on designing their micro-credential initiatives.

About the Author



As a Principal Strategic Consultant with Anthology's Global Education Services, Dr Caroline Steel brings fresh energy, proven educational expertise and a creative mindset to working collaboratively with her global clients to achieve their large-scale education transformation goals. Caroline has worked with clients on micro-credential initiatives since 2020 and follows the evolving, global micro-credential landscape with great interest.

Consulting across professional, vocational, and higher education, Caroline's contemporary thinking and creative approaches are informed by global research, novel design methodologies and her desire to bring the highest value to client work, learner experiences and learners' future success.

Prior to her current role, Caroline built a strong reputation as a pioneer and expert in digital learning and teaching through her leadership of ASCILITE (Australasian Society for Computers in Learning in Tertiary Education) and as an innovative academic and educator. She retains an Adjunct position as an Associate Professor at the University of Queensland, Australia.

About Anthology

Anthology offers the largest EdTech ecosystem on a global scale, supporting over 150 million users in 80 countries. The company's mission is to provide dynamic, data-informed experiences to the global education community so that learners and educators can achieve their goals.

Through Anthology Intelligent Experiences™ and over 60 SaaS products and services, Anthology advances learning in partnership with education, business and government institutions. Tapping into this unmatched portfolio of solutions, only Anthology can leverage data from across the EdTech ecosystem to create Intelligent Experiences that lead to better outcomes.

Learn more about our mission at www.anthology.com

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