

eCampusOntario's Micro-credential Toolkit

ECAMPUSONTARIO'S MICRO-CREDENTIAL TOOLKIT

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WELCOME TO THE TOOLKIT

About eCampusOntario

eCampusOntario is a provincially funded non-profit organization that leads a consortium of the province's publicly funded colleges, universities, and Indigenous institutes. We develop the platforms, tools, and research that advance the use of education technology and digital learning environments in support of lifelong learning.

The landscape of micro-credential development has expanded significantly since 2020, when the need for a micro-credential toolkit was conceptualized and initial planning began. The early adopters of micro-credentials in higher education and government highlighted their potential impact for skills-based and short-duration learning, as these examples demonstrate :

- In 2016 the [European Skills Agenda](#) called for more modular and flexible learning through the development of a European approach to micro-credentials. This was followed in 2017 with a commitment by the European Union to quality and inclusive education, training, and lifelong learning. By November 2020, the [Rome Ministerial Communiqué](#) identified micro-credentials as a vehicle to democratize knowledge and sustain lifelong learning ([Futures et al., 2020](#)).
- The [New Zealand Qualifications Authority \(NZQA\)](#), part of New Zealand's regulated education and training system, incorporated micro-credentials in 2018 as a recognized and credentialed part of their education system. The NZQA regulations for micro-credentials require a coherent set of skills and knowledges be addressed to meet the needs of employees, members, and people.
- By 2017, eCampusOntario started building [a micro-credential ecosystem](#) in Ontario with two rounds of pilots at post-secondary institutions, and co-created one of the first [micro-credential frameworks](#) developed and tested in what was then still an emerging area of educational innovation.

Micro-credential development greatly accelerated during the COVID-19 pandemic as a practical, impactful, and rapid way to address urgent skill needs and gaps. In Ontario, there has been [significant investment provincially](#) in micro-credential development, including expanded funding eligibility through the Ontario

Student Assistance Program. Other provinces, including [British Columbia](#) and [Saskatchewan](#), and national organizations, including [Colleges & Institutes Canada](#) (CiCan, 2021), introduced their own approaches and frameworks. Globally, increased government adoption of micro-credentials in countries (e.g., [Australia](#)) has occurred alongside growing interest from organizations such as [UNESCO](#). However, while growing global investment and focus on micro-credentials have codified micro-credentials into some education systems and frameworks, the sharing of practical experiences for building, offering, and evaluating them is not as comprehensively developed.

For the past five years, eCampusOntario has been working to help support the Ontario post-secondary education sector in the exploration, experimentation, and development of micro-credential programs. Through annual events and communities of practice, we provide the opportunity and space for conversations and connections. To enable micro-credential practice and development, eCampusOntario has funded [36 pilot projects](#) across Ontario post-secondary education institutions. The learnings from these pilots have helped to shape the micro-credential ecosystem in the province and have been [documented](#). These findings have also helped shape the content in this toolkit.

The foundation of eCampusOntario's work in this space is the [Micro-credential Principles and Framework](#). That document was developed in 2019 by a group of employers, colleges, universities, and other public agencies dedicated to building a harmonized micro-credential ecosystem in Ontario. It has been tested and piloted by institutions across Ontario and their employer partners. The content in this toolkit is based on the principles and framework document, building on it to provide to a “how-to guide” for developing micro-credential programs, rather than a comprehensive overview of the subject.

eCampusOntario's Micro-credential Toolkit outlines how to navigate opportunities and challenges of developing micro-credentials around three core themes: collaboration, structures, and recognition. It also offers practical suggestions from practitioners who have developed micro-credentials at post-secondary institutions throughout Ontario. These practitioners share their knowledge on building micro-credentials based on their own experiences.

During regular community of practice meetings, participants collaborated to co-create the toolkit's sections and structure, and then co-wrote a draft of the toolkit in a shared document. The result of this process is a practical road map to developing, testing, and revising micro-credentials as the ecosystem continues to grow.

This first iteration of the toolkit was then developed collaboratively by several volunteer working groups, comprising micro-credential community leaders. To encourage participation and offer flexibility around competing priorities, eCampusOntario organized two working groups that varied in purpose and commitment:

- The **micro** working group, a small group of individuals, met every two weeks to collaboratively develop an outline and content for the toolkit.
- The **macro** working group represented a larger community of stakeholders that met every two months to validate outcomes of the micro-working group and to learn about the toolkit's progress.

Prior to engaging both groups, we consulted the community at large to establish the following guiding principles to define the scope of the resource:

- **Learner focused:** Designed with and inclusive of lifelong learner feedback; learner-centred pedagogy.
- **Educator and employer partners:** Common and equitable skills accreditation that supports recognition and transferability across sectors, with a clear role for employers.
- **Situated:** Situated in—and informed by—local, national, and global contexts; aligned with industry standards.
- **Frame of reference:** Designed as a blueprint and guide to account for different contexts and environments.
- **Open:** Openly licensed, open development, open community. As the micro-credential ecosystem continues to grow and shift, as institutions and industry partners solidify their partnerships, and as this toolkit is tested and used, the content will adapt to these changing contexts. It is intended that the Micro-credential Toolkit will be adopted by institutions, organizations, industry, and government to develop new and advanced existing micro-credential programming. In 2022, this first iteration will be piloted by post-secondary institutions with varying experiences in micro-credentialing to evaluate its validity, applicability, and existing gaps. Piloting will inform adaptation plans for the second iteration.

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Micro working group

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Macro working group

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PART I

DEFINITIONS

1.

DO WE NEED A MICRO-CREDENTIAL DEFINITION ANYWAYS?

Agreeing on an exhaustive or universal definition of micro-credentials is unlikely given varying types of providers, jurisdictional considerations, and institutional differences. However, a focus on language can help clarify the meaning and structure of a micro-credential. For example, the term *micro* indicates shorter and more specialized units of learning than in a term-based or 36-hour three-credit course. On the other hand, a *credential* is earned by a learner and serves as evidence of accomplished learning. In most approaches to micro-credential development, earning a credential requires some form of assessment.



In reviewing micro-credentials presented by [eCampusOntario](#), [the Ontario Ministry of Colleges and Universities \(2021\)](#) and [UNESCO \(2021\)](#), the overarching consensus is that shared characteristics involve collaboration between an accredited educational institution and an employer or industry sector. Together, they can identify, create, and review workplace relevant training that is of value to the learner and the employer or industry sector. Micro-credentials should demonstrate that depth, rather than breadth, of a specific skill or area of focus, and that learners are assessed to ensure that new skills and competencies have been gained. However, ongoing questions involve how to assess mastery and related quality assurance of micro-credentials offerings with academic post-secondary institutions.

Taking these common characteristics into account, the definition provided in *A European Approach to Micro-Credentials* (Futures et al., 2020) may be a good starting point for those newer to micro-credential development :

A micro-credential is a proof of the learning outcomes that a learner has acquired following a short learning experience. These learning outcomes have been assessed against transparent standards. The proof is contained in a certified document that lists the name of the holder, the achieved learning outcomes, the assessment method, the awarding body and, where applicable, the qualifications framework level and

the credits gained. Micro-credentials are owned by the learner, can be shared, are portable and may be combined into larger credentials or qualifications. They are underpinned by quality assurance following agreed standard (Futures et al., 2020).

While the term *micro-credentials* may be new to the wider post-secondary landscape, especially the university context, the concept of creating courses or programs that are shorter than traditional degrees and diplomas to fill an identified training need for business or industry is not new for continuing education units. Workforce training is continually evolving, as can be seen by the amount of flexibility and discussion of the term *micro-credential*. Micro-credentials are already also being offered and issued by various providers beyond higher education institutions, such as industry associations, sector boards, and employers. These entities operate in diverse jurisdictions with differing approaches to public education policy and implementing structures. Consider also the national context in Canada with education being a provincial responsibility, which creates a challenge for having a one-size-fits-all definition of micro-credentials only for higher education. Further challenges are presented by the varying natures, missions, and practices of post-secondary institutions across Canada, including Indigenous institutions, colleges, and universities, combined with each institution's unique geographical setting and reach, as well as their priorities and mission.

Given this wide variety of contexts and needs, what is more necessary than landing on a common micro-credential definition is a common set of flexible characteristics that define what a micro-credential is and *is not*.

2.

WHAT ARE, AREN'T AND MIGHT BE MICRO-CREDENTIALS?

In comparison to traditional courses and ways of learning that focus on structure and specific due dates for assessments, micro-credentials value self-directed learning and recognize that learners will complete smaller units of learning experiences at a pace that meets their learning needs and styles. As a result, micro-credentials should be flexible and, where possible, learners should complete them at a pace that works best for them. In some offerings, there are no specific due dates except for the end date.

Micro-credentials have the potential to fill skills gaps in both the current and future labour markets. They give learners the opportunity to “specialize” in a particular area or topic; for example, donning and doffing of personal protective equipment (PPE). An employer interested in hiring would know by the micro-credential achieved if a candidate has a specific skill set depending on the micro-credentials they completed. In the example of learning how to prepare healthy menus, an employer would be able to recognize that the candidate has had training and education in this area.

Micro-credentials do not have to conform only to usual semester intakes; they should be readily available to learners and offered multiple times throughout the year. In comparison to traditional courses, micro-credentials can be taken at any time, or offered as many times as possible.

Micro-credentials **are**:

- Shorter learning experiences that home in on a specific topic or identified skill gap in ways that are flexible and readily accessible for learners. This means there is variety of ways to offer and design micro-credentials.
- Designed to focus on a specific skill, subject, or topic area; this focus differs based on the needs of the learners, employer, and industry partners. As a result, micro-credentials can be skills-based *and* competency-based; they can also be outcome-based with measurable learning objectives. Offerings could be stand-alone credentials, or they could be part of a series of micro-credentials that make up a program



or certificate.

- Credit-bearing or non-credit-bearing. The design of each micro-credential is contextual and should reflect the needs of specific learners, industries and professions, and institutions.
- Industry focused with assessments to support learners with retraining, upskilling, or pursuing a career change. For example, learners who want to enter the food service industry may take a micro-credential on preparing healthy menus. Learners who are successful in completing the micro-credential should be able to effectively prepare healthy menus and, therefore, learning activities and assessments should be aligned with this competency or ability.
- Developed and designed with industry experts to ensure that retraining and upskilling accurately reflect industry needs and are recognized with some form of certificate or digital badge outlining the learning outcomes or competencies that learners achieved.

Micro-credentials **are not**:

- Intended to be delivered using a traditional face-to-face delivery; rather, flexible delivery modalities should be adopted such as online asynchronous delivery, hybrid, or in some instances, face-to-face, depending on the subject, skill, knowledge, or area being instructed.
- Traditional courses that tend to cover an array of topics and subject areas over a 12- or 13-week academic term. For example, a 45-hour program that focuses on mental health and wellness might address a number of topics such as diagnostic assessment, diagnosis, and treatment; however, a related micro-credential may focus only on the assessment component of mental health.

It is important to note that micro-credentials can be stand-alone credentials; they don't have to always be part of a series that makes up a larger program. For example, an employer may need a learner (or employee) to complete only one stand-alone micro-credential, which is why the completion of micro-credentials should be documented or recorded in some capacity. Micro-credentials can also be stackable, however. For example, a learner who completes five micro-credentials in caring for wound infections may be able to receive credit for a course or two in the Personal Support Worker Program. The ability to stack credits in this way depends heavily on the instructional hours for each micro-credential, as well as the learning outcomes or competencies that were achieved, including the assessments that were selected.

Micro-credentials should be designed to meet quality standards and include instructional design principles such as appropriate measurable competencies, or learning outcomes and objectives. As well, the design should extend to instructional materials and resources, learning activities, and intentional assessments that measure the stated competencies or objectives. Ideally, all these factors would be decided at the beginning of design of any micro-credentials, with consideration given to pathways or transferability—topics that should be discussed with and considered by program coordinators and chairs, and the registrar's office. Similarly, clear expectations concerning grades or benchmarks (such as pass or fail) for targeted-skill or competency need to be developed.

Micro-credentials should provide learners with opportunities to become proficient with a specific skill or competency. They should also provide opportunities to practise before the summative or final assessment, which determines if the learner has successfully mastered the particular skill or knowledge.

With all this in mind, stakeholders in the micro-credential ecosystem have made significant progress toward a consensus of definition and conceptual convergence, both globally and in Canada. Increasingly, Canadian stakeholders see micro-credentials as being:

- Defined by a focus on specific skills and competencies
- Awarded on the basis of assessment
- Employer- or employment-relevant
- Flexible in terms of their connection to other forms of accreditation
- Accrediting courses of short duration.

Micro-credentials have a lot of promise, which is why it is important to separate the genuine opportunities from the hype that has built up in recent years. Micro-credentials offer the possibility of making higher education more convenient, flexible, and accessible and, in so doing, more inclusive and diverse.

3.

MICRO-CREDENTIAL LIFECYCLE: FROM SUNRISE TO SUNSET

Outlined below are seven phases of the micro-credential lifecycle:

- Ideation (sunrise)
- Feasibility
- Design
- Build
- Marketing and launch
- Deliver or pilot
- Evaluate and revise (sunset)



Each phase shares some key tasks and ideas that link to different parts of the micro-credential ecosystem.

Micro-credentials can be initiated in a variety of ways: by industry and focused on a particular problem, or by an institution, community, or learner need.

Ideation

- Conduct labour market research to determine industry training and needs.
- Connect with local employers and partners within the industry to inquire if they are interested in participating in a working group or focus group.
- From these focus group sessions, determine what necessary skills, attributes, knowledge, or competencies these industries would like their employees to have.
- Identify the purpose of a micro-credential, or what need the micro-credential will address.

Using a working group?

A working group can consist of smaller focus groups that can meet to draw out key information about the industry or profession. Use focus group sessions to pose relevant questions to better understand the training needs, including upskilling or new skills that employees are lacking. Also, determine what the needs are for graduates from colleges and universities and if they are entering into these industries with the correct skill set. If not, determine what exactly is missing and how a micro-credential could address this need.

You can gain this valuable information from your working group of industry experts; this group is critical to your ability to developing a micro-credential. The more industry experts and partners you have in the working group and participating in the focus group sessions, the more valuable the information gathered will be for all stakeholders.

Feasibility

- Consider how the micro-credential will align with institutional priorities (e.g., academic plan, strategic mandate agreements), institutional micro-credential policies, and unit plan resourcing prioritization. Build awareness, explore, and ideate possibilities for developing micro-credentials at your institution. Work up a one-pager or an elevator pitch.
- Identify a team of possible collaborators within your institution.
- Determine what kind of proposals may be necessary for curricular and quality assurance processes, and get started on securing any needed approvals.
- Create an initial budget. Identify and apply for internal or external funding opportunities to support the design of the micro-credential. Consider learner and employer pricing sensitivity, and marketing plan and costs.

Members of a micro-credential design team

Initiative lead: The lead is the lynchpin of the micro-credential development (is this you?). This person should be engaged about the initiative and be a good problem solver, able to navigate the internal processes.

Employer engagement lead: Getting employers on board early is critical. This person should have a track record of successful employer engagement and be able to talk their language and get calls returned.

Subject matter expert (SME): The SME co-creates content and advises on delivery in collaboration with industry or employer partners.

Pedagogical and edTech support: This is an instructional designer or educational developer who can help shape the learning plan and content, possibly in partnership with your institution's teaching and learning centre.

Visual design support: That first glance is crucial to respect and understanding. This person should be able to go beyond making the design attractive and correctly branded. The job is about how visual design can support the meaning of your micro-credentials.

Leadership champion: Sooner or later you're going to need this person—someone at the director, dean, or vice-president level who believes in what you're doing and can advocate at high levels.

Design

- Compile the list of competencies and skills and determine how a micro-credential can meet the requirements of the identified purpose it will address.
- With the focus group members, determine the number of instructional hours an employee or learner will need to master a specific skill or competency.
- Determine which learning goals or objectives need to be considered to ensure that learners can master a set skill or competency.
- As a group, determine what will be the best delivery method for this micro-credential: online, hybrid, or face-to-face.
- Build a learner profile to make informed decisions, including those of modality preference. Talk to prospective students about how to design a micro-credential to meet their needs.

Co-designing with industry

Having conversations with industry experts is essential and they must happen regularly. The more industry experts are involved, the more likely the content will be developed to meet their current needs.

Once this relationship has been established with industry experts, determine if any of them would be interested in writing the content for the micro-credential in collaboration with the faculty SME.

Build

- If the micro-credential is competency-based, determine which learning objectives will help support the learner master the specific competency. If the credential is not competency-based, set learning outcomes and measurable learning objectives that will measure the micro-credential's outcome.
- With the focus groups, identify how learners will be assessed and what evaluation method will be appropriate to determine whether a learner has successfully mastered a skill or competency. A mastery benchmark of passing must be determined by the working group; therefore, learners must pass the summative assessment with a specific percentage in order to be awarded the micro-credential.

Authentic Assessments and Micro-credentials

Focus group sessions should determine which authentic assessment will be suitable for a micro-credential. The goal is to ensure that the assessment accurately measures the stated competency for the micro-credential, and if there is no competency, then the stated learning outcomes and objectives. The goal of the assessment is to determine whether the learner can accurately fulfill the learning goals outlined in the micro-credential. Learners should be given clear instructions, criteria and a rubric on how to complete the required assessment.

Marketing and Launch

Once the micro-credential content has been developed and reviewed by the working group, and you know the assessment measures the stated learning goals, it is ready to be launched.

- Consider two key questions: What is the description of the micro-credential? Who is the audience?
- Complete audience research and analysis (e.g., use case personas).
- Conduct surveys with relevant audiences.
- Develop a website and marketing plan.
- Reach out to prospective students in person through class visits or events, website presence, and social media posts.
- Participate in sector-wide events for building bridges between sectors (e.g., eCampusOntario micro-credential forum), regional forums (e.g., City of Hamilton, Mohawk College, McMaster University [Micro-credentials Community Forum](#)).
- Collaboratively develop marketing materials such as one-pagers, video promos and tutorials, presentation templates, text copy for websites, surveys, website, brainstorming tools (e.g., badges in Canvas), etc.

Deliver or Pilot

The following are key concepts and best practices for piloting and delivering a micro-credential:

- Similar to other course development, an appropriate micro-credential outline and learning plan should be developed and readily available in the learning management system. The length of time a learner is given to complete a micro-credential must be stated in the outline.
- Micro-credentials that are stackable, recognized as transferrable, or create pathways to greater or larger credentials should be identified early on to the learners. For example, if three micro-credentials at 15 hours earns a learner three credits on their transcript, this should be identified and recognized as they consider pathways into other credential programs.
- If learners are successful, they are awarded the micro-credential, which can be showcased with an institution's digital badge or certificate of completion or achievement. Learners should have some trackable record or transcript that outlines these micro-credentials, and if they are credit-bearing (not all are), including this information on a transcript would be appropriate.
- Learners should be given two attempts to complete their summative assessment. If they are unsuccessful on their first attempt, they should receive constructive feedback from their facilitator, professor, or instructor on what they need to do on their second time to achieve a passing grade. Constructive, immediate feedback to learners is essential to help set them up for success.
- Explain to learners that, typically, after successfully completing an eligible course they will receive an

electronic message with a link to their micro-credential.

- Encourage learners to share the micro-credential on your social media threads, such as LinkedIn, Twitter, Facebook, or to an e-portfolio or resume.

Prior learning and assessment recognition (PLAR)

Learners who believe they have already mastered the skill or competency that is being measured should be given an opportunity to measure their prior learning. The PLAR assessment should be the same summative assessment that is applied to learners taking the full micro-credential.

Flexibility for learners

Learners should be able to work through micro-credentials at a pace that works best for them. Because micro-credentials are self-directed, a rigid learning plan outlining specific due dates should be avoided. The only timelines that should be presented and enforced are the end date of the micro-credential and when the summative assessment should be submitted. Therefore, once a learner has registered for a micro-credential, they should be informed right away of how long they have to complete the required learning activities and assessments. There should be time allowed for learners who require two attempts to complete an assessment: this includes time to provide them with appropriate and constructive feedback, and for the second attempt.

Evaluate and revise (sunset)

- Micro-credentials may encompass new skills that have not yet been integrated into degrees. As programs evolve to include these new skills, the sunset of a micro-credential may be triggered.
- Determine the life cycle of the micro-credential being offered. Depending on the purpose of a micro-credential, some may have hard expiry dates when the content is no longer up-to-date as determined by industry partners. Others may become out of date and require consistent content and curricular review to remain relevant.

PART II
COLLABORATION

4.

SECTOR RELATIONS AND EMPLOYER-EDUCATOR PARTNERSHIPS

So, you want to build a Micro-credential?

There are a few questions you should ask before you begin:

- What opportunities exist for more co-designed and cohesive partnerships?
- How can the employer organization or sector play an active role in co-designing and co-delivering micro-credentials to enable credible and relevant employee and employer forms of certification?
- What industry and professional forums can be used to help broker and facilitate meaningful co-design and co-delivery of micro-credentials ([Mhichif et al., 2021](#))?



These questions speak to the authenticity of micro-credentials.

Relationships between sector partners and educational institutions should be purposefully driven by two key elements: identifying in-demand skill or upskilling needs, and ensuring that any assessments are in line with job performance ([eCampusOntario, 2020](#)).

It is important to involve employers early on in the development. [Contact North \(2021\)](#) identified this as one of the 10 key actions needed to ensure micro-credentials meet the needs of learners and employers. Questions persist about whether students are being taught the skills they will need on the job market. There are varying levels of alignment, or misalignment, between employers' desired topics and competency levels and what students are taught (Jones et al., 2019). While studies have found considerable overlap between the needs of employers and program focus, gaps have also been identified, especially in the area of self-management ([Rhew et al., 2019](#)).

Questions for employer partners

1. Are we the right partner for this micro-credential? Can we actually do this?
2. Is this going to help us? Does this align with our existing goals? Does it present us with a new goal that works for us?
3. Do we currently have all the right skill sets to respond to this need? Are we willing to hire to get the required skill sets if we don't have them now?
4. Can we put our name behind the credential in a way that we are comfortable with?

There is great value in building employer-educator partnerships and collaborations. Educators can work with employers to undertake a needs analysis to identify a skill or competency with sufficient detail to develop a micro-credential. In turn, this can help employers identify discrete needs to support competency and skill-based micro-credentials ([Franklin & Lytle, 2015](#)). Tools are often needed to help support this work. For example, the ADDIE model can help design effective learning programs by moving five different phases: Analyze, Design, Develop, Implement, and Evaluate ([van Vulpen, 2020](#)).

Tools to support employer-educator partnerships

Academy to Innovate HR (2020). *Skills Gap Analysis: A how-to guide for Learning & Development*. https://www.aihr.com/resources/AIHR_Skills_Gap_Analysis_L&D.pdf

Centre for Teaching Excellence. *High Impact Practices (HIPs) or Engaged Learning Practices*. University of Waterloo. <https://uwaterloo.ca/centre-for-teaching-excellence/support/integrative-learning/high-impact-practices-hips-or-engaged-learning-practices>

Kuh, G. D. (2008). Excerpt from *High Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*. American Association of Colleges and Universities. <https://secure.aacu.org/AACU/PubExcerpts/HIGHIMP.html>

Niagara College Canada (2019). *Finding and Cultivating EL Partners and Resources*. Experiential Learning Toolkit. <https://www.eltoolkit.ca/designing-experiential-learning-opportunities/finding-and-cultivating-el-partners-and-resources/>

van Vulpen, E. (2020, Oct.) *How to Conduct a Training Needs Analysis: A Template and Example*. Academy to Innovate HR. <https://www.aihr.com/blog/training-needs-analysis/>

Employer partners should understand how competencies are assessed so they are able to accept the micro-credential as part of a validation of the skills of a potential employee. This can be done by engaging the employer in the process of determining which skills are most required as well as understanding the assessment process. The employer lens can highlight which skills are undeveloped in the available talent pool and where skills are migrating between two fields. In this way, the academic rigour can work hand in hand with business needs in streamlining content development that makes learners more employable.

It is particularly important to engage employer organizations or professional bodies in determining which skills and competencies will be assessed and how the assessment will be delivered: “The key is that employers agree that a specific micro-credential and its assessment provide a sufficient basis for employability” ([Contact North, 2021](#)).

Stories from practitioners

Ontario Tech University did a partnership with Lakeridge Health where we developed a micro-credential designed to provide the skill in transfer of a patient (e.g., moving them from one surface to another) to other paraprofessionals as it is currently taught to nursing students. The pandemic started right at launch time and the result was a confidence from Lakeridge Health in the quality of the education that they were able to take the content and use it to provide the training to their own staff. – Fiona McArthur

Industry input can influence content, delivery, and assessment of competencies that promote job-ready skills in a variety of ways. However, not all industry partners will want to be actively engaged at the same level. Different layers of engagement and collaboration with employers are possible; for example:

- Awareness
- Consultation (one-time, or pre- and post-micro-credential offering)
- Ongoing, intermittent advisory role (like a program advisory committee)

- Endorser
- Industry accreditor
- Supplier for industry-led micro-credentials
- Co-producer
- Industry-led quality assurance

Leveraging existing mechanisms: Program advisory committees (PACs)

PACs can provide links between programs and the respective sectors they serve at Ontario's colleges. PACs play an important role in helping ensure programs meet the changing needs of the labour market. They are generally made up of a cross-section of external college stakeholders with direct experience in the particular areas addressed by college programs ([Ontario Ministry of Training, Colleges and Universities, 2008](#)). Established PACs are uniquely positioned to provide advice on the development of part-time professional development and workforce training, including micro-credentials.

Future directions to consider for educator-employer partnerships might include any of the following:

- Co-create protocols and rubrics for assessing work-integrated learning.
- Build ways to recognize non-formal credentials from employers (see [the Credit Bank](#) at Thompson Rivers University).
- Adapt and co-create competency frameworks with employers that can drive learning and recognition.
- Explore a contract training model, as practised by [Humber College in Canada, Otago Polytechnic](#) in New Zealand, and VIA University College in Denmark: assess the workplace against a target framework, recognize current skills, identify gaps, and develop learning and recognition strategies for the workforce ([Presant, 2020](#)).
- Develop credentialed training for employers (managers) to be workplace assessors or advisors.

5.

CONNECTING LEARNERS



Learners as co-creators

- Consider running a focus group in the design phase.
- Run a survey or focus group during the evaluation stage.

Engage with learners

- Solicit testimonials from learners and employers who find micro-credentials useful.
- Build learner case studies to use in marketing efforts.

Connect learners

- Encourage connections with past and future cohorts.
- Curate learnings from each cohort about the challenges, opportunities, and improvements of the micro-credential taken.
- Create working spaces (virtual or physical) for making connections.

Learners after the credential

- Share micro-credential to LinkedIn and other social media.
- Curate the presentation of the micro-credential record so they tell a story to employers who may not be familiar with the them.

Stories from practitioners: Badges and prior assessment of learning

PLAR/RPL (recognition of prior learning) practices include diagnostic and formative assessment, which can include self-assessment and peer assessment. With this in mind, some issuers are using selfie badges as a way to surface learning (Pakanen, 2021). This can be an entirely “build from scratch” approach, or learner claims of scaffolded badges saying, “I Did A Hard Thing,” where they justify it as they claim it as they would in a portfolio, or goals, even learning contracts (“I am learning about SDGs”). Or badges issued by peers (“You are a great colleague”). These are informal digital badges that can be part of a journey to a more formal micro-credential or be useful in themselves. – Don Present

Case study: Read the article *Micro-credentials as Evidence for College Readiness: Report of an NSF Workshop* ([Fishman et al., 2018](#)), about a workshop conducted by the University of Michigan Faculty of Information and funded by the National Science Foundation. One of the goals of this workshop was to explore whether micro-credentials could serve as valid and reliable evidence of prior learning and future potential.

Stories from practitioners

*Learners in a current learning situation could create a **learner analysis artifact**. This might allow for future connections in the workplace and for keeping abreast of the sphere of influence that the credential allowed. It’s a start to building incoming and outgoing pathways.*

*Use video of **students’lived experiences** as part of the cohort introduction. These can be structured by the educator to support and validate the learning outcomes of the credential. Students can showcase incoming skills sets, and then vouch for the new competencies they acquired by achieving the micro-credential .*

“E-folio” projects used as assessments can serve as a permanent record of students’ incoming competencies and the mastering of outgoing competences (content specific) for cross-institutional recognition. – Anonymous

Resources to support connecting with learners

Brieger, E., Arghode, V. & McLean G. (2020). Connecting theory and practice: reviewing six learning theories to inform online instruction. *European Journal of Training and Development*, 44(4/5) 321-229. <https://doi.org/10.1108/EJTD-07-2019-0116>

Gagné, R. M. (1970). *The Conditions of Learning*. 2nd edition. Holt, Rinehart and Winston.

Hunt, T., Carter, R., Zhang, L. & Yang, S. (2020). Micro-credentials: the potential of personalized professional development. *Development and Learning in Organizations*, 34(2) 33-35. <https://doi.org/10.1108/DLO-09-2019-0215>

Texas Tech University (2017). *ARCS Model of Motivation*. <http://www.tamus.edu/academic/wp-content/uploads/sites/24/2017/07/ARCS-Handout-v1.0.pdf>

6.

FACULTY AND CROSS-CAMPUS COLLABORATION

In addition to industry and employer collaboration, there also needs to be significant collaboration among inter-institutional departments. Therefore, to ensure that micro-credentials are implemented effectively within an institution, each department lead must be present and part of the delivery phase of micro-credentials. It is important to acknowledge that each department has its own internal processes and operations, and if these are not communicated early on, key deliverables of the overall project may not be met, creating a negative ripple effect in other departments.



To develop a micro-credential or not?

When working through questions like those in the checklist below, you may find yourself wondering whether or not a micro-credential is a good fit for you and your organization. Ontario Tech has designed a process to help guide this decision-making and shape micro-credential development.

(Emerging) Principles for Excellent Badges



Figure 6.1 *(Emerging) Principles for Excellent Badges*. Developed as part of the Ontario SMA-funding for the joint OCAD and OntarioTech micro-credentialing initiative through stakeholder facilitation and synthesis by Dr. Carolyn Hoessler (2019). Reproduced by permission of Dr. Carolyn Hoessler.

Draft Principles' Criteria






Draft Principles' Criteria			
Principle	Learners	Industry*	University & Faculty
 Value-added	Focuses on articulable competencies that benefit & celebrate the Learner.	Valuable indicator of transfer-level readiness for industry.*	Represents & builds on University's ethos.*
 Feasible	Manageable with existing commitments.	Easy to access and use and verify; effective communication tool; efficient process.	Efficient to create, verify, confirm. Fits with chartered/funding. Financially feasible.
 Credible	Assesses "transfer" of competency; not participation.	Represents knowledge & skills that can "transfer" into other contexts; not participation.	Academically governed, approved; consistently and clearly defined.
 Wayfinding	Easy to identify the skills to get and how to get them; flexible options; scaffolded learning.	Clear path visible from outside-institution view.	Clear process to approve, create, implement, and verify.
 Useful	Increases ability to articulate and transfer competency; relevant.	Distinguishes & indicates ability to apply & transfer competency; timely.	Identifies competencies students have gained.

Figure 6.2 *Draft Principles' Criteria*. Developed as part of the Ontario SMA-funding for the joint OCAD and OntarioTech micro-credentialing initiative through stakeholder facilitation and synthesis by Dr. Carolyn Hoessler (2019). Reproduced by permission of Dr. Carolyn Hoessler.

Questions for faculty and cross-campus collaboration

The following checklist can be used to approach the development of micro-credentials. The questions apply to the various aspects of through faculty and cross-campus collaboration.

Questions that everyone on the micro-credential development team

- Is this really something we want to be doing over time?
- Do we have the right team here to be making this decision? Are there other people we should be talking to? (See the textbox "Members of a micro-credential design team" in chapter 3.)

- Are there other people on campus already doing this kind of micro-credential? Are we duplicating? Are we duplicating something already in an existing course?
- If we recognize that another institution is doing this, should we be doing it? Is there enough of a market?
- Are we doing something different?
- Do we have the necessary institutional policies in place to support this work?

Questions on collaborating with industry-employer partners

- Have we found the right partner or is this just the partner we found?
- Is this the best use of our extra time? Will the project we're going to get match our goals for doing this in the first place?

Questions on how collaboration is being approached

- Have we created a situation where our post-secondary partners are going to be rewarded for their work?
- Are we going to continue to facilitate this work or are we handing off the project management to the faculty subject matter expert (SME)?

Questions about developing content

- Can we repurpose existing content?
- Who owns the content? What does the license allow?
- Where will it be hosted?
- Who will have final decision on content?
- What quality assurance processes are in place?
- Are there individuals at our institution who can assist with instructional design, media development, and editing?

Questions about project management protocols:

- Has administrative ownership been articulated end to end from market analysis to development, recruitment to badge issuance?
- Is there a project management tracking process in place for major milestones and risks?
- Are there controls to manage scope creep?
- Is the project sustainable, with ongoing administrative and academic staff/instructor resourcing?

Questions related to recognition

- Have all governance requirements specific to the institution been addressed?
- Is a badging/credential issuing platform available on an ongoing basis?
- Does the badge align with institutional, provincial frameworks and practices?

Tools to support faculty and cross-campus collaboration

Hasson Plattner Institute of Design (2022). *Tools for taking action*. Stanford University. <https://dschool.stanford.edu/resources>

Lethbridge College (2021). *Micro-credential Development Handbook*. https://learninginnovation.ca/wp-content/uploads/2021/08/LCmicro-credentialHandbook_2021.pdf

Future directions for faculty and cross-campus partnerships

- Develop a faculty-friendly project charter that explains what the total cost of this project is in terms of time and effort (see the project charter template in the next section).
- Consider how faculty will be recognized for their contributions under tenure and promotion. Is this service and teaching? Is it one or the other?
- Optimize possible collaboration between continuing education and other departments or faculties. Collaborative workflows can help reduce repetition of existing full-term courses with an eye to also leveraging micro-credentials as a pathway into full-term programming or building an alumni network of continuous learners.

7.

COLLABORATION ACROSS DEVELOPMENT AND DELIVERY PHASES

To offer authentic, credible, useful, and relevant learning, many collaborators should be involved in the design and development of micro-credentials. With that in mind, it is first important to clarify the goals of collaboration: are you collaborating or are you consulting? Collaboration relies on:

It is important to clarify the goals of collaboration: are you collaborating or are you consulting? Collaboration relies on:

- Relationship-perspectives rather than a transactional approach
- Embracing the process versus pursuing a predetermined goal or outcome
- Time to build an ongoing relationship
- Trust
- Listening skills



To develop a micro-credential collaboratively, partnerships need to be fostered and stewarded. One approach to consider is “design thinking,” which focuses on users and their needs. It places people at the centre of the design process, and frames the problem, or the need, as central to the design ([Morris & Warman, 2015](#)). It might also be helpful to explore Tuck’s theory of group development, which outlines the different stages groups move through when working collaboratively: Forming, Storming, Norming, Performing, and Adjourning ([Stein, n.d.](#)).

A project charter is a very useful tool for shaping a conversation about developing a micro-credential. The template below provides a starting point; you can adapt it as needed as you build a micro-credential offering collaboratively.

Project charter: A tool for practitioners

A project charter ends up being really a useful way of shaping a conversation in a meeting. The project charter template included in this section provides a starting point for you to adapt as you build a micro-credential offering collaboratively:

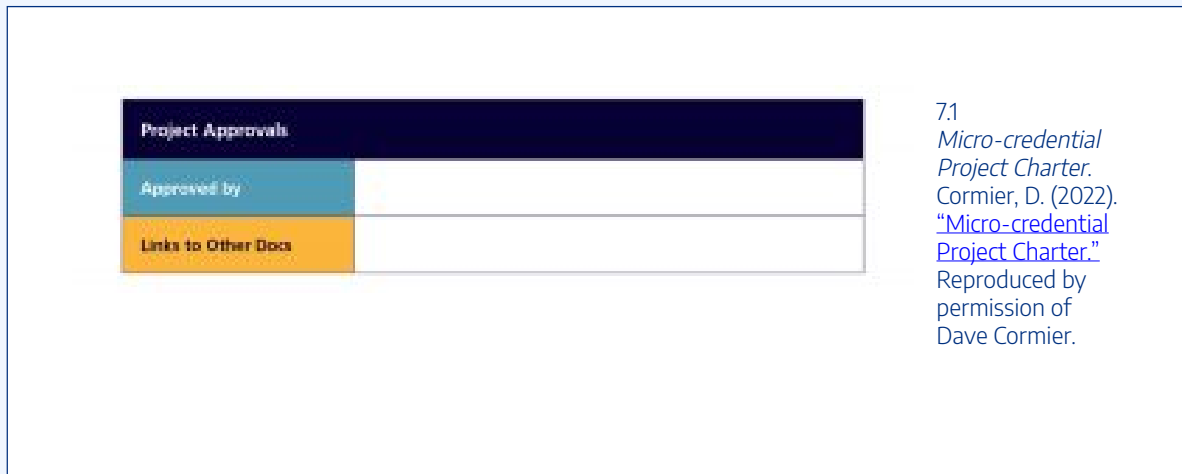
Charter Details			
MC Title			
Date Created		Faculty Lead	
Admin Lead		Project contact	
Other Contact		Version #	
Target Start Date		Target End Date	
Estimated Funding Required		Funding Source	

Micro-credential Overview	
Goals	(How will the world be different because of this project?)
Objectives	(What measurable changes will happen?)
Course Description	(How could we explain this project to a person not involved in it?)
Industry Connection	(What kinds of things will we do to make this happen?)
End state	(How do we know this project is over?)

Preliminary High-Level Milestones	
Milestones	Target Time Frame

Scope	
In Scope	Out of Scope
	Choosing courses

Factors to Consider	
Risks	Mitigation



Collaborators are an essential to every stage of the micro-credential development, from design and development through to marketing. Collaborators will come from various departments within the institution and external stakeholders such as employers, industries, and professional bodies. Each section below provides a list of possible collaborators for each phase of development.

Design and development collaborators

In the first phase of design and development, meeting with stakeholders is important to learn more about training needs and skills required in specific industries and professions. Each collaborator has a different journey to micro-credentials and collaboration pathways.

Collaborators include :

- Industry experts, employers, partners, and individuals from professional bodies
- Project manager
- Instructional designer or curriculum developer
- Quality assurance specialist or quality matters coordinator
- Subject matter experts (could be the industry experts mentioned above)
- E-learning development and design team
- Chairs, deans, or faculty members

Stories from practitioners: Collaborating with employers

When I conducted several focus group sessions with employers, partners, and industries last year, I learned that many graduates of college-level programs were still lacking specific skills and competencies to perform the job effectively. The feedback that I received from these stakeholders helped me and my design and project team to develop micro-credentials that were tailored and designed to meet these specific training needs and gaps. I worked with these industries to learn what would be needed concerning curriculum to ensure that learners completing these micro-credentials would indeed have the required skill set to complete the job effectively. Having these stakeholders involved in the process early on helped me to ensure that curriculum was designed to address these gaps, and that assessments were intentionally selected to measure the specific skill, competency, or knowledge gained.

Without this collaborative process, our design team would have been designing micro-credentials that most likely would not have met the upskilling and retraining needs that these industries were requiring; more importantly, these industries and professionals were elated to participate and were thankful that they could be a part of this journey of creating a specific micro-credential framework tailored to their particular industry. Additionally, with this collaboration, I was able to ensure that assessments were intentionally selected to measure the competency that was being assessed and mastered. With these collaborators, the learning goals of the micro-credential were easily identified, as well as the assessments that were chosen. Many of these industry partners ended up being subject matter experts who I hired to create the content for our micro-credentials, which was also an excellent benefit of collaboration. – Anonymous

Implementation and delivery collaborators

Collaborators bring different expectations with them to micro-credential development and delivery, as shown in the figure below. With the aim of micro-credentials being to build employability or market-ready skills, collaborators should have input on what, who, and how they are taught. For learners, micro-credentials might offer pathways to personal success and future opportunities. For educators, micro-credentials represent opportunities to apply skills and knowledge to a particular skill need or gap. For employers, micro-credentials can signal graduate and employee skills and training ([Mhichflet al., 2021](#)).

Collaborators include:

- Registrar's office

- Marketing department
- IT department
- HR department
- Student success/counselling office
- Continuing education
- Deans and chairs

Stories from practitioners: Collaborating in your institution

When I initiated the micro-credential competency-based framework at the post-secondary institution that I was employed with, I learned that collaboration with several departments needs to happen early in the design phase; this included collaboration with the following departments: IT, the registrar's office, marketing, HR, student success/counselling office, program coordinators, faculty, deans, teaching and learning departments and continuing education. – Jenn M.

Collaborators bring different expectations with them to micro-credential development and delivery. With micro-credentials building employability or market ready skills, collaboration should also encompass what, who and how it is taught. For learners, micro-credentials might offer pathways to personal success and future opportunities. For educators, micro-credentials represent opportunities to apply skills and knowledge to a particular skill need or gap. For employers, micro-credentials can signal graduate and employee skills and training. ([Nic Giolla Mhichilet al., 2021](#))

Stakeholder Expectations and the Need for Micro-credentials

7.2 Stakeholder expectations and needs.

Education/Policy Maker	<ul style="list-style-type: none"> • Financial stewardship of public funds • Learner access to the workforce and to education • HE institutional collaboration and cost savings
Providers/HE Institution	<ul style="list-style-type: none"> • Revenue stream • Industry partnerships • Learner recognition • Industry recognition • Broad credential acceptance • Funds contract training relationships with specific employers • Innovation • Potential to reduce cost through open and re-deployable learning objects
Employers	<ul style="list-style-type: none"> • Competency based • Skill ready candidates • Timely upskilling • Timely reskilling • Credible credential • Value
Learners	<ul style="list-style-type: none"> • Targeted and competency based • Value • Trusted provider • Flexible modality • Personalization • On-demand • Self-paced • Access

Marketing collaborators

Marketing encompasses a variety of approaches and ideas that involve collaboration to facilitate awareness of micro-credentials with stakeholders: employers, educators, and learners. As a start, it would be useful to explore how your project is approaching marketing. Are you hoping to encourage a general awareness of micro-credentials at a system level? Institutional brand awareness? Specific tactical approaches for a micro-credential or a cluster/constellation of micro-credentials? These considerations may change the location and content of your marketing efforts.

As a developer of a micro-credential, or part of a development team, it is important to ask yourself this question: “How might you raise awareness about micro-credentials and appeal to stakeholder groups to motivate collaboration for development, and/or engagement or participation in micro-credentialing?”

To answer that question, you first need to develop a message that communicates the value of the credential for your stakeholders. Developing questions using the principles of rhetorical theory to prepare your message theory can help:

- What is the subject?
 - How much do stakeholders know about micro-credentials in general?
 - How much do they know about a specific proposed micro-credential?

- ◦ How much do they need to know?
- What is the context?
 - ◦ What is the current educational climate?
 - ◦ What is precipitating the call and need for micro-credentials?
 - ◦ Why do micro-credentials matter?
 - ◦ What is the situation that stakeholders find themselves in (e.g., employers lacking skilled employees; students needing something extra on their resume)?

Exploring these topics leads to two important and interrelated questions: What is the purpose of the micro-credential? Who is the audience?

- **Defining the purpose of your micro-credential:** Your purpose can be defined in a kind of course description, highlighting how micro-credentials are different from a course that is part of a program. you can do this in just a few sentences, in the following format:
 - Sentence 1: What specific topic does your micro-credential cover?
 - Sentence 2: What things will people do in this micro-credential?
 - Sentence 3: Who are the people you are anticipating will take this?
 - Sentence 4: What professional value might those people receive from it?
- **Defining your audience.** There are two distinct steps in the process of defining your audience: describing the target market from viewpoint of the content expert, and doing the marketing research, performed by a professional who might ask questions like:
 - Can you describe the kind of person who you imagine taking this micro-credential? What is their current education level? Do they work in a particular profession? What part of their career might they be in?
 - If you were to guess, how many people do you think there are who would be specifically interested in this micro-credential?
 - If you were to try and reach these potential students, where would you go?

Employers and lifelong learning

Employers are increasingly interested in demonstrable skills and a clear commitment to lifelong

learning when hiring. A study by Northeastern University in the US shows a significant shift in focus away from formal degree and diploma credentials to clear evidence of skills and competencies ([Gallagher, 2018](#)):

- 23% of companies surveyed already prefer skills-based evidence over degrees.
- 39% indicated they were moving in this direction.
- 64% saw micro-credentials as demonstrating a commitment to lifelong learning—something they valued highly.
- 55% saw micro-credentials gradually diminishing the emphasis on degree-based hiring.

Several companies, including Google, EY, Penguin-Random House, Costco, Whole Foods, Hilton, Publix, Apple, Starbucks, Home Depot, IBM, Bank of America, and Lowe's, no longer use degrees as a major requirement of hiring.

To support workforce training, in 2020 the federal government introduced the Canada Training Credit. Individuals may take advantage of this annual \$250 tax credit by claiming accredited training ([Government of Canada, 2019](#)).

For more information on the marketing and launch of micro-credentials, refer to section 3, “[Micro-Credential Lifecycle: From Sunrise to Sunset](#)” in Part 1.

PART III
STRUCTURES

8.

PROGRAM PATHWAYS TO MICRO-CREDENTIALS

The flexibility of micro-credentials makes them adaptable to myriad applications. Most often in Ontario right now, they are being used in the validation of skills learned as part of stand-alone continuous education programs. However, they can also have other applications. Micro-credentials are meant to represent a “stand-alone value” ([Oliver, 2021](#)), which suggests that the skills should be relevant to an employer once completed. But micro-credentials can also be grouped together to represent clusters of skills that can be relevant in the same field.

There should be a movement from pathways that lead to a certificate in one specific discipline to courses from a variety of disciplines that make up a certificate in broader areas, such as human relations, communication, facilitation skills, for example. It is important to develop micro-credentials with the end in mind; for example, examining high-demand jobs in the workplace and working backwards to include and target the required skills and attributes for success.

In some cases, pathways to micro-credentials can be integrated within academic programming to validate a particular skill set that is learned within a for-credit degree program. The value in integration is that it can highlight that a student has successfully demonstrated a skill that is important to an employer but not mandatory for the successful completion of the entire course. For example, a student could master a type of software used for assignments in class that do not form the bulk of the grade.

Another pathway for integrating micro-credentials in academic programs could arise when program requirements change. For example, the Ministry of Education announced changes to curriculum for elementary students with the incorporation of coding into the math units. With this change, there was demand from practising teachers to learn the skill. Coding was implemented into curriculum in faculties of education across the province to reach new teacher candidates, and other teachers acquired it through professional development. A micro-credential integrated into the existing degree could identify teacher candidates who are learning this skill and distinguish them from those in programs that do not teach the skill and from graduates



who pre-date the curriculum change. Because the skills taught are identical, the same micro-credential can be earned either within the traditional classroom or as a stand-alone continuing education opportunity.

Micro-Credentials, time, and prior learning assessment and recognition (PLAR)

How can micro-credentials account for previous experience and education? Micro-credentials are not just about “time in a seat” but validated by assessment. The power of the micro-credential is that it allows us to evaluate a skill regardless of how that skill is demonstrated or how it was mastered.

The traditional academic format in Ontario is based on the Carnegie credit system, which is a standard based on the number of hours spent on direct instruction. A grade is then given based on what the student has achieved during those pre-set number of hours. By contrast, micro-credentials are generally based on the demonstration of a skill instead of the number of hours spent in the classroom.

Micro-credentials are often graded as either pass or fail: a learner either demonstrates the skill or they do not, and other metrics, such as how much time it has taken to achieve mastery of this skill, are irrelevant to the final outcome. In this way, the earning of the micro-credential can be divorced from the learning experience and, as a corollary, provide for increased opportunity to evaluate prior learning ([Woods & Skapenko, 2021](#)).

Micro-credentials may be getting away from conversations about seat time, but the “size” of the credential generally has been expressed using time as a common currency beyond the original learning context. Examples are “notional learning hours,” “volume of learning,” and “credit.” As the Australians put it, “volume of learning” is the time it would take a “normal” person to learn skill. Actual time taken is variable, but there cognition units (usually credits) are ultimately based on effort time. Oliver(2019)simplified this concept to the idea of “notional learning hours.”

Micro-credentials can be offered in a variety of ways, including self-directed, asynchronous, and synchronous formats. The material itself should guide the method of program delivery rather than the credential earned.

Information on the details of the micro-credential should be clearly articulated in the description and outline. These include the number of instructional hours, learning outcomes, and method of assessment. As well, learners should know whether the micro-credential is credit-bearing or non-credit-bearing. The pathways for transferability should be established between the institutions and their registrar’s office to ensure the process is seamless and recorded on the learner’s records or transcripts.

PSW Pathway at Lambton College

Micro-credentials that are stackable and ladder into other programs should be clearly described in their description, and all departments that handle transfers and pathway opportunities should have easy access to these laddering flowcharts and progression. See, for example, the Personal Support Worker (PSW) Micro-Credential Pathway Overview developed by [Lambton College \(2022\)](#).

Micro-credentials can be stand-alone or part of a micro-credential program. However, not all micro-credentials need to be stackable. If the design team has agreed to pathway opportunities, the micro-credentials should be designed to support the learners with the required learning outcomes or competencies to seamlessly transfer into a larger credential program such as an Ontario college certificate or diploma.

Micro-credentials: credit or non-credit?

Micro-credentials can be credit-bearing or non-credit-bearing; therefore, some micro-credentials can be designed and developed to support learners wanting to transfer into certificate or diploma programs. Pathways for credit and non-credit courses should be clearly articulated, and this information should be identified early in the micro-credential. Learners should know whether completing this micro-credential will help them transfer into other credential programs.

When determining whether to design a micro-credential as credit or non-credit, it is helpful to consider the question through the following lenses.

Educational goals and standards

- Appropriateness of the program's structure and admissions requirements, method of delivery, and curriculum quality of teaching proposed.
- The adequacy and effective use of institutional resources relative to micro-credential program requirements.
- The learning outcomes achieved by students/graduates meet the program's stated goals, the credential level standard, and the standards of any related regulatory, accrediting, or professional association as aligned with the discipline.

- The continuing adequacy, suitability, and academic rigour of the methods used for evaluating student progress and achievement to ensure that the program's articulated outcomes have been met.

Institutional accountability

- Demonstrate a policy and process for new program approval.
- Show that policy guidelines are differentiated and adaptable to the range of programs and offerings with the institution, and responsive to needs and contexts.
- Provide measurable, consistent means and direction to undertake a quality review.
- Demonstrate that policy and process guidelines are consistent with institutional mandate, mission, vision, and strategic goals.
- Create rubrics for measurement of product, development, and quality of content.

Provincial accountability

- Commonalities between institutions, industry, sector boards, and employers, and provincial policies and guidelines.
- Standardized competencies accessible to inter-institutional transfers and pathways.

ASSESSMENTS

Assessments are an essential component of a micro-credential ([Oliver, 2021](#)). They should always align with the stated learning objectives or competencies within the micro-credential and be intentionally selected to measure whether the learner has successfully mastered a specific skill. In consultation with industry, assessments should reflect what learners will need to be able to do within that profession. Assessments of competency should be authentic to eventual performance in the expected context. For more information on competency and competency frameworks, see eCampusOntario's Open Competency Toolkit ([Green & Levy, 2021](#)).

Recent conversations related to micro-credential design suggest *authentic assessments* are an emerging high-impact practice ([Gooch et. al., 2022](#)). Authentic assessments are defined as those being relevant to particular or specific workplace and social contexts. They ask learners to “do” and practise the skill, competency, knowledge, or attitude that the micro-credential is designed to support ([Wiggins, 2006](#)).

The practice of assessing learners invites them to demonstrate how they have acquired the specific skill, knowledge, or competency targeted by the micro-credential. Without assessment there cannot be *trust* that a micro-credential has achieved its purpose ([Chaktsiris et al, 2021](#)). However, to reach this goal, assessments must authentically measure and share how the learner has acquired the promised outcome of the micro-credential.

Intentional selection of learning outcomes and objectives is a critical step in micro-credential design and development. It is important that an assessment be carefully selected to measure the targeted skill or competency, and for it to align with the competency. The same applies to assessments of learning outcomes and objectives. Using the rubric and framework available from Quality Matters while designing micro-credentials, including the selection of intentional assessments, can help to ensure alignment between the objectives and assessment ([Quality Matters, 2022](#)).

A rubric helps learners to better understand what is expected of them and what criteria they must meet to be successful. However, it is important to note that rubrics are not always required for assessments, especially if the instructions and criteria of the assessment are clearly explained and learners know what they need to



do to reach a specific benchmark (e.g., a grade of 80% or higher). Rubrics do, however, provide learners with instructions and guidance on how to complete an assessment effectively.

Using backward design for micro-credential assessments

Backward design: is a method of instructional design that focuses on the “big picture” and what learners should be able to do upon successful completion of the micro-credential. The assessment method selected, therefore, should reflect this big picture approach. For example, if the design team feels that a learner should be able to create a resume and cover letter upon successful completion of the micro-credential, it only makes sense that the summative assessment would be to “create a professional resume and cover letter.” The formative assessments, whether graded or ungraded, should provide opportunities for learners to practise specific components of a writing a resume and cover letter and receive constructive feedback from the instructor before completing the summative assessment.

If the micro-credential is competency-focused, and learners are required to demonstrate a specific skill, the assessment must be able to measure and assess that the learner has mastered that specific skill. How this is done depends heavily on how the micro-credential is being delivered. For example, if the competency is welding a piece of copper, and the micro-credential is offered online, a suitable authentic assessment might be a video recording of the learner welding a piece of copper and describing each step of the process. Or if a micro-credential states that a learner will be able to “Identify common mental health–related illnesses in young children,” it would be appropriate for the assessment to measure their ability to “identify” these illnesses ; this could be done with a quiz or test, a PowerPoint presentation that asks learners to identify these illnesses, or a written assignment.

Choosing micro-Credential assessments

When designing micro-credentials, it is important to identify the assessments early on to ensure they are appropriate to the delivery method selected for the micro-credential, as well as the

learning objectives. Some micro-credentials are better suited for face-to-face or blended delivery than online or hybrid formats.

For example, suppose the learning objective is to “perform proper hygiene” and the delivery method is completely online, asynchronous. In this case, an appropriate authentic assessment might be a video presentation where the learner is engaging in performing proper hygiene while verbally describing each step of the process.

Assessments of competency should be authentic to the eventual contexts where they will be used and provide evidence converging on the same skill or competence.

Some examples of assessments that could be used for micro-credentials:

- Project-based assessments
- Problem-based assessments
- Scenario-based assessments
- Video demonstration presentations
- Written assessments
- Portfolio (e.g., collected evidence from formal and informal learning)
- Workplace observation (e.g., specific demonstrations and/or observations over time)
- Dialogue or conversations (e.g., presentations, interviews, debates, discussions)

It is essential that both the formative and summative assessments selected help learners achieve the stated learning objectives.

Formative Assessments and Micro-Credentials

Formative assessments provide excellent opportunities for learners to practise and gauge their own learning and progress before they complete the summative assessment. Formative assessments throughout the micro-credential can provide learners with automated feedback through online quizzes, or direct feedback from an instructor to better support and prepare them for their summative assessment. Not all formative assessments need to be graded; ungraded assessments allow learners to practise and engage with the assessments multiple times.

Summative Assessments and Micro-Credentials

The summative assessment is critical and should always align with the learning objectives or competencies

in the micro-credentials. Depending on the type of micro-credential being designed, some design teams may opt to provide learners with multiple opportunities to complete a summative assessment until they reach a specific benchmark or percentage. Others may want to provide learners with only one opportunity. Regardless of the choice, which will be different among institutions and design teams, learners should be set up for success with clear expectations related to assessment. They should be supplied with all the required materials and instructional resources, learning activities, course-related tools, and formative assessments to support their learning experience; this includes appropriate and measurable objectives or competencies.

The chart below will aid in developing and choosing appropriate assessments .

Micro-Credential Authentic Assessment Framework

PURPOSE

When developing an assessment for a micro-credential, start with two simple but complex questions:

RELEVANCE

Once the purpose of the micro-credential has been set, next comes the work to identify the specific contexts where learners will be expected to “do” the skill targeted by the micro-credential:

CHOICE

Offer flexibility through assessment design. Learners can demonstrate competency or mastery in a variety of ways ([Acree, 2016](#)). After collaborating to identify how learners can demonstrate their mastery of a skill, competency, or knowledge, consider how they might choose to share their learning in a variety of formats (or multiple means of representation and engagement) ([UDL On Campus](#), n.d.):

- What should a learner be able to do or know by the end of the micro-credential?
- How will the learner know they are able to do or know this?

- How do you know that the assessment is relevant? Consult with both industry/community partner and learners to co-create this sense of relevance.
- Working together, explore possibilities for assessments that are relevant to the work or social context where the learner will be expected to use the skill being assessed. For example, how might learners demonstrate their learning in ways that meet their expectations, but also those of the industry and educational partners?
- What evidence could a learner present that demonstrates they have mastered the skill or competency targeted by the micro-credential?

- How is the assessment relevant to “doing” the skill targeted by the micro-credential ([UDL On Campus](#), n.d.)?
- How can learners demonstrate they have met the goals of the micro-credential? Consider brainstorming this question with micro-credential partners, including learners.
- There are likely at least a few ways learners can demonstrate they mastered the purpose of the micro-credential. Can this variety of demonstration be used create variety in assessments learners can choose from?
- How do flexible assessment options align to the purpose of the micro-credential and support learner diversity ([CAST, 2020](#))?
- Create assessment tools (rubrics, checklists, criteria lists) focused on learning goals that can be used across multiple learning contexts or assessments ([White, 2020](#)).

CONNECTION

Connection between learners and instructors is a high-impact teaching practice known to increase student learning ([Centre for Teaching Excellence](#), n.d.). Building connection between micro-credential partners through assessment offers a powerful opportunity for a micro-credential to meet its outlined purpose: to fit a clearly identified need for a skill or competency. To facilitate connection through assessment, consider:

- How can the assessment invite opportunities for learners to connect to each other, to instructors, and to community/industry partners?
- Can learners be included in smaller groups throughout the term providing opportunities for them to get to know one another and build social connections?
- How does the assessment connect learners to the work or knowledge they will be expected to do once the micro-credential is completed?

FEEDBACK

Providing meaningful feedback to learners throughout the micro-credential invites reflection on the core skills targeted by the micro-credential offering. The purpose of any assessment is feedback ([Wiggins, 2006](#)). To provide meaningful formative assessment and feedback within a micro-credential offering, consider:

- How can learners access low-stakes opportunities for them to reflect on their own learning and identify gaps (such as regular quizzes, journaling, or group exercises)?
- How does feedback relate to authentic and effective assessment, where employers might watch videos or view other evidence of performance through a learner's e-portfolio ([Contact North, 2021](#))?
- Are there clear expectations so learners know *how* they will be assessed (e.g., by rubric, checklist), and *why* this assessment is important to the purpose of the micro-credential?
- When is feedback provided to learners? Consider offering feedback throughout the micro-credential rather than only at the end of an offering through a summative assessment and providing opportunities for students to engage in peer-review feedback opportunities.
 - Assessments require instructors to provide learners with constructive feedback, and if the micro-credential is competency-focused, learners should be given opportunities to receive this feedback and master the specific competency; therefore, competency-focused micro-credentials should provide learners with second attempts to complete their assessments after receiving essential feedback from their instructors. The goal is to support learners with mastering a specific competency and therefore, providing this feedback for improvement is essential.

ITERATIVE DESIGN

To incorporate perspectives of all members of the micro-credential ecosystem, adopting a flexible and iterative design approach provides opportunities to evaluate and revise offerings in a cycle of evaluation, analysis, and revision ([Mei et al., 2021](#)). Adopting an iterative design and evidence-based approach to micro-credential projects might look like:

- Identifying which member of the micro-credential ecosystem, educational institution, or industry partner, will lead facilitation to create and evaluate the micro-credential.
 - Co-creating core aspects of the offering, including content, delivery, and assessment through an iterative design cycle with regular feedback.
 - Developing plans to evaluate and rework the micro-credential after each offering every time a micro-credential is offered so that more will be learned about its high points and pain points.
-

10.

TECHNOLOGIES AND PLATFORMS

Learning Management System (LMS)



Your choice of technologies and platforms to use will depend on how the micro-credential will be delivered.

If it will be delivered solely online and asynchronously, you will want a learning management system (LMS) that ensures learners access to required instructional materials and resources. You will want to arrange opportunities for automated “real-time” feedback through both formative and summative assessments. Additionally, the LMS used should be able to issue either a digital badge or certificate of completion once the learner has successfully completed their micro-credential.

To create and deliver micro-credentials, most institutions should be able to use the use the same LMS they have already adopted for many of their online or hybrid courses. This is a discussion that needs to occur with the institution’s IT department and the current LMS provider.

Digital credentialing platforms

Another technology requirement is a digital credentialing platform. This is needed to create and issue credentials to learners.

The platform chosen must be able to display essential information, such as the name of the micro-credential,

a description of it, and the skills learned. As well, it needs to provide the name of the institution issuing the credential and the date it was completed.

Data security is an important to consider when choosing a digital credentialing platform. Some platforms use blockchain security, while others have different means of protecting data. The security measures are needed to ensure validity and verifiability (i.e., proof that the credential is authentic and cannot be replicated or altered).

Resources to support choosing a digital credentialing platform

Badge Alliance (2022). *Badge platforms*. Badge Wiki. https://badge.wiki/wiki/Badge_platforms

Dimitrijevic, S., Devedzic, V., Jovanovic, J. & Milikic, N. (2016). Badging Platforms: A Scenario-Based Comparison of Features and Uses. In D. Ifenthaler, N. Bellin & D. Mah (Eds.), *Foundation of Digital Badges and Micro-credentials*. Springer International Publishing (pp. 141-161). DOI: [10.1007/978-3-319-15425-1_8](https://doi.org/10.1007/978-3-319-15425-1_8)

Transcribing micro-credentials and student Information Systems (SIS)

Integrating the student information system is a complicated process that requires extensive collaboration among many inter-institutional departments. These include, but are not limited to:

- Registrar
- Information technology
- Online education or continuing education
- Teaching and learning centre (design team)
- Marketing team

There are significant internal departmental operations and processes with the integration system that impact other departments and their ability to meet required expectations, timelines, and project deliverables. It is essential that planning take place early in the micro-credential design and development phase so that the affected departments can plan for the capacity and human resources needed to effectively execute this important task.

Using a centralized location, for example a Microsoft Teams channel, allows each department to contribute and upload specific processes and operations for everyone to adhere to. As well, regular weekly meetings should occur each week with each department to clearly communicate “next steps” and action items, and to ensure appropriate capacity and human resources are available.

Platforms for learners to share micro-credentials: Proof of capabilities

Micro-credentials are digital and can be posted to a learner’s e-portfolio. Once posted, they are “owned” and managed by the learner.

An e-portfolio is a type of “digital wallet.” As a micro-credential or certificate is earned, it is automatically deposited in the learner’s wallet, allowing the learner to control who can see which credentials when. It is also possible for the issuer to put a time limit on the use of the micro-credential or certificate, ensuring that outdated knowledge and skills don’t continue to appear.

Most digital credentialing platforms conform to an open standard, which means that micro-credentials can be shared across multiple platforms. The open badge standard is free and provides the greatest flexibility for learners when evaluating the portability of a badge ([IMS Global Learning Consortium, 2022](#)). Credentialing platforms may also provide encrypted certification of a credential through the Ethereum blockchain ([Chukowry et al., 2021](#)) or an alternative digital security method such as the one used by Parchment, which can provide employers with the confidence that the credentials have not been altered. Institutions must consider whether this level of encryption is essential; the answer may come down to the demands of the market. If employers require blockchain institutions, the institutions may have no choice but to respond.

If a skill or competency becomes out of date—perhaps a new way of undertaking a specific process or competency becomes standard—it’s possible for the issuer to set an expiry date for that credential. For example, when the guidelines for CPR (cardiopulmonary resuscitation) changed in 2010, a digital CPR certificate issued before that date could be given an expiry date requiring the holder to update their skills and competencies ([Contact North, 2020](#)).

Platforms and the micro-credential ecosystem

Different platforms are needed to support elements of the micro-credential eco-system:

- Platforms that house micro-credential learning content (e.g., LMS).
- Platforms for issuers to create and issue credentials (e.g., a dedicated platform such as [BC Diploma](#)).
- Platforms for learners to display, curate, or share issued credentials as links or proxy copies (LMS, SIS, wallets, backpacks, passports, portfolios):
 - [MyCreds](#) as a wallet.
 - [eCampusOntario Passport](#) as a portfolio.

- [LinkedIn](#) as a social media sharing platform from wallets, portfolios, or direct from credential hosting platform.
- Platforms, technologies, and services for credential consumers to validate and verify credentials (validators).
- Platforms to house frameworks for alignment to competency models, standards, and other structured frameworks (OSN, EMSI, etc.).
- Marketplace platforms to choose micro-credentials to earn (e.g., [eCampusOntario Micro-credential Portal](#)).

PART IV

RECOGNITION

11.

QUALITY ASSURANCE

Quality assurance is critical to the success of micro-credentials within the system. While the term “quality assurance” is hard to define, all stakeholders agree that it is foundational to growth and acceptance of micro-credentials as a valid component within the educational landscape.

Both learners and employers rely on trusted providers who have demonstrated quality, and this is borne out by research reported by the European Union ([Orr et al., 2020](#)). However, while the importance of quality assurance may be recognized, this is new territory, and in many cases existing quality assurance frameworks are still being adapted to facilitate and monitor micro-credentials.

Several possibilities for assuring quality can be identified in the current ecosystem. Ontario higher education institutions are subject to specific quality and accreditation requirements within provincial jurisdiction, and micro-credentials may fall into existing administrative and governance processes for degree-bearing credits. In other cases, a specific professional organization (e.g., colleges or associations for nursing, engineering, health care, etc.) may be responsible for auditing recognized programs. Another scenario is applying a quality framework driven by one already established in industry (e.g., ISO, W3C).



Frameworks for Credentials

Context is key in determining the appropriate quality standards framework for a micro-credential program—whether that should be existing academic review and approval processes, or alternative, industry, or employer-led frameworks.

Academic quality standards frameworks

The governance of academic institutions can broadly be defined as the rules, relationships, and systems that

assign decision-making authority, provide accountability, and report on performance. These processes apply to degree-bearing credit programs. Two definitions follow :

- Colleges—“Governance may be defined as the legislation, policies and procedures under which an organization is governed and the decision-making structures it employs...The board of governors governs each college on behalf of the public” ([Ontario Ministry of Training, Colleges and Universities, 2003, p. 1](#)).
- Universities—Ontario Universities Quality Framework notes, “Every publicly assisted Ontario university that grants degrees and diplomas is responsible for ensuring the quality of all of its programs of study, including modes of delivering programs and those academic and student services that affect the quality of the respective programs under review, whether or not the program is eligible for government funding” ([Ontario Universities Council on Quality Assurance, 2021, pp. 6](#)).

From a quality perspective, this governance is carried out through various committees, most notably a college council and a committee (e.g., a learning and engagement committee) for colleges, and for universities, a quality council and appraisal committee of the university board.

Alternative quality standards frameworks

When existing academic governance structures are not sufficient for the purpose of micro-credentials, a third party may provide structured quality standards and an audit process. These are used by regulatory, professional, and industry bodies and other non-academic educators seeking course certificates. For example:

- Institute for Credentialing Excellence provides several services including:
 - Assessment-based Certificate Accreditation Program (ACAP) ICE 1100: 2019—Standard for Assessment-Based Certificate Programs for third-party accreditation of assessment-based certificate programs and certification programs ([Institute for Credentialing Excellence](#), n.d.).
 - An overview of terminology can be found in this free introduction to the 2010 version of the standard: *Background Information ICE 1100 2010 (E)—Standard for Assessment-Based Certificate Programs* ([Knapp & Kendzel, 2009](#)).
 - A more recent, less-detailed reference, which does include definitions for micro-credentials, is *TERM20 C.E Basic Guide to Credentialing Terminology* ([Clark et al., 2020](#)).
 - National Commission for Certifying Agencies (NCCA) for development of standards of excellence for voluntary certification programs in healthcare: *ST 2021 NCCA Standards for the Accreditation of Certification Programs* ([Institute for Credentialing Excellence, 2021](#)).
 - Common Microcredential Framework (CMF), developed by the [European MOOC Consortium](#), uses the European Qualification Framework (and other national qualification frameworks of recognized universities) to provide high-quality courses that award academic credit.

Critical information summaries

Critical information summaries, as first proposed by [Orr et al. \(2020\)](#) are a form of checklists, or “manifests,” of micro-credential components. The author notes:

Having easily accessible, informative and comparable information items will create greater trust and transparency with regard to micro-credentials among employers, quality assurance agencies, qualification recognition bodies, higher education institutions, learners and other providers (e.g. private institutions, technical and vocational education and training providers, companies, government agencies, non-profit organisations, libraries and museums) ([Orr et al. 2020, p. 14](#)).

Given the potentially widely varying characteristics, the following list of *critical information items* is suggested to provide clarity to stakeholders on the form and nature of the credentials:

- Title of the micro-credential, which precisely signals the learning outcomes.
- Provider of the course.
- Date when the micro-credential was awarded.
- Description of the course content and its purpose.
- Learning outcomes—what the successful learner knows, understands, and can do based on this assessed learning.
- How the learner has participated online, on-site, or both online and on-site.
- Number of credits provided, if credit-bearing.
- Time period when the learning took place.
- Any prerequisites that were required to begin the course.
- Learning resources relevant for the credential.
- Type of assessment testing, application of a skill, portfolio, etc.
- Supervision and identity verification: unsupervised with no identity verification, supervised with no identity verification, supervised online, or on-site with identity verification.
- Quality assurance: the body ensuring the quality of the course.
- Outcome for a successful learner: admission to a degree program, credit toward a degree program, certification or digital badge earned, number of credits.
- Integration/stackability options: stand-alone, independent course/integrated, stackable toward another credential.

Providing this metadata and descriptive information enables different “flavours” of micro-credentials to be appropriately identified. (See [Case study: atingi.org](#) for a detailed explanation of classification, formatting, and templating, and critical information summaries.)

Meeting Expectations

For many, quality simply means “meets expectations,” which implies *managing* those expectations through clear communication of intent and process, then confirming you have delivered. With micro-credentials, the expectations come from both learners and industry/sector partners, and it is up to the educational institution to ensure that both sets of expectations are met effectively.

The following can help manage expectations of both learners and industry/sector partners:

- **Clear classification of micro-credential types.** Micro-credentials can vary widely in terms of scope, volume, level, stacking, rigour, etc. Clear labelling in the metadata (use of standard descriptors) and articulation of learning outcomes can manage expectations of both learners and industry/sector of what is being learned; allowing industry/sector partners to be active participants in the development of the micro-credential by taking on the role of reviewer should ensure that the content created meets their needs and expectations and fulfills possible accreditation criteria.
- **Predictable formatting and templating.** Using copyable templates for the different kinds of micro-credentials can provide a good balance of predictability and flexibility in the metadata for the learner so that they do not have to navigate different LMS platforms, educational technologies, etc.
- **Use authentic assessment** (explored more fully in section 9, above). A regular review by both the educational institution and industry/sector partner ensures that content is kept current and up-to-date.
- **Collect learner feedback.** Administering end-of-learning experience surveys ensures that expectations are met consistently and that adjustments can be made quickly and efficiently before the next offering.
- **Match expectations to accreditation:** If the micro-credential is to support eventual accreditation in a certain industry/sector, ensure that content developed matches the expectations of the accreditation body before it is first offered. Ideally, gain the seal of approval from the accreditation body to add to the labelling of the micro-credentials for learners and industry/sector partners.
- **Use critical information summaries (“metadata manifests”).** The notion of using concise critical information summaries “to assist busy employers and learners” was proposed by [Dr. Beverley Oliver \(2019\)](#) in her paper *Making micro-credentials work for learners, employers and providers*. The idea was picked up by [Orr et al. \(2020\)](#) NESET analytical report, *Towards a European approach to micro-credentials*, which was an input document for the European Commission’s Final Report: *A European Approach to Micro-Credentials* ([Futures et al., 2020](#)). These are detailed assertions of quality by the issuer that may be endorsed by third parties.

12.

POLICY AND REGULATION OF MICRO-CREDENTIALS

Ontario does not have a framework in place to regulate micro-credential programs. However, lessons can be drawn from formal structures in other jurisdictions such as New Zealand, Australia, Scotland, Ireland, Denmark, and Hong Kong where there are frameworks for integrating shorter credentials within the overall higher education framework. At this early stage of evolution, it would also be suitable to leverage insights from other existing frameworks such as the Ontario Qualifications Framework, as well as designing and implementing your own institutional policies for micro-credentialing.

The eCampusOntario Micro-credential Community of Practice is an excellent resource for connecting and sharing best practices with colleagues from across the education system.



Regulatory compliance and audit

- Consider the regulatory frameworks (both government authority and self-regulating) that apply to your institution as they relate to credentials (e.g., in Ontario, the Minister’s Binding Policy Directives and Operating Procedures).
- Consider the standards established for your institution type:
 - Colleges
 - [Credentials Validation Service \(Ontario College Quality Assurance Service, 2022\)](#).
 - Universities
 - [Ontario Universities Council on Quality Assurance](#)
 - Private career colleges
 - Indigenous institutes
- The Ontario Qualifications Framework is applied across the sector and establishes the credentials

covered under the regulatory regime.

- Non-credit-bearing continuing education and certificate program approval requirements may be determined by institutional policy.
- Consider professional organizations and regulatory agencies.

Aligning policy development with regulatory and governance frameworks

- Within the regulatory construct you operate, ensure that your quality policy is institutionally grounded in mission and values.
- Suggest a principles-based approach starting with the learner and stakeholder.
- Consider incorporating non-credentials framework items into the policy to ensure that governance goals are met.
 - Consider any associated risks (e.g., reputational, audit).
- Emphasize consistent but relevant policy goals; as has been discussed, micro-credentials are different from Ontario Qualifications Framework credentials.
- Leverage pre-existing procedural assurance practices.
- Emphasize procedural assurance practices that focus on relevant risks and stakeholder benefits as they relate to your institution’s definition of micro-credential, its place within the institution, etc.
- Remember the stakeholder needs and drivers.

Policy options for alignment with Ontario Qualifications Framework (OQF)

The table below describes two very different approaches to positioning micro-credentials in the current OQF landscape.

Separated/Segregated	Linked
Micro-credentials are maintained separate from the OQF credential offerings of the institution. No pathways, transfers, or equivalencies will be considered in policy or design of the programming.	Micro-credentials are conjoined with the OQF credentials offered and policy and procedures are in place to create, facilitate and monitor pathways, transfers, and/or equivalencies.

National framework examples

Government of Australia

While Ontario does not yet have a formal structure or common practice, many jurisdictions, such as New Zealand, Australia, Scotland, Ireland, Denmark, and Hong Kong have frameworks for integration of shorter credentials within the overall higher education

framework. A comprehensive overview of international frameworks has been published by the Government of Australia.

To better understand how credentials are recognized internationally, see the detailed explanation of the International Standard Classification of Education (ISCED) taxonomy of learning in Appendix A of *Better 21C Credentials; Evaluating the promise, perils and disruptive potential of digital credentials* (Oliver, 2016).

(2018). *Other Countries – Shorter Form Credentials in Qualifications Frameworks*.
<https://www.ocqas.org/credential-validation-service/>

Establishing your own institutional framework

At some point, there will be a need for a policy framework at your Ontario institution. These resources may provide useful examples:

- Algonquin College (2021). *Algonquin College Micro-credentials Framework*. <https://www.algonquincollege.com/microcredentials/framework/>
- Deakin University (2022). *Micro-credentials Policy*. <https://policy.deakin.edu.au/view.current.php?id=00005>
- Kwantlen Polytechnic University (2021a). *Micro-credentials Policy*. <https://www.kpu.ca/sites/default/files/Policies/AC15%20Micro-credentials%20Policy.pdf>
- SUNY Empire State College (2020). *Micro-credential Policy*. <https://www.esc.edu/policies/?search=cid%3D127482>

For an example with administrative forms and templates, triage processes see:

- Kwantlen Polytechnic University (2021b). *Micro-credentials Procedure*. <https://www.kpu.ca/sites/default/files/Policies/AC15%20Micro-credentials%20Procedure.pdf>

For an example of collaboratively drafted campus policy framework for open badges see:

- Flintoff, K. S., Casilli, C., Gibson, D., Derryberry, A., Pempedijan, G., Bixler, B. & Harvey, F. (2014). A collaboratively drafted campus policy framework for open badges. *Badge Alliance*. https://www.academia.edu/8830797/A_collaboratively_drafted_campus_policy_framework_for_open_badges

13.

MICRO-CREDENTIAL QUALITY CHECKLIST

Quality is the result of considered and continuously improved policies and procedures impacting a variety of activities across an institution. The elements below are frequently identified in quality systems; however, they are sometimes arranged differently with greater or lesser emphasis:

1. Credential design
2. Course design
3. Instructor preparedness
4. Student/learner perspectives
5. Employer perspectives
6. Delivery
7. Technology infrastructure
8. Leadership, management, and resourcing



The following section outlines areas to consider as you build and refine your quality assurance system for micro-credentials, including some questions for building policy and related implementing procedures:

1. Credential design

The design of the credential has a great impact on quality. Alignment, content of the micro-credential, and pathways are integral to maintaining quality. These factors should all be considered within the structure of the credential.

Stackable/Milestone credential

Is the credential comprised of micro-credentials that can be aligned to create a larger milestone credential?

If the credential is stackable, or can become a larger milestone credential, does the larger milestone credential

need a set of competencies or learning outcomes? The competencies or learning outcomes can tie the smaller micro-credentials together and provide the learner with a complete set of skills.

Determining the organization of the micro-credentials can show the alignment of competencies and scaffolding of learning.

Pathways

How will the micro-credential, or set of milestone credentials, pathway to other credentials? Align the outcomes to those of courses, programs, and other credentials to determine pathways the learner can follow to ladder their learning.

Length

How long does the micro-credential need to be? The length should depend on the competencies or outcomes and how specific the learning experience needs to be. The micro-credential needs to provide clear links to the competencies and align to assessments.

Content lifespan and renewal cycle

When will the content of the micro-credential be reviewed? It needs to be often enough to determine its accuracy and currency. Industry input may need to be solicited to determine the lifespan of the content.

Other factors to consider are the nature of the competencies assessed in the content. Are the competencies timely and for a specific span of time? Do they apply to a specific group of learners? Is the content meant to bridge the learner's skills to a new technology? Will the micro-credential become obsolete once the learner has learned the new technology?

Work-integrated learning, applied research, and experiential learning opportunities

How will the content be delivered within the micro-credentials? Will work-integrated learning, applied research, or experiential learning opportunities be incorporated?

The delivery of the content should be considered before the design of the course. Work-integrated learning and experiential learning opportunities, especially when simulated, require in-depth planning and organization. This should be initiated prior to the design of the course to expedite the course development. If simulations or digital assets are required, the content should be developed so that it can be refined and built in conjunction with the design. Any simulations and digital assets must align with competencies or learning outcomes.

Development of competencies

Competencies should be developed based on data and industry consultation. They should align with industry need and be targeted to the learner requirements. They should also align with milestone competencies, pathways, and assessments ([Duklas, 2020](#)).

2. Course design

The development of a micro-credential can be broken down into three consecutive steps:

1. **Design:** Main characteristics of one specific micro-credential are defined, including its learning contents, how skill attainment is measured, its connection to other micro-credentials, and other characteristics (e.g., duration of validity, visual design).
2. **Implementation:** Technical implementation of the micro-credential design within the chosen learning environment (e.g., an institution's own learning system or a cloud-based learning platform) and consideration of related challenges (e.g., level of data privacy, ease of use of the environment, performance of system).
3. **Deployment:** Making a micro-credential available for use by its target audience (e.g., opening the registration). This also includes further consideration such as how to make a micro-credential easy to find and be shared by those stakeholders it is relevant to.

Planning for micro-credential design

Design of the micro-credential should ensure explicit and reasoned coherence between the intended learning outcomes, the assessments, the strategies for teaching/learner engagement, and the resources. Appropriate levels of resources should be set aside for course design and development, for administrative systems, and for supporting learners. If the micro-credential is scaffolded into a program, consider where program learning outcomes can be threaded back into the micro-credential course learning outcomes while incorporating relevant institutional protocols for course development.

In addition, the structure of the LMS or online platform must make it both clear and easy for learners to:

- Know what the micro-credential seeks to measure.
- Understand what they must do or complete to earn the micro-credential.
- Submit all the necessary materials to earn the micro-credential.
- Get feedback and know why they did or did not earn a micro-credential.

Next steps

- Write out some goals of your course. These will later become learning outcomes.
- Determine the delivery format and modality. Will the micro-credential be offered online (asynchronous, synchronous), hyflex, self-paced, or hybrid?
- Construct a one-page overview of each micro-credential module or week.
- Think about the content title for each session or learning unit. Add some subtitles to the headings, including the details of the content, as these will become your elements of performance (i.e., the competency's breakdown).
- Move the content pieces exactly where you see them; scaffold from easy to more difficult, sequential. etc.
- Incorporate labs or studio time where necessary into the micro-credential sessions.
- Place your assessments in the most appropriate place in the course. Resources should be provided outlining types of assessments, measuring instruments, rubrics, etc. (See section [9 Assessments](#).)
- Select a framework to work with (e.g., the ADDIE model of instructional design, backward design).
- Create a plan to monitor, review, and subject the micro-credential to reapproval regularly to ensure that the content of all learning materials remains current and relevant to the workplace. (See also [section 3](#) on the micro-credential life cycle.)

Designing micro-credential lessons

At the micro level, a micro-learning lesson of about 20 minutes duration should include:

- Activation of prior knowledge, delivery of information, and some form of assessment.
- Structured lesson plan templates to be used institutionally for standardization and transferability (PLAR, credit transfers, etc.).
- Lessons centred on the workplace skills set (e.g., use of problem-based learning).

Stories from practitioners

While developing their micro-credentials for teachers, the Friday Institute for Educational Innovation at North Carolina State University considered several design elements including:

- Self-directed: Teachers can pursue micro-credentials at their own pace either on their own or as part of the MOOCs for educators.
- Job-embedded: Each of the micro-credentials is directly tied to classroom practice and

provides a scaffolded approach to building useful classroom skills.

- Competency-based: Micro-credentials must measure an educator’s demonstrated ability to apply one specific skill in the classroom context.
- Research-based: Micro-credentials are designed around skills that have been thoroughly researched and have a demonstrated impact on classroom practice.

([Wolf, et. al., 2022](#))

Resources to support micro-credential design

Fischer, T., Oppl, S. & Stabauer, M. (2022, February). *Micro-credential Development: Tools, Methods and Concepts Supporting the European Approach*. Paper presented at 17th International Conference on Wirtschaftsinformatik, Nuremberg, Germany.

https://www.researchgate.net/publication/356568140_Micro-Credential_Development_Tools_Methods_and_Concepts_Supporting_the_European_Approach

Welch, T. & Reed, Y. (Eds.). *Designing and Delivering Distance Education: Quality Criteria and Case Studies from South Africa*. Nadeosa. https://www.saide.org.za/documents/Nadeosa_Quality_Criteria.pdf

- The Nadeosa Quality Criteria report provides some case study examples within an online delivery context that illustrate some of these ideas. Additionally, a number of quality assurance tools are available to support micro-credential course design reviews.

European Commission. *European Skills/Competences, Qualifications and Occupations (ESCO)*.

<https://ec.europa.eu/social/main.jsp?catId=1326&langId=en>

International Labour Organization (2010). *International Standard Classification of Occupations*.

<https://www.ilo.org/public/english/bureau/stat/isco/index.htm>

3. Instructor preparedness

These skill sets are required for micro-credential instructors:

- Facilitation techniques
- Writing learning outcomes to match competencies
- Active learning and group dynamics
- Assessment techniques and measurement instruments
- Portfolio thinking

Micro-credentials can also be used to prepare instructors for learning environments. With the use of an agile online system, instructors have opportunities to document their formal and informal learning and professional development through micro-credentials:

- Individually and in teams, teachers can identify and develop important skills, submit evidence of their competence, and earn digital badges verifying their expertise.
- Educational systems can tap the resulting data to inform decision making about investments in professional development.
- Instructors can use micro-credentials as an avenue to more fully own and advance their profession.

Findings from the use of micro-credentials in teacher education ([Acree, 2016](#)) found that:

- Teachers who earn some micro-credentials want to earn more.
- Micro-credentials encourage teachers to apply skills to classroom practice.
- Micro-credentials scaffold teachers to engage at an increased level of rigour.
- Teachers can demonstrate competency/mastery in a variety of ways.
- Instructional design and online platform matter.
- Micro-credentials should not have a one-size-fits-all approach.

4. Student/learner perspectives

Micro-credentials can prepare individuals for employment by supporting them in developing human skills, intercultural competence, teamwork, and communication skills, among others. Simulation-based activities have been used as part of micro-credentialing to provide experiential opportunities for learners to hone both interpersonal and technical skills. They may also be used to prepare individuals for a specific project; for example, micro-credentials that provide skills that intersect with design, technology, and social theory could prepare workers to develop a new product prototype.

Ways to consider learner expectations, needs, and goals:

- Request learner feedback on their success and experiences.

- Ensure learner supports are accessible in similar delivery through competencies: are learners able to discuss skills/competencies meaningfully?
- Engage learners in understanding outcomes and competencies.
- Engage learners in assessment design.
- Ask for employer review of micro-credential content to ensure relevance.

See also chapter [5, Connecting Learners](#), and [Oliver, B. \(2019\). Making micro-credentials work for learners, employers and providers.](#)

Competency-based education (CBE) training

Program stakeholders can benefit from a systems perspective of how their assessment practices contribute to the efficacy of the system as a whole ([Burns, 1972](#)).

The following principles are important to consider when reviewing competency-based programs and courses for quality:

- Competency-based programs and courses affirm the student’s ability to not only “know” but “do” ([Adelman, 2013](#)).
- Competency-based assessment validates learning ([Klein-Collins, 2013](#)).
- Competency-based programs focus on learning rather than time spent ([LeBlanc, 2013](#)).
- Learning is student-centred in terms of flexibility and personalization ([Klein-Collins, 2013](#)).
- Students are able to learn at a variable pace and are supported in their learning ([Johnstone & Soares, 2014](#)).
- Use technology for teaching and learning ([Mendenhall, 2012](#)).
- Effective learning resources are available anytime and are reusable ([Johnstone & Soares, 2014](#)).
- The faculty role changes ([Mendenhall, 2012](#)).
- Valid, reliable assessments are a key component ([Mendenhall, 2012](#)).

Assessment Design

The evolution of micro-credentialing from providing digital badges, to demonstrating differences among users, to demonstrating skills and abilities now provides learners with the ability to engage in a performance-based assessment. ([Fong, et al., 2016](#); [Wu et al., 2015](#)).

Methods of assessment are consistent with the learning outcomes being assessed, and are capable of confirming that all specified learning outcomes are achieved and that grades awarded reflect the level of student attainment. Assessments should cover a wide range of self, peer, collaborative, and content expert assessment tools.

Resources related to assessment design

[Boud, D. \(2021\). *Using the development of micro-credentials to improve diplomas and degrees* \[Webinar, PowerPoint\]. Contact North.](#)

[Ifenthaler, D., Bellin-Mularski, N. & Mah, D. K. \(Eds.\). \(2016\). *Foundation of Digital Badges and Micro-credentials: Demonstrating and Recognizing Knowledge and Competencies*. Springer.](#)

[Rossiter, D. & Tynan, B. \(2019\). *Designing and Implementing Micro-credentials: A Guide for Practitioners*. Commonwealth of Learning.](#)

The [IMS Global Learning Consortium](#) provides standards and solutions to enable the sharing and transferability of digital credentials.

[Making Informal Recognition Visible and Actionable \(MIRVA\)](#) is a European Commission project looking at conditions for effective continuity between informal and formal recognition and aiming to produce a series of enabling guidelines.

Adaptation of the [Quality Matters](#) Framework for Course Evaluation can also be considered for short courses.

5. Employer Perspectives

The perspective of the employer plays an important role in the creation of the micro-credential . The requirements of the employer and employee, and the relation of the requirements to the overall industry, play a role in content development and competency creation. Alignment, pathways, and employability stem from employer consultation and all have an impact on the quality of the micro-credential.

Employer consultation on skills and competencies

Research and data can provide questions for an employer to probe information about the skills and competencies for the micro-credential. The employer can give information about the industry and the demand for the area of the micro-credential. Currency of the industry and the content covered in the micro-credential determine its relevance and lifespan. Consulting with more than one employer can give greater insight into the skills and competencies required.

Outcomes/competency and engagement

Employers should provide information about the skills and competencies required for potential candidates within the organization. Competencies should be specific and targeted to a set of skills. Once the competencies/learning outcomes have been created, the employers should evaluate them and provide feedback on how they will be assessed and covered in the content. Employers should also determine if changes to the competencies need to be made.

Assessment design

Employers should give insight into industry practices that could translate into authentic assessments. This includes details on processes, procedures, skills, and tasks that would be expected of an employee. This should translate into assessments, work-integrated learning, simulations, or experiential learning opportunities that reflect the workplace. Once the content has been created, the employer should re-engage to determine if the content does authentically reflect the workplace.

Learner success/satisfaction consultation

During the content review process, employers should be consulted to provide feedback on course content. They should speak to the reception of course content and the impact of the learning experiences on the workplace. Employers can share changes that need to be made to the material, consult on the currency of the content, and determine competency changes that may be needed.

Surveying individual employees

The intersection of employers, employees, and the micro-credential needs to be examined. Employers can give information about candidates who completed the micro-credential and how it improved, or hindered, employee skill level in the workplace. Reflecting on employee performance can determine the success of the micro-credential and initiate improvements.

Employer review of the content

An employer's content review is essential to maintaining quality within a micro credential. The employer can assert the accuracy of competencies/learning outcomes, the alignment of content to assessments and assessments to competencies, and the authenticity of content and assessments.

6. Delivery

Consider user experiences:

- Are existing policies and practices effective against the intended purpose of the micro-credential?
- Have approval and development timelines matched market expectations?
- Has performance been measured against institutional estimates and expectations?
- Has performance been measured against procedure and process?

Resource

[Rossiter, D. & Tynan, B. \(2019\). *Designing and Implementing Micro-credentials: A Guide for Practitioners*. Commonwealth of Learning.](#)

7. Technology Infrastructure

Technology plays a role in the quality of a micro-credential. Tools can provide labour market data, the opportunity for the creation of digital assets, and monitor user data. The integration and use of technology can also ensure consistent micro-credential delivery. Technology can also provide learners with easy access to materials, seamless integration of digital assets, and simulated authentic assessment. Technology must always be included in the quality process. Quality checklists should evaluate the effectiveness of technology, the relevance of digital assets, the currency of materials, and surveys of user data.

Learner and employer access of open digital badges: Analytics

The quality process can be informed by learner and employer analytics. An institution can gather data based on employer and learner access of micro-credentials, and can determine how many times a user has accessed them, the completion rate, problematic areas within the micro-credentials, and other important statistics. Statistics can include:

- Number of micro-credentials issued, accepted, and shared (and where shared).
- What skills are supported; what skills are sought.

Labour market tools

The use of labour market tools can provide insight into the industry and competencies. Micro-credential quality should be based on skills, as opposed to training for a broader role. Industry consultations provide an in-depth perspective on the skills for the competencies or learning outcomes.

Learning Management System (LMS) analytics

Data pulled from the LMS can provide detailed information about the quality of the micro-credential. LMS analytics can give information about user access, issues with the micro credential, the completion rate, problematic areas, and learner access. (See also [chapter 10, Technologies and Platforms.](#))

8. Leadership, Management and Resourcing

Resource

Boud, 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) pp. 18-20.

Each micro-credential and the program it is intended to fit into should be mapped and communicated to demonstrate overall capability.

Self-Assessment

Regular review and self-assessment are pivotal to the quality process. The institution needs to evaluate the competencies/learning outcomes, the delivery, and the assessment of the micro-credential to determine the strengths, weaknesses, and opportunities for improvement.

Institutional review of performance against procedure and process

- The institution should evaluate the success of the alignment of competencies, assessments, and learning experiences in the micro-credential.
- The institutional self-assessment should evaluate the data pulled from the LMS, labour market tools, and badge providers to determine how the learner interacts with the micro-credential. The analysis of the data will drive the quality of the review.
- Instructor feedback should provide feedback on the success of the micro credential and opportunities for change.
- Learners should provide feedback on the learning materials, the assessments, the accessibility, and other key factors in quality. The learner feedback should provide important data in the review of the micro credential.
- There should be institutional review of performance against procedure and process.

Resources to support institutional reviews of micro-credentials

- The [NADEOSA Quality Criteria](#) report provides some case studies within an online delivery context that illustrate some of these ideas. Additionally, several quality assurance tools are available to support micro-credential design reviews.
- [Quality Matters rubrics](#) might be a springboard for ideas on measurement tools.

Tools and resources for micro-credential design quality

Tools and resources that are used for online and other program design are equally applicable for micro-credential development. The following are well-known tools that may be adapted for the micro-credential curriculum planning process. These principles and guidelines are well recognized as critical to the success and quality of courses and programs.

- [Quality Matters](#): Course/program based, includes competency-based learning.
- [SUNY \(2022\) Scorecard](#): open course-based micro-credentials.
- User Experience Design ([Nielsen, 2017](#)).
- Usability 101: Introduction to Usability ([Nielsen, 2012](#)).
- Decisive dozen heuristics ([Thalheimer, 2012](#)).
- [Work-Learning Research](#), Research-to-Practice Reports ([Work-Learning Research](#)).

14.

TRANSCRIPTABILITY

In Ontario universities, a transcript reflects a student's academic history. Depending on the institution, it may include other achievements. The transcript is also meant to provide a reader, for example a potential employer, with a clear understanding of a learner's abilities. The focus is on presenting academic history and achievement, which will include courses, other assessed activities such as placement and co-op, etc. Not-for-credit activities not linked to an academic course or program may be recorded elsewhere (e.g., co-curricular record).

Micro-credentials offered by institutions that are eligible to be on the student transcript will meet the criteria of the institution's transcript policy and the

standards of quality assurance that would include development, review, etc. For example, in Ontario "it is widely agreed that [a micro-credential is 'transcriptable'](#) meaning it will appear on a learner's college or university transcript and will be deposited to her or his digital wallet or e-portfolio" ([Contact North, 2020](#)).



The difference between badges and micro-credentials

Badges and micro-credentials are not the same.

The key difference depends on whether or not the credential is "transcriptable," meaning it could appear on a traditional college or university transcript. To elaborate:

- Micro-credentials are related to a formally approved or accepted set of standards or competencies.
- Micro-credentials are formally taught by a teacher or mentor who is responsible and accountable for ensuring the student learns and demonstrates the expectation for awarding the micro-credential.
- Micro-credentials may be stackable to achieve a credential recognized by other institutions.

Badges, on the other hand, can be for anything and awarded by anyone. The value is in learning the specific skill or knowledge ([Contact North, 2020](#)).

In short, the micro-credential is the course of study and the badge is a representation of success in its learning. Following are some further related definitions to highlight these distinctions.

The comprehensive learner record

[Ewan \(2016\)](#) discusses the importance of the comprehensive learner record in the development of micro-credentials, indicating that the disaggregation of learning will require new ways of recording learning in all its forms—from the official transcript and the co-curricular transcript to competencies and micro-credentials. The comprehensive learner record will incorporate these disparate artifacts in a single record. A digital version of this record would allow the learner to curate and control their credential.

E-transcripts

Traditional transcripts are under threat in content (competency, co-curricular elements being added) and format. E-transcripts using blockchain provide for portability, learner control, and the incorporation of metadata. Eduventures identifies the following as reasons institutions are investigating e-transcripting: learner service experience, learner access, cost savings, operational efficiency, and improved security ([Lurie, 2019](#)).

Open digital badges

Open digital badges are an interoperable digital representation of competencies and learning achievements that may be made publicly available by the learner. They include metadata to link to the issuing institution and the evaluation criteria and evidence. They are not the same as badges used within courses to motivate learning. Such badges are “closed,” and not available for public sharing on the part of the learner. They remain in a closed system, and they are often associated with participation or completion of an activity as opposed to a credential.

Co-curricular activity recognition

Similar to the closed badge, co-curricular activity is often participation-based where activities support a holistic view of the learner beyond their academic achievements and is recognized distinctly.

Resources on representations of learning

[Ewan, C. \(2016\). Higher Education Standards in a Disaggregated Learning Environment. Australian Government Office for Learning and Teaching.](#)

[Lurie, H. \(2019\). *State of the Field: Findings from the 2018 National Survey of Postsecondary CBE*. Encoura.](#)

15.

RECOGNITION AND COMMON CURRENCY



Accreditation and endorsement

A micro-credential is a type of claim made by the issuer stating that a learner has achieved a quantum of learning. A micro-credential also contains evidence to support that claim about this learning, and sometimes includes direct evidence demonstrating how the individual learner achieved the learning outcomes.

Beyond direct evidence, how can the consumer or viewer of the credential trust that the claim is true and significant?

- One way is through branding: Open University and IBM micro-credentials tend to be trusted because of their brand. Ontario post-secondary institutions also have strong brands, particularly in their regions.
- Another way to enhance and consolidate trust for any issuer is through third-party validation, which can include everything from formal accreditation and non-formal and informal endorsement.

Accreditation

Existing provincial policy for higher education in Ontario has a clear framework for accreditation of degree and certificate programs ([Ontario Ministry of Colleges and Universities, 2022b](#)). Professional organizations may provide specific requirements and audit compliance for training in their domain. Some third-party

organizations provide certification of compliance with non-academic standards to add additional credibility to the claims of micro-credential providers or support transferability.

Endorsement

Endorsement can mean different things in different contexts. We are using the term here as defined in the [Open Badges standard](#), which is the vehicle for most micro-credentials. Open Badges are trustworthy records of achievement. The vocabulary or metadata when combined with the validation and verification procedures establish Open Badges as a reliable method for expressing and verifying achievements online.

However, these open badge procedures don't answer questions such as, "Who trusts this micro-credential to be a good certification of the competency it describes?" Endorsement allows micro-credentials to represent specific claims about other profiles (issuers), badge classes (issuable micro-credentials), or assertions (micro-credentials as issued to individuals).

So, according to the [Open Badges standard](#), third parties can endorse three things:

1. Micro-credential issuers: This could include formal or non-formal accreditation that can be verified within the credential ("this meets our standards"), or more informal approval (e.g., "we work with this organization"). Examples include micro-credentials issued by continuing education units of Ontario institutions.
2. Issuable micro-credentials: These can range in formality from rigorous approval specifications by an employer or professional body to less formal support such as "we co-created this" or "we find this useful." Examples include endorsement by businesses or organizations, such as [eCampusOntario's Ontario Extend](#) program, which is endorsed by selected colleges that accept it for credit. Google has its own ecosystem of micro-credentials that signal readiness for a professional role at their company.
3. Micro-credentials issued to specific individuals: This is less common and not implemented on all platforms. It can be a way of adding more detail at the time of issue about the recognition event, or after issue, as part of the "socialization" of the micro-credential. Examples include linkage to a portfolio such as [Canvas Student Pathways](#) competencies achieved, as in the case of Riipen's micro-experiential programs ([Wong, 2020](#)).

Stackability

Stackability within or across programs is another signal of endorsement and recognition of micro-credentials as a common currency. Transferability of micro-credential credits levels the playing field as barriers to entry may be reduced through open admissions or low-cost alternatives. Quality assurance processes can improve recognition of a credential, regardless of the program provider.

Stackability also builds credibility with learners who value the portability of credits. They will have the ability to build a portfolio of credentials from multiple institutions to reflect their unique interests and skills.

They may also be able to curate the skills sets presented to a specific employer or audience to highlight their strengths relative to the opportunity they are seeking, whether a career opening or an academic program admission threshold.

PART V
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