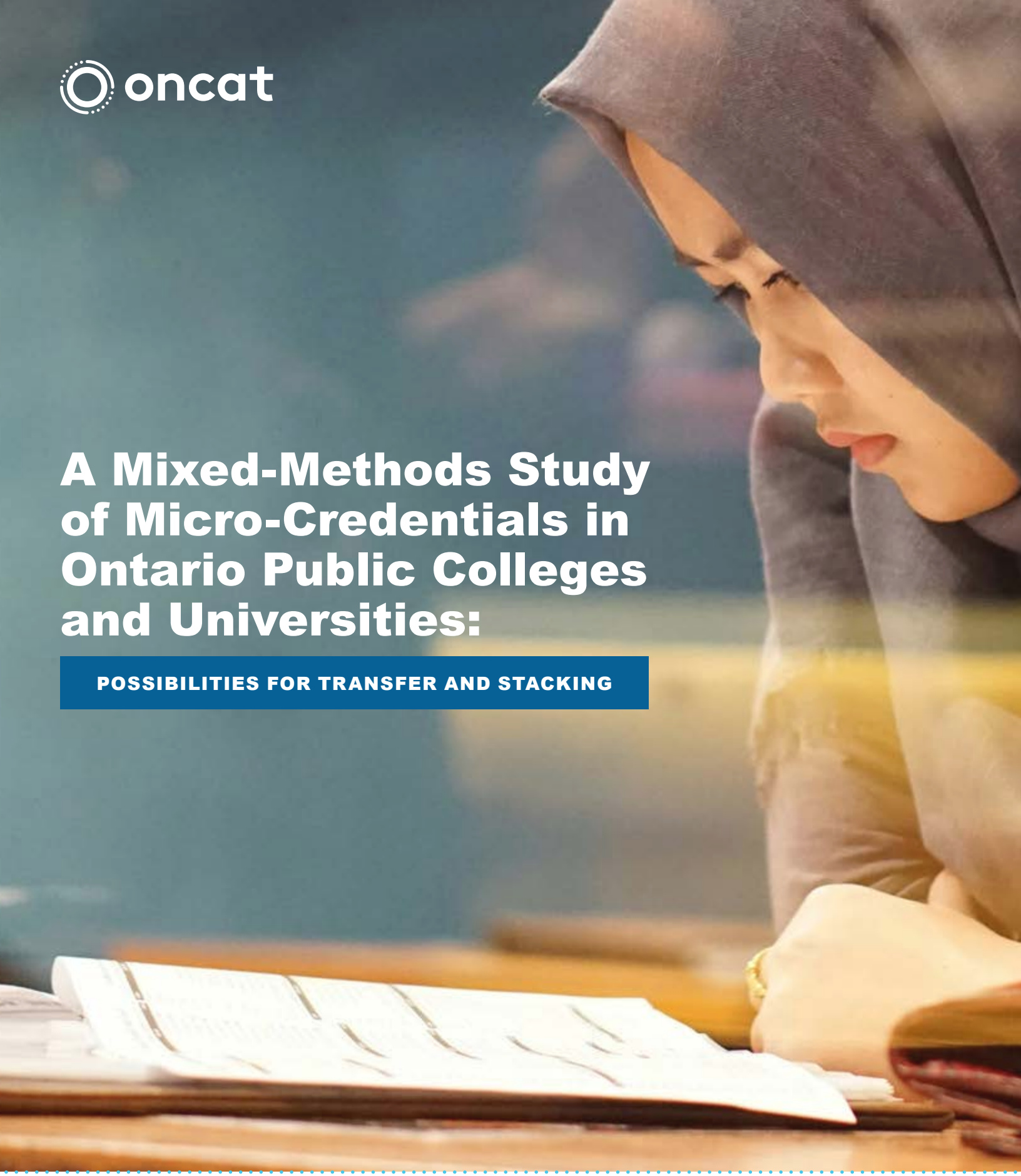

A Mixed-Methods Study of Micro-Credentials in Ontario Public Colleges and Universities:

POSSIBILITIES FOR TRANSFER AND STACKING

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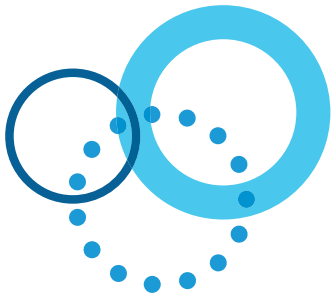

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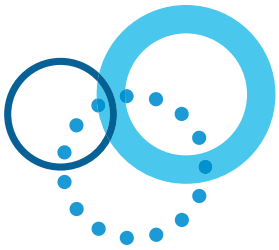


A Mixed-Methods Study of Micro-Credentials in Ontario Public Colleges and Universities: Possibilities for Transfer and Stacking

Executive Summary

Ontario's provincial government has recently incentivized its public postsecondary institutions to offer "micro-credentials." The government is touting micro-credentials as time-efficient and cost-efficient programs via which learners can access specialized training and demonstrate marketable skills to employers. Micro-credentials are potentially distinct from other postsecondary credentials when they combine some of the following traits: relatively short durations and low costs, content shaped by the expressed needs of industry, and provisions via which students can earn badges by demonstrating relevant competencies, even before completing the requisite course work. With these qualities in mind, our study examines the current state of micro-credentials in Ontario public colleges and universities, as well as their potential to be awarded as transfer credits and be "stacked" and "laddered" (defined below). We pose the following research questions:

First, are the micro-credentials currently offered in Ontario postsecondary institutions distinct from those institutions' existing programs? Do they explicitly advertise their defining components: short durations and low costs, content based on industry-based competencies and ways students can receive credit by demonstrating those competencies before even completing the coursework?

Second, to what extent do micro-credentials vary in their duration, cost, content, and evaluation? Is this variation sufficiently constrained so that micro-credentials can be readily stacked and laddered within institutions and transferred for credit across institutions?

Third, are higher education administrators and instructors considering processes of transfer, laddering, and stacking for micro-credentials? Do they have clear transfer protocols in place, and if not, is there the potential to develop such protocols?

To address these questions, we conducted a mixed-methods study that had two data-collection components. The quantitative component used data mining techniques to extract information from eCampusOntario's portal for all micro-credential courses listed on that portal in April 2022. The

qualitative component consisted of 33 interviews with administrators and instructors involved in micro-credential programming at 17 Ontario community colleges and universities. We report the findings below.

First, Ecampus Ontario's online portal contained a total of 1,552 micro-credentials. Those courses were offered by 36 institutions: 15 universities (64% of all courses), led by York University; 19 community colleges (34%), led by Lambton College; and two Indigenous institutes (2%). Offerings ranged across a wide array of fields, including information technology (IT), communication and marketing, business finance, management and operations, health, education, various trades, and various social services. Their median duration was 20 hours, though the courses offered by universities were lengthier on average than those offered by community colleges, with respective medians of 24 and 15 hours. Some courses were considerably longer, however; the longest 10% of courses lasted 125 hours or more. Micro-credential courses tended to have flexible starting dates, being offered throughout the calendar year. However, very few descriptions of micro-credentials on that portal referred to ways of demonstrating competencies or pathways for stacking, laddering, and transfer.

Second, micro-credentials were not necessarily distinct from the institutions' current offerings, particularly their certificate programs. All interviewees claimed that their institutions' micro-credentials reflected industry-based content, but not all offered students opportunities to directly demonstrate their competencies and receive badges before completing course modules. Furthermore, many micro-credentials appeared to be "unbundled" versions of existing certificate programs (i.e., created by splitting certificate courses into smaller, bite-sized chunks). Some interviewees deemed such unbundling to be logical and appropriate, believing it could facilitate the stacking and laddering of micro-credential courses into institutions' certificate programs, while others believed that unbundled courses were not "true" micro-credentials.

Third, institutions are not yet enacting protocols for granting transfer credits for micro-credentials. Some interviewees noted that micro-credentials are still very new and, thus, no students had yet requested transfer credits for them; they noted that micro-credentials could be transferred using protocols already in place for other courses. Other interviewees, however, highlighted barriers to granting transfer credits for micro-credentials, noting that their variety, the lack of quality assurance for industry-offered micro-credentials, and the lack of adequate documentation, such as detailed course outlines or syllabi, made it difficult to assess equivalencies among courses.

Our main conclusion is that micro-credentials currently occupy an ambiguous position in Ontario postsecondary institutions and that this ambiguity requires a trade-off. On one hand, micro-credentials that closely resemble certificate courses are more readily stacked and laddered, with clear potential to be transferred across institutions. On the other hand, such courses may not adhere to ideal typical micro-credentials and thereby do not help to expand postsecondary options for students. Conversely, the flexibility of micro-credentials, with their varying durations, unique fields of study, and industry-based instructors, which is touted as their strength, may also confound efforts to draw equivalencies between them, and thus, that flexibility could hinder efforts to engage in credit transfer.

Our findings suggest several avenues for future research. First, more work is needed to assess the current state of micro-credential documentation (i.e., detailed course outlines), which post-secondary institutions require to grant transfer credits. Second, research could examine whether colleges and universities see industry-provided micro-credentials as equivalent to their own and, thus, worthy of transfer credit. Third, surveys could gauge postsecondary students' levels of awareness and demand regarding receiving transfer credits for micro-credentials. Fourth,

given their current novel status in Ontario postsecondary institutions, a follow-up study two to three years from now could re-assess whether administrators and instructors have developed and enacted protocols for granting transfer credits for micro-credentials.

Introduction: What Are Micro-Credentials?

"Micro-credentials" are touted as time and cost-efficient programs via which learners can access training and demonstrate their skills to employers. Their raison d'etre is to quickly respond to existing skills gaps in labour markets (Ralston, 2021; Msweli et al., 2022), a view held by major authorities, including Colleges and Institutes Canada, eCampusOntario, and the Higher Education Quality Council of Ontario (HEQCO; Colleges and Institutes Canada, 2021; eCampusOntario, 2020; Pichette et al., 2021).

However, despite its broad usage, the term "micro-credential" does not, as yet, have a universally agreed-upon definition, nor it is clear how micro-credentials differ from traditional degrees, diplomas, and certificates in higher education (Gooch et al., 2022). Nevertheless, micro-credentials are potentially distinct from other postsecondary credentials when they combine some of the following four traits.

First, micro-credentials should be relatively unbundled offerings, with durations that are markedly shorter than those of other traditional postsecondary programs. Whereas degree and diploma programs bundle, sequence, and tier multiple courses over several years, micro-credentials should consist of stand-alone chunks of competencies that may or may not be sequenced with other kinds of courses.

Second, micro-credentials should be generally less costly than traditional diplomas and degrees and, thereby, affordable for a wider range of students.

Third, the content of micro-credentials should reflect the current demands of employers. Ideally, they should be designed through close consultation with employers and industry professionals. This industry-oriented content, combined with unbundled formats and a delimited scope, is said to offer just-in-time learning that is immediately applicable in job settings.

Finally, micro-credentials should offer a means by which students can demonstrate their competencies independent of whether they have completed course modules. Whereas traditional credentials are awarded only after students complete a requisite number of courses and/or credit hours, micro-credentials are touted for allowing students to directly demonstrate their competencies at any time; thus, they can be awarded "badges" before they complete coursework, potentially saving them time and money (Pichette et al., 2021).

However, it is unclear whether micro-credentials in Ontario higher education today actually possess these ideal qualities. As the newest credentials in today's colleges and universities, they may not yet have gone through vetting, standardization, and quality assurance to ensure their distinctiveness. Likewise, it is unclear whether today's micro-credentials are primed for the awarding of transfer credits across institutions. Courses in traditional diploma and degree programs may be transferred relatively easily because they typically undergo processes of standardization and, thus, may have comparable durations (i.e., split into terms or semesters with similar numbers of weeks and hours) and formats (i.e., weekly lectures, labs, and tutorials), have instructors with

comparable qualifications (i.e., PhDs), and be in recognized fields of study (i.e., well-established academic disciplines or professional fields). This standardization, itself a product of academic bureaucracy, facilitates commensuration, referring to processes by which courses are compared in an "apples to apples" fashion and potentially deemed equivalent.

However, because micro-credentials are prized for their novelty and flexibility, they may be less comparable. Their instructors may have a range of qualifications and not consist exclusively of certified PhDs with appointments in colleges and universities. They may have varying durations and formats that are tailored to their students' learning needs. If their standards are based on industry requirements, those standards may differ from academic norms. If their content is oriented toward brand-new, state-of-the-art competencies in industry, there may be no analogous fields of study in academe. Thus, the ideal micro-credential may actually engage in commensuration, which is needed to develop transfer protocols.

However, it is possible that many micro-credentials may ultimately resemble existing offerings in higher education, particularly certificate and/or diploma courses. Ontario colleges and universities are being incentivized to label some of their offerings as "micro-credentials," but they are not being clearly guided as to what those offerings should look like. Thus, institutions may align with a government policy, such as Ontario's promotion of micro-credentials, but then incorporate that policy into their own pre-existing protocols, priorities, and arrangements. Any policy implementation can be fraught with unintended consequences and be transformed themselves by institutions. To paraphrase Tyack and Cuban, "institutions can change reforms." One possibility is that institutions may dilute the very attributes of micro-credentials that would make them novel, flexible, and distinct from their other offerings. The implications of this possibility are mixed. If micro-credentials resemble certificate courses, institutions could readily adapt their existing transfer protocols to them. However, if many micro-credentials are merely re-branded certificate courses, the very purpose of creating micro-credentials, which is to broaden the range of postsecondary options, could be undermined.

To recap, this report examines the micro-credentials being offered by Ontario postsecondary public institutions, focusing on their potential for transfer, stacking and laddering. It is informed by ONCAT's mandate to help nurture a seamless, flexible, and efficient higher education system, with an eye to the capacity of micro-credentials to expand the current range of options for students. We hope this report can inform decision-makers about the current position of micro-credentials in today's higher education system, particularly their potential to be positioned in effective learning pathways. The next section examines the current context in which micro-credentials are emerging.

Context: The Ontario Landscape for Micro-Credentials

Ontario's provincial government is pursuing several goals as it promotes the development of micro-credentials among its public colleges and universities. It wants micro-credentials to be recognized widely among employers. It wants micro-credentials to be novel, flexible, and distinct from existing offerings. It also wants micro-credentials to fit into a seamless higher education system that benefits mobile students. To achieve the last goal, micro-credentials should have the potential to be 'stacked', that is, sequenced and/or combined with other courses, thereby helping students ultimately earn credits for larger credentials, such as certificates, diplomas, and even degrees. Furthermore, the government wants micro-credential courses, like any postsecondary

credit, to be transferrable, meaning that earned course credits from one institution are recognized if students move to another institution.

To reach these goals, the government has recently provided three incentives to its higher education institutions: it is funding micro-credential courses, it is granting their enrolees eligibility for OSAP, and it has created a searchable list of micro-credential courses on an internet portal. However, several processes make it unclear whether the government's goals are being achieved.

First, because micro-credentials are recent innovations in higher education, their boundaries with traditional credentials—degrees, diplomas, and certificates—are not clear. As is explored further below, we have found that some institutions that have courses listed on Ontario's micro-credential portal lack an explicit "micro-credentials" page on their own websites and do not necessarily advertise those same courses as micro-credentials. Furthermore, many course descriptions on that portal do not use terms such as "micro-credentials" or "digital badges."

Second, it is difficult to discern whether all courses advertised on the provincial portal possess the distinguishing traits of micro-credentials: content based on the needs of industry, flexible formats with short durations and low costs, and ways to directly demonstrate competencies that are independent of completed coursework. The proportion of micro-credentials with those characteristics is unknown.

Third, provincial decision makers want micro-credentials to be placed within pathways that lead to further education and lifelong learning (e.g., eCampusOntario's Micro-Credential Principles and Framework, 2020). "Stacking" refers to the combining of individual micro-credentials to form higher-level or bundled credentials (see Figure 1). The capacity to be stacked is considered a key marker of quality for micro-credentials (Pichette et al., 2021). 'Laddering' refers to using a single micro-credential or a series of stacked micro-credentials to earn advanced standing in a larger related credential, such as a certificate, diploma, or degree (see Figure 2). Our investigation proceeds from the assumption that it is currently unknown whether new micro-credentials have the potential to be stacked, laddered, and transferred within and across postsecondary institutions.

FIGURE 1

Stacking

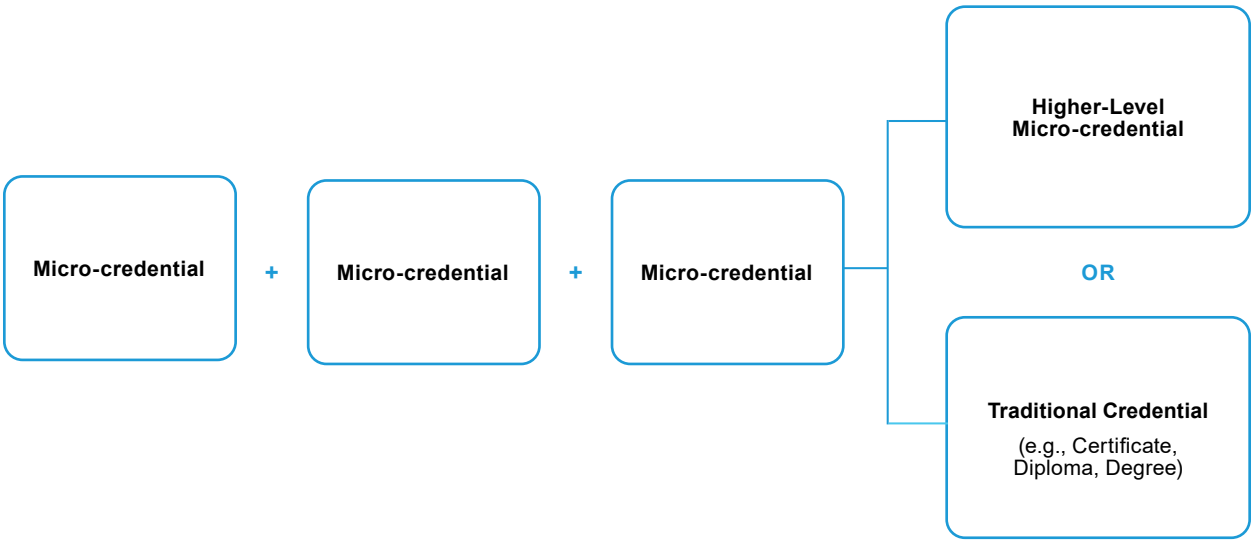
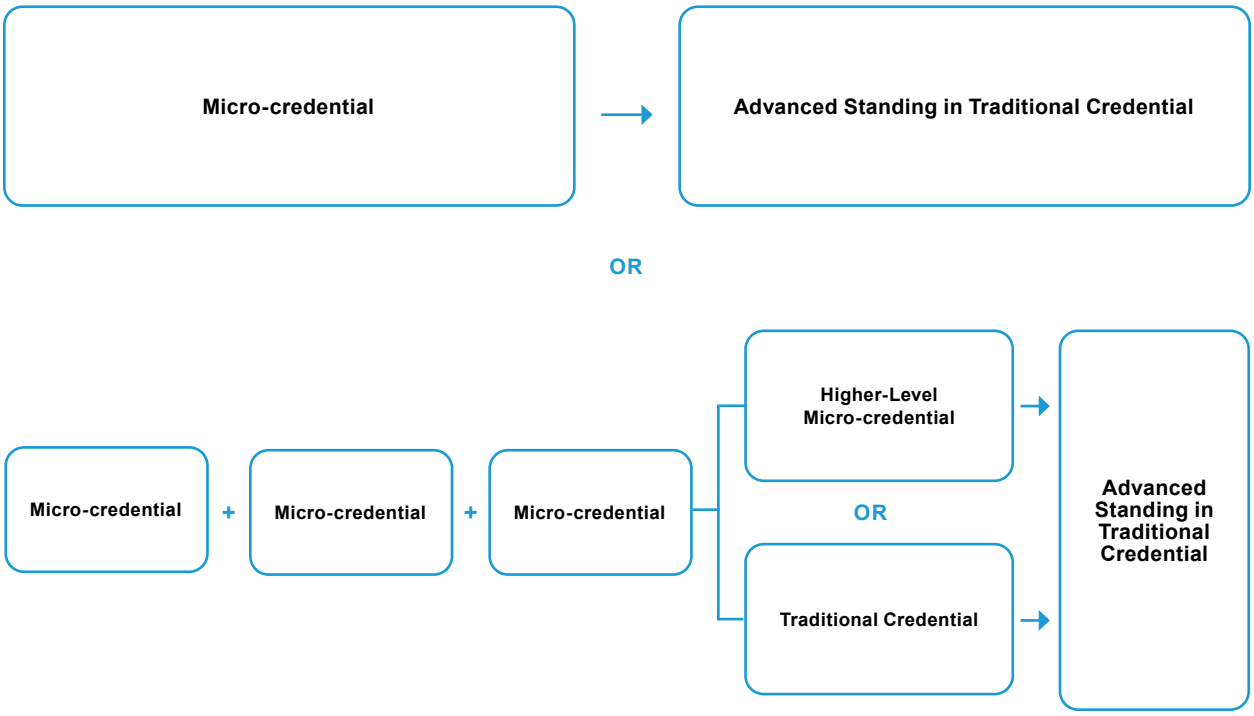


FIGURE 2

Laddering



Research Questions

Our study is guided by three groups of research questions:

A) Distinctiveness:

What proportions of advertised micro-credentials explicitly advertise their ideal attributes, which are industry-defined content, allowances for direct demonstrations of competencies, short and flexible durations, and low cost? Because postsecondary institutions already offer non-degree and non-diploma certificate courses that might share some of these attributes, it is important to determine whether their micro-credential courses are distinct and unique and not unbundled and rebranded versions of existing certificate courses (Boud & Jorre de St Jorre, 2021; Pichette et al., 2021).

B) Variety:

To what extent do micro-credentials vary in their duration, cost, content, and evaluation methods? This issue is important because it highlights a trade-off: if micro-credentials vary greatly, they represent a major extension of postsecondary options to students, but at the same time, great variations can undermine efforts to recognize equivalencies across courses and, thus, grant transfer credits for coursework completed elsewhere.

C) Potential:

To what extent are higher education personnel considering processes of transfer, stacking, and laddering for their micro-credentials? Do they have clear protocols in place? If not, is there the potential to develop such protocols, perhaps by extending existing protocols for their other course types? Are these personnel providing means to stack and ladder micro-credentials?

Research Methods

To address our research questions, we conducted a mixed-methods research study with two data-collection components:

A) Quantitative:

This data-collection component used internet data-mining techniques to gauge the current variation among micro-credentials in the province. We hired Professor John McLevey (University of Waterloo) to develop a program with which to mine eCampusOntario's "micro-credential portal" and systematically scan all micro-credentials on that portal in late April 2022 (https://search.ecampusontario.ca/micro-credential-search).

We used automated data-mining techniques to extract each credential's stated duration, cost, content, and mode of evaluation into three Excel spreadsheets, which we then converted to Stata data files. We analyzed three separate files: one for analyzing course titles, institutional affiliation, duration, and timing; one with detailed text descriptions of courses; and one with networks of links to other courses. Together, these data offer a snapshot of Ontario's full population of micro-credentials—a total of 1,552 courses—that were advertised on its official portal.

We employed automated methods using Stata's suite of commands for textual analyses. We searched for patterns across micro-credential titles, affiliations, and course descriptions. One limitation of these automated analyses is that they largely identify and count selected keywords regardless of their contexts. To better discern the actual meanings of keywords within their contexts, we selectively examined the course titles and descriptions. This manual process had the benefit of revealing the intended uses of the terms in their context, but it had the limitation of being selective because the manual inspections of all 1,500 micro-credential descriptions is otherwise very time-consuming. Another limitation of analyzing course titles and descriptions is that institutions may not include all relevant information in those materials.

B) Qualitative:

This data-collection component consisted of a series of interviews with administrators, instructors, and staff involved with micro-credentials at Ontario colleges and universities.

Participants were recruited from each of the 17 Ontario public college and universities that were advertising micro-credentials on the ecampus Ontario portal in April 2022. We reasoned that those institutions were clearly involved in micro-credentialing and that their personnel would be well-positioned to offer valid insights regarding micro-credentials. Our preliminary search suggested that institutions housed their micro-credentials in different units. About half housed their micro-

credentials in their continuing- education units, so we examined lists of staff in those units. For example, the University of Toronto houses its micro-credentials in its School of Continuing Studies (e.g., https://learn.utoronto.ca/programs-courses/unique/micro-courses-and-micro-credentials) and advertised its leadership team here: https://learn.utoronto.ca/about-scs/our-team/leadership-team. For other institutions, we searched more broadly, and contacted administrators who appeared to be involved with micro-credentials.

We approached three groups of institutional employees for interviews: administrators involved in micro-credentials, instructors of micro-credential courses, and staff involved in transfer credit processes. We reasoned that administrators, instructors, and staff could each offer unique insights into their institutions' micro- credentials. For example, we reasoned that instructors were the most knowledgeable about the content of micro-credentials, ways of assessing student competencies, micro-credentials' alignment with industry standards, and micro-credentials' relationships to conventional diploma and/or degree courses. Administrators and staff, we reasoned, would be the most knowledgeable about processes of transfer, stacking, and laddering. We recruited instructors using publicly available contact information. Many institutions explicitly named instructors for their micro-credentials. For example, the University of Toronto listed the instructor of this micro-credential course offered on agile leadership (https://learn.utoronto.ca/programs-courses/courses/3845-agile-leadership).

We conducted a total of 33 interviews: 12 with administrators, 11 with instructors, and ten with staff (see Table 1). Our lines of questioning were broadly similar for each group, but we adjusted questions to suit each. These questions addressed several themes: i) the interviewee's formal tasks with regard to micro-credentials; ii) their perceptions of existing and potential protocols aimed at facilitating transfer, stacking, and laddering; iii) whether they engage in assessing equivalencies between micro-credentials and other courses; iv) whether their micro-credentials adopted industry-based definitions of skill; v) whether they offered provisions by which students could demonstrate competencies before completing a course; and vi) whether they perceived differences and/or similarities between micro-credentials and existing certification courses. We asked both open-ended and closed-ended questions. Interviews were conducted and transcribed using Zoom and, later, cleaned manually. These interviews offer the benefit of tapping insider knowledge about micro-credentials, though we cannot be sure whether our interviewees were selective in reporting certain details about those credentials or whether our particular interviewees were fully knowledgeable about the topics addressed by our research questions.

Combining these methods allowed us to engage in triangulation. Our quantitative data offer a wide view of the full landscape of micro-credentials in the province. However, being public advertisements, they may lack the depth of information required to address our research questions. Our interviews with institution's administrators, staff, and instructors can potentially compensate for that limitation by tapping into insiders' knowledge about micro-credentials, including their underlying rationales and emerging directions.

TABLE 1

Participating Institutions and Roles of Interview Participants

Variable	Name of Participating Institutions	Role of Participants at their Institution
1	University of Toronto	Micro-Credential Administrator, Instructor, Transfer Credit Staffer
2	Brock University	Instructor
3	Western University	Micro-Credential Administrator, Instructor
4	Queens University	Micro-Credential Administrator, Instructor, Transfer Credit Staffer
5	University of Ottawa	Instructor, Transfer Credit Staffer
6	Toronto Metropolitan University	Micro-Credential Administrator
7	Ontario Tech University	Micro-Credential Administrator, Instructor
8	Humber College	Micro-Credential Administrator, Instructor, Transfer Credit Staffer
9	George Brown College	Micro-Credential Administrator, Transfer Credit Staffer
10	Canadore College	Transfer Credit Staffer
11	Loyalist College	Micro-Credential Administrator
12	Conestoga College	Micro-Credential Administrator, Instructor, Transfer Credit Staffer
13	Fanshawe College	Micro-Credential Administrator, Instructor
14	Georgian College	Micro-Credential Administrator, Instructor
15	Lambton College	Micro-Credential Administrator, Instructor, Transfer Credit Staffer
16	Centennial College	Transfer Credit Staffer
17	St. Lawrence College	Transfer Credit Staffer

Findings

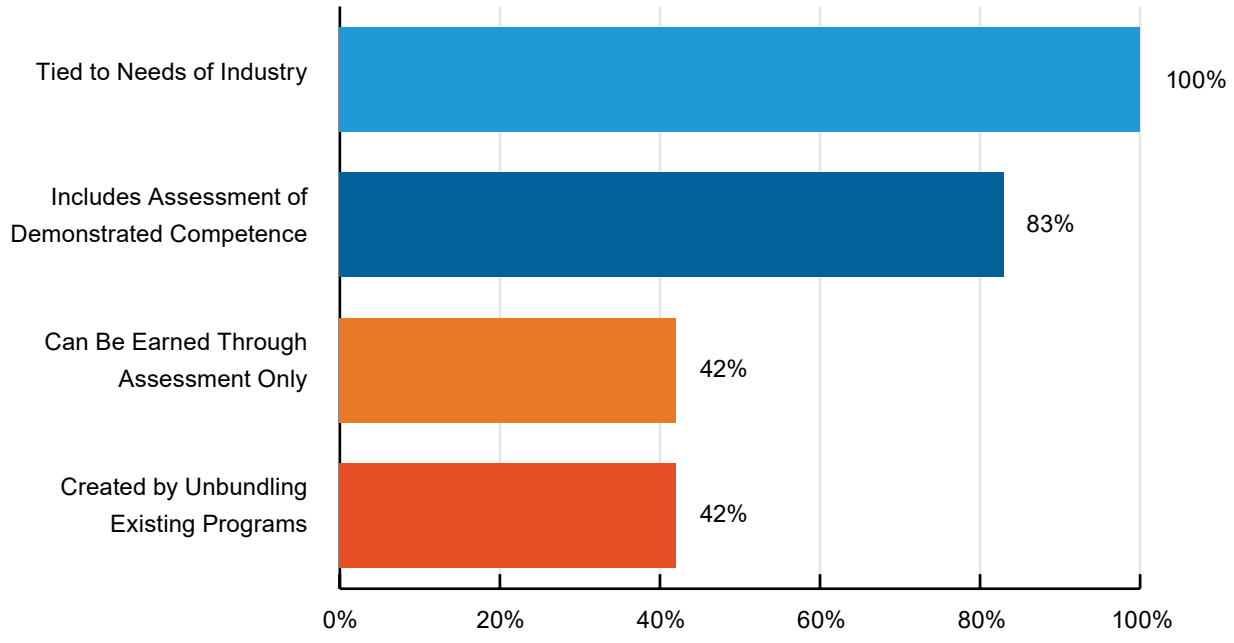
The following section describes the major findings of our study. It begins by drawing on interviews with administrators and instructors to assess whether the micro-credentials being offered by Ontario postsecondary institutions possess the characteristics said to distinguish them from other postsecondary credentials. Next, it uses data from E-Campus Ontario's micro-credential portal to describe the province's varying micro-credentials' durations, costs, modes of evaluation, and fields of study. Lastly, this section returns to the interviews to assess the current potential of micro-credentials to be stacked and laddered within Ontario's postsecondary institutions, as well as to be transferred across those institutions.

A) Distinctiveness

The features that potentially distinguish micro-credentials from existing postsecondary certificate, diploma, and degree courses include content shaped by the expressed needs of industry, provisions by which students can earn badges by demonstrating competencies before even completing requisite course work, short durations, and low costs.

FIGURE 3

Percentage of Postsecondary Institutions (Represented by Administrators) Offering Micro-Credential Features (n = 12)



i) Responsiveness to Industry

All interviewees, including all 12 of the administrators interviewed, claimed that their institutions' micro-credentials were indeed responsive to industry-based needs (see Figure 3). Among the

dozen administrators, ten (83%) also claimed that their micro-credentials allowed students to demonstrate their competencies, noting that such an attribute was an important feature of their micro-credentials. Five of the 12 administrators (42%) explicitly stated that students could skip certain modules and proceed directly to assessment or their institution's Prior Learning Assessment and Recognition (PLAR) process.

When discussing ways their institutions determined the needs of industry when developing their micro-credentials, a common approach was to form advisory committees to detect skills gaps in labour markets and then tailor their micro-credentials to those gaps:

"I would say the major piece of employer feedback is micro-credentials are part of our program Advisory Committee processes… Those committees are made up of industry professionals working in the specific industry that the committee is based on. At those tables are where the micro-credential conversations are happening. When we launched them, we were asking those committees, 'We're launching micro-credentials. What are the specific standalone skills that you would see people in your industry needing?' They were the ones who identified what we would initially tackle."

Another method was for staff to discuss with industry representatives those skills that the latter were seeking, as well as how micro-credentials could meet those needs. One instructor said the following:

"We've intentionally done this by reaching out to companies all across the country and the province and even in the [United] States, having interviews with them, actually getting them to review the syllabi plans, the content plans, before we've even made the content, to make sure that it's going to be relevant to them."

Other interviewees said they identified skills that were in demand in their industry by scraping online job advertisements. Interviewees also pointed out that experts from industry are themselves developing and/or directing micro-credential programs. One administrator said the following:

"A lot of the content, just for your information, a lot of the content, we either hire the industry partner or a subject matter expert that comes from that industry to develop the content."

Another instructor described how their background in industry gave them insight into employers' needs:

"You know what? I'm actually in the industry myself. I would be hiring the actual people who would be taking these courses. I've worked at four, five, six other institutions… I understand the needs very, very well."

Moreover, administrators claimed that ensuring that micro- credentials met the needs of industry was "very important," "incredibly important," or "critical" to their college or university. Indeed, several reported that any course that was not responsive to industry needs should not be considered a "micro-credential." One administrator said the following:

"Yes, yeah, it's one of the criteria for calling it… a micro-credential."

Another administrator echoed the idea that this feature was fundamental to their college's micro-credentials:

"The third pillar is that it's backed by industry. We can't just create a micro-credential in a nutshell if nobody wants it. It has to partner with us. When I say partner, that's [in] quotation marks. We have to have evidence, empirical evidence, that an industry wants our micro-credential… We can't have one without it."

ii) Assessing/Demonstrating Competence

Another important feature of micro-credentials is whether they assess students' competence. Among the 12 postsecondary institutions represented in the interviews, representatives from ten (83%) claimed that their micro-credentials assessed student competence, including all five (100%) of the universities and five of the seven (71%) colleges. Indeed, administrators from all ten of those institutions claimed that demonstrated competence was a key feature of their micro-credentials. Similarly, ten of the 11 (91%) instructors noted that their micro-credentials included assessments of student competence. Instructors described several methods used to assess competencies.

One instructor described the following format:

"For final assessment, students have to do a small little video where they have to use their skills and bring that into play. They're all very practical-based assessments… or there might be a roleplay that the instructor is overseeing that's happening, so they're putting those skills to use."

Another instructor described this assessment as follows:

"We have an oral piece as well, just in case they needed to explain to somebody, that they can explain the document or the concept with, just to do a little bit of teach-back so we can gauge their knowledge that way and assess them that way."

Most administrators and instructors claimed that such assessments were "fundamental," "essential," or "critical" features of their micro-credentials, and for several, such assessments were pre- requisites for any course to be considered a micro-credential.

One instructor said the following:

"I don't think there's any credibility to them if you don't have them assessed."

That sentiment was echoed by another administrator:

"It's not a micro-credential, it's not a micro-credential if it doesn't have that."

One administrator said that any micro-credential lacking this feature would not be offered at their college:

"We cannot make one without it. In fact, it's part of our checklist [for] what is a micro-credential in that if there isn't one, then it doesn't exist."

Some institutions used PLAR to assess students when awarding micro-credentials. Of the twelve administrators interviewed, five (42%) claimed that students could skip coursework and either go straight to assessment or use PLAR. Two of the five (40%) administrators at universities and three of the seven (43%) administrators at colleges said their institutions offered these alternate ways of earning micro-credentials. However, the instructors offered a very different story. Only one (9%) of the 11 instructors interviewed claimed that their micro-credential could be earned by skipping coursework and going straight into the assessment portion of the micro-

credential program. None of the instructors mentioned that their micro-credentials could be earned through PLAR.

iii) Shorter Durations through Unbundling and Rebranding?

One key two-part question is whether micro-credentials are more "compact," with shorter durations than institutions' existing certificate, diploma, and degree courses, and, if so, whether those micro-credentials were created entirely anew or, instead, created by "unbundling" existing courses in other programs. Widespread unbundling may create issues regarding the distinctiveness of micro-credentials.

Among the 12 institutions represented in the administrator interviews, five (42%) claimed that their institutions created micro-credential programs by unbundling existing certificate or degree programs and could be very similar to courses in those programs. Three of the five (60%) universities and two of the seven (29%) colleges created their micro-credentials in that manner. Other administrators were aware of this "unbundling and rebranding" process but did not approve.

One said the following:

"Some institutions decided to just make their certificates a different color… We made a strategic decision at [name of institution] College to not do that. We wanted to create proper micro-credentials… We're not just rebranding."

This administrator's use of the term "proper" evokes a critical opinion of the practice of unbundling. Several other administrators were similarly negative. One did not believe unbundled courses should be considered micro-credentials and said the following:

"There are lots of people who just jumped on and were like, okay, so we already have these courses that we're just going to call them micro-credentials because that's the buzzword and it makes us look like we're ahead of the game. And, so, I think there's a lot of that happening… There is a big difference between calling something a micro-credential and then actually being it."

Some administrators believed that unbundling and rebranding were motivated by institutions' desire to tap into provincial funding that was made available to applicants to OSAP-eligible micro-credentials.

One administrator said the following:

"People have taken their diplomas and rebranded them as micro-credentials to take advantage of the fact that the government is allowing OSAP."

In contrast, other administrators and instructors justified unbundling and rebranding by noting that some of their existing programs already shared many of the features of micro-credentials. One instructor reported that certificates at his university already met industry needs and included assessments of competence, easing their conversion into micro-credentials:

"It wasn't a big change that we had to make towards that. One of the reasons why we embraced making our courses micro-credentials [was that] it wasn't a huge change for us to do that."

Five interviewees (42%) discussed ways to further unbundle and repackage existing courses to fit into a micro-credential framework. One administrator said the following:

"We were all looking at programs or courses, certificates, module series, things that were already existing, to see if they would fit into the framework. A lot of the courses that we offered, they do fit into the framework."

iv) Complement or Competitor?

We also asked administrators and instructors about their institutions' positioning of micro-credentials as complements or alternatives to their traditional programs and whether they perceived demand for micro-credentials as potentially reducing demand for their traditional programs.

Administrators and instructors were split on these issues. Most administrators (eight of 12) and instructors (six of 11) did not foresee any decline in the demand for their traditional programs. They reasoned that traditional programs offer something different, a broader educational and personal-development experience. Thus, most administrators (eight of 12) saw micro-credentials as complements to their traditional programs, and the remainder saw them as both complements and alternatives. Only one interviewee saw micro-credentials as stark alternatives. Most administrators believed that students seek micro-credentials to supplement their other credentials as part of a strategy to differentiate themselves in labour markets. However, on the other hand, five of 12 administrators believed some students might opt for micro-credentials instead of traditional programs, with four believing that the presence of micro-credentials could lower enrollments in traditional programs at their institution. Conversely, four (33%) believed that presence of micro-credentials could actually boost traditional enrollments because many students explore further opportunities after completing micro-credentials. The remaining four believed that micro-credentials would likely have no effect on traditional program enrollment.

Among the instructors, six of 11 believed their institution would position their micro-credentials as complementary to their traditional programs, four (36%) believed their institution would position their micro-credentials as both complementary and alternative, and one (9%) believed their institution would position their micro-credentials as alternatives. However, almost all instructors (ten of 11) believed that some students might opt for micro-credentials instead of traditional programs. Four (36%) instructors believed that the presence of micro-credentials could decrease enrollment in traditional programs at their institutions. One (9%) foresaw increases in enrollment as students continue their studies after completing micro-credentials. Five (45%) believed micro-credentials would have no such effects at their institution, and one (9%) was unsure on the matter.

Administrators and instructors identified two factors that likely buffer their traditional credentials from declining demand: their facilitation of students' social and personal development, as well as their broad and theoretical curricula. They emphasized that traditional postsecondary programs offer developmental benefits beyond academics, helping students become well rounded and socially well adjusted members of society, whereas micro-credentials, with their shorter durations, cannot have comparable benefits.

One administrator explained:

"I would tell you that a student who goes through a postsecondary program of some duration will pass through several stages of development. A student who is enrolled for a flight services course for 48 hours has not."

The same administrator also tied personal development to success in the workplace as follows:

"I'll conclude by–and I've had this said to me twice by two different employers: 'I have never let go somebody for their technical skills. I have let them go for their personal skills.' Those who are concerned that micro- credentials are going to deconstruct the diploma and degree program are missing that essential element that comes with programs of some duration."

Others valued the acculturation gained by spending significant amounts of time on traditional campuses, noting that such experiences cannot be replicated online. One instructor discussed the value of being embedded in a campus learning community:

"There is value in coming to campus and embedding in that experience of communal learning. Online showed us that we can do it all online, and we did for the last couple years. I still think that there's value in that on-campus experience. I don't think that'll ever go away. Post-pandemic, I think students are going to want it back more. Some of them will be like, 'Whatever, I was fine online.' I think for a lot of the ones that went through [that] recently, they don't know what they were missing, because they never got it. That's a bit of a worry."

Another stated:

"I don't think the value of that credential is the same. When you develop a full program, it's designed to be well rounded."

Agreeing, another administrator noted that traditional programs offer high school graduates a stronger knowledge base:

"The traditional convention credential is for someone who's fresh out of high school, hasn't got a clue about an area that they're going into, and needs all that basic knowledge and foundation…"

One administrator argued that any skills-oriented program should be complemented by broader ethical frameworks that only traditional programs can provide:

"There are a number of organizations teaching coding skills, but behind coding, there needs to be, in my opinion, an undergraduate degree that includes courses in ethics and talks about privacy. There are broader concepts here. That's where I hope postsecondary can continue to advocate."

However, administrators and instructors also identified two factors via which micro-credentials could lessen demand for traditional credentials: if they motivate hiring employers to place more priority on job-relevant skills and if their shorter durations and lower tuition fees appeal to students. Some perceived employers as placing less value on traditional credentials and more value on marketable skills.

One instructor commented on this shift as follows:

"I started to get a sense that as students feel that there's not so much value in an undergraduate degree anymore, that maybe they'll just skip them entirely."

The same instructor viewed micro-credentials as providing students with the skills that today's employers seek and commented:

"More and more, I don't think they're valuing our degrees, because they just want skills. I think we're offering students a way that they can get that."

Discussing this possibility, an administrator stated:

"Okay, again, this is an individual opinion, and I'm not an academic. I don't have a PhD or teach. I do think they are. I think that my view of what's happening in industry is industry is less and less interested in the degree and more and more interested in those competencies and skills."

Some interviewees also pointed to micro-credentials' shorter durations, greater flexibility, and lower costs as selling points that could entice some students from traditional programs.

One administrator reasoned:

"I do think it's possible that people might shift that way. It's faster. It's potentially more affordable. It's very relevant. You can see these short bursts. People move up and move on."

Another administrator shared similar thoughts, saying:

"Micro-courses have been trending upwards. It speaks to what we've been saying–shorter bursts, and perhaps lower cost and access to funding."

Interviewees believed that part-time students–seeking flexible ways to upskill or reskill while continuing to work full-time–were particularly good candidates for micro-credentials. As one instructor put it:

"I think there's going to be a subset of students who are already out in the workforce, who historically may have considered taking a leave or doing part-time studies to complete a certificate or diploma, that are now not going to do that and are going to do micro-credentials that are very workplace-specific for their particular job or their goal trajectory in their career because, again, it's more manageable, they can do it when they're working full-time, the cost is less, etc."

v) The Complicating Emergence of Industry-Offered Micro-Credentials

Micro-credentials are also being provided by for-profit corporate entities. These industry-provided micro-credentials could have implications for the stacking, laddering, and transferring of micro-credentials.

Postsecondary institutions perceive large differences between those micro-credentials and their own. Eight (67%) administrators and seven (64%) instructors believed that industry-provided micro-credentials might compete with their own institutions' micro-credentials. They cited providers such as Microsoft, IBM, and Google as having global recognition and the capacity to quickly adapt and respond to labour-market changes, thereby luring potential students from their own institutions. Three administrators (25%) doubted that industry-provided micro-credentials would have any impact of their own institutions' micro-credentials, as did two instructors, and one administrator and one instructor were unsure.

Whether Ontario colleges and universities will draw equivalences between their micro-credentials and those provided by industry remains unclear. Several interviewees questioned the quality of industry-offered micro-credentials, noting that postsecondary institutions provide better quality assurance. One administrator said the following:

"One thing I would say–and it's my hesitation with these corporate things–is I don't know what their QA is. One of the things when you take–and this is what any postsecondary institution would say. I would say, 'Look, we've got QA that's backed by our college's Board of Governors.' We don't know what the QA is on industry credentials."

FIGURE 4

Percentage of Postsecondary Institutions' Perceptions of Micro-Credentials, Perceived Potential Impact on Traditional Programs

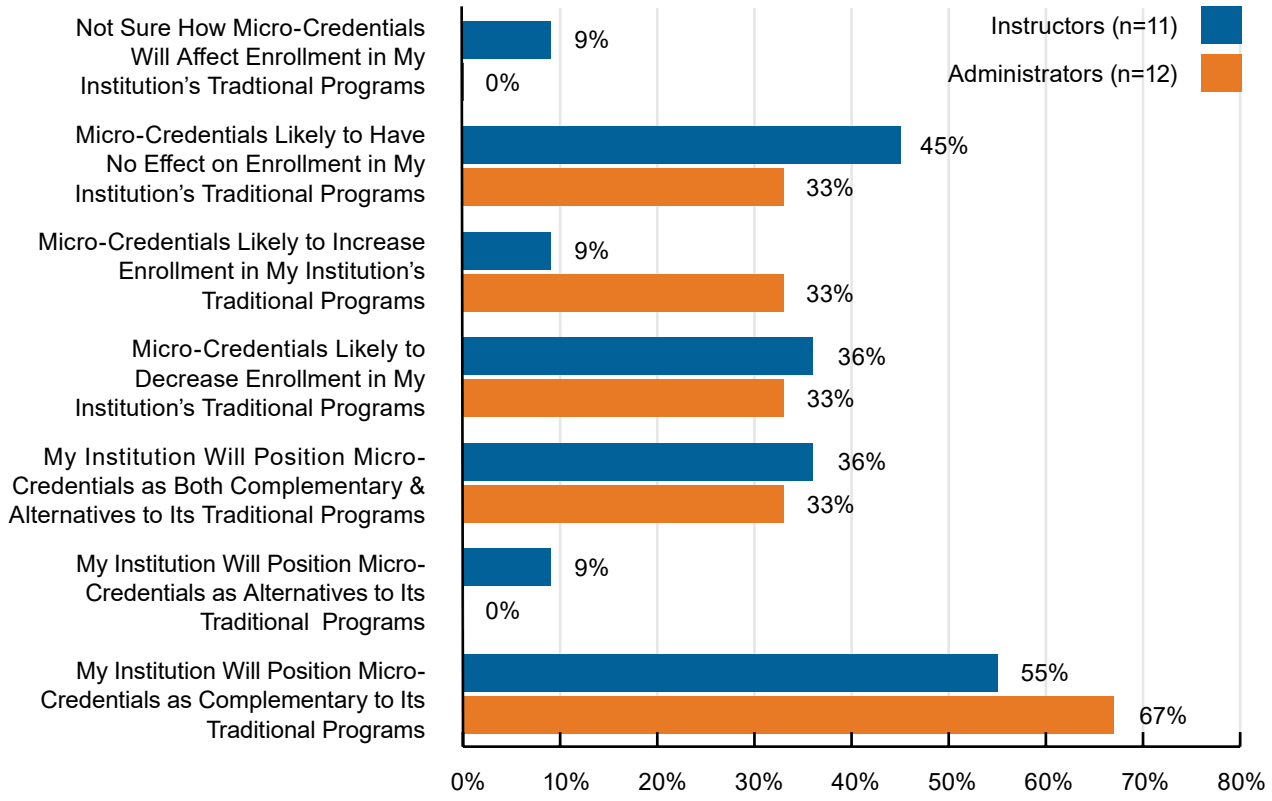
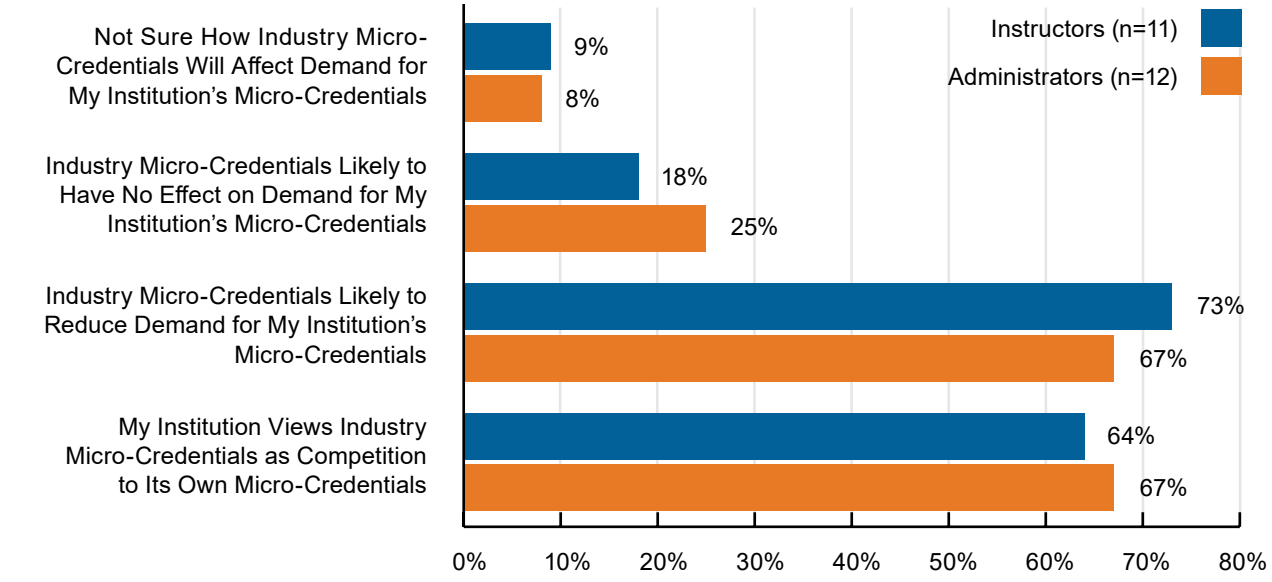


FIGURE 5

Percentages for Interviewee Perceptions of the Competition Posed by Industry Micro-Credentials



One instructor noted that industry-based learning platforms could have lower quality because they are primarily driven by profit, saying the following:

"Traditionally, the reason why I would say those platforms are not competitors for anything that we've done up to this point is there's no perception of quality, right? They're understood that they're private. They're going to try to make money. They're not going to give you the best, right?"

However, other interviewees did not share that skepticism. One instructor with experience in industry stated:

"I think there is probably–I would assume some academic people will think that a private company can't put out the same quality as a higher education unit, but I don't believe in that, because I've seen some of it."

Several administrators contended that industry providers of micro-credentials were nimbler than colleges and universities. They saw that agility as giving those providers a competitive advantage because the latter could quickly adapt and tailor their micro-credentials to ever-changing markets.

One administrator discussed this difference:

"I do think it's different because it's a private institution creating learning and coming into the space that has traditionally been meant for our public sector higher education unit. I'm lucky because I work in a unit that can be quite flexible and respond to the needs of industries, but typically, in higher education, things have to go through board or governors and senate. Innovation can be slower than in a privatized company."

Administrators saw this advantage as particularly strong in the private technology sector, with its rapid rate of development, with one saying the following:

"I'm thinking like, in the very tech heavy stuff, like you were talking about, like programming or networks or like that kind of stuff, I do see if you get it from IBM or you get it from Google, I mean, or you get it from [name of their institution] computing, I mean, their industries move so fast that the university cannot keep up. And I would say that that is one. I think that there are some areas that we'll need to be very mindful of as an institution. And not just us [but] other institutions as well because we all move very slowly."

One administrator noted that the competition posed by industry was forcing her institution to create more innovative micro-credentials:

"Yeah… I think it forces us to think differently about what particularly continuing education is or should be and how we should offer it. Other colleges are not forcing me to be innovative. I don't need to be particularly innovative to compete with another college, because they're all kind of the same and very bureaucratic. To compete in a very fast-paced digital space that is very customer centric, I need to think differently about my programs."

Other interviewees believed that students mainly value the brand recognition and reputation of micro-credentials, whether they are offered by postsecondary institutions or by industry. However, interviewees were divided on whether postsecondary institutions or industry had stronger brands.

One instructor believed industry providers had the edge, especially in the tech sector:

"Honestly, what would a student rather have if they're trying to get into Google or any high-tech industry? Would they rather have a Google credential or an IBM credential or a Microsoft credential, or would they like to have one from their university? I don't know. If I was a student, I'd probably go for the Google one. Let's be honest."

Another administrator echoed this sentiment, claiming that few postsecondary institutions can match the global brand recognition enjoyed by companies like IBM. He stated:

"They are industry accepted because it is IBM. Frankly, unless you're U of T, if I take a badge to India, and they see [Name of College in Ontario] or IBM, they're going to pick IBM. They are. I think we would be remiss not to take them very seriously."

However, another administrator believed their institution and colleges and universities in general have stronger brands:

"Oh, 100%. I mean, yeah, we're under the [name of their institution] brand, right? For us, we're considered a postsecondary institution. We have a good reputation in industry. We have great programming in the credit world. I think that when participants or students are looking for opportunities in the world of micro-credentials, in my mind, I would choose an academic over an organization because of the brand, absolutely."

Another administrator similarly emphasized the strong reputation of postsecondary institutions as follows:

"I think it's a difference in value proposition. Students see their postsecondary provider. They are aware of that brand. They're aware of what we do as institutions. I think there's a comfort level in taking credentials at a very reputable and known postsecondary institution in their community."

vi) Summary

Overall, these interviews suggest that micro-credentials currently have an ambiguous standing in Ontario's postsecondary institutions. On one hand, virtually all interviewees claimed that their institutions' micro-credentials are guided by industry-based needs and that those micro-credentials are and should be shorter and less expensive that their institutions' "bundled" credentials, such as their certificate programs. However, interviewees were less clear and/or consistent on the issue of whether their micro-credentials had another ideal-typical component of micro-credentials: providing students with ways to assess and reward their competencies, even before the completion of the requisite course modules.

This lack of consensus was further reflected in several other themes that emerged in those interviews. First, some interviewees noted that their institutions' micro-credentials were largely unbundled and rebranded versions of their certificate courses, while others believed that such practices were contrary to the spirit of micro-credentials. Second, it was also unclear whether most institutions were positioning their micro-credentials as complements or competitors to their traditional programs. Third, name-brand micro-credentials offered by industry-based providers present a further complication in that they may be created through markedly different methods than those used by public colleges and universities, particularly with respect to quality assurance. If industry-provided micro-credentials gain further currency, Ontario colleges and universities could face the task of assessing equivalencies between credentials that were developed according to different standards.

Considering these issues together, we offer the following provisional assessment: the current status of micro-credentials is ambiguous in Ontario public institutions of higher education, and this ambiguity offers an implicit trade-off. Those micro-credentials that are not markedly distinct from traditional offerings may limit student options. Some interviewees implied that such courses were being falsely advertised, while others argued that many certificate courses already possess key qualities of micro-credentials. This ambiguity reveals a trade-off: unbundled micro-credentials are likelier to be stacked, laddered, and transferred because assessors can more readily detect equivalencies among similar offerings. Conversely, highly unique micro-credentials serve to enhance student choice but also complicate assessments of equivalencies and, thereby, also complicate processes of stacking, laddering, and transfer.

This provisional assessment is based only on our interviews, which we conducted in a context in which Ontario's provincial government was promoting micro-credentials without enforcing a clear or consensual definition of their distinguishing characteristics. This context has incentivized institutions to use the label "micro- credential" for some of their offerings without necessarily adopting all of their ideal-type characteristics. Our next section further probes these issues from a different angle.

B) Variety: What kinds of micro-credentials are on eCampusOntario's micro-credential portal?

We next present quantitative data on all courses advertised on Ontario's micro-credential portal in April 2022. These data offer a "big picture" of the varieties of micro-credentials currently offered in provincial colleges and universities. They can be used to consider the policy trade-off posed above, namely that between offering students' choice on one hand and the possibility of transfer pathways on the other. In total, 1,552 micro-credentials were advertised on the portal. All except one was eligible for OSAP.

i) Providers, Durations, Fields

A total of 36 institutions offered micro-credentials. Among them, 15 were universities, representing 64% of all courses. Next, 19 community colleges offered micro-credentials, representing 34% of all courses, with Lambton College offering the most. Finally, two institutes (the Wenjack Educational Institute and the Seven Generations Educational Institute) offered 3% of all micro-credentials.

Among universities, York University offered 312 micro-credentials, the most among Ontario institutions. The Schulich School of Business was a major driver of micro-credentials at that university, advertising their offerings as just-in-time learning that quickly lead to digital badges (https://schulich.yorku.ca/news/micro-credentialing-one-of-the-trends-reshaping-management-education/; https://hlln.info.yorku.ca/digitalcredentials/). The University of Waterloo offered 179 micro-credentials, the second largest offering among Ontario institutions. Among Ontario's community colleges, Lambton College offered the most micro-credentials (138), followed by Fanshawe (51). Lambton explicitly advertises its micro-credentials as "individualized, competency-based, training programs that allow students to receive credit for skills they already have, rapidly acquire competencies needed to advance in their careers…. in a self-paced, flexible learning environment that values experience and provides accelerated training of focused skills." (https://www.lambtoncollege.ca/microcredentials/). The college also notes that in some instances, "some students (not all) who complete all learning units within a micro-credential pathway may apply to graduate from an Ontario College Certificate program." Seneca College appears to be currently advertising far more micro-credentials than the 23 it listed in April 2022, suggesting

both considerable growth and a commitment to stacking (i.e., courses embedded within broader sequenced programs). Indeed, Seneca now advertises its micro-credentials as "diverse, flexible and stackable programming options in a variety of fields" that are "in constant development to ensure your skills stay sharp and in demand" (https://www.senecacollege.ca/programs/bycredential/microcredential.html). Micro-credentials were offered across a surprising range of fields. Below, the most prominent are listed.

- **Communication & Marketing:** Course titles with keywords such as "Youtube," "writing," "speaking," "presentations," "Facebook," "Instagram," "ads," "copywriting," "communications," "arts," and "media arts"
- **Information Technology:** Course titles with keywords such as "search engine," "information management," "cyber security," "python," "computing," "cloud," and "records"
- **Business:** Course titles with keywords such as "business," "finance," "financial," "management," "managing," "Lean Six Sigma," "project management," "leadership," "accounting," "operations," "operational," and "training"
- **Health:** Course titles with keywords such as "health," "nursing," "opioid," and "veterinary"
- **Trades:** Course titles with keywords such as "welding"
- **Teaching:** Course titles with keywords such as "teaching," "geography," "history," "education," "music," "mathematics," "math," "junior division," "primary division," "religious," and "social sciences"
- **Social Services:** Course titles with keywords such as "accessibility," "treaty," "First Nations," and "green"

The median duration for all micro-credentials was 20 hours. Micro-credentials offered by universities tended to be lengthier than those offered by community colleges, with means/medians of 24 and 15 hours, respectively. Some courses were considerably longer, however. Durations for the longest ten per cent of courses were 125 hours or more. Micro-credentials were offered throughout the calendar year, with flexible starting dates.

ii) Assessment:

Do course descriptions suggest that micro-credentials allow their students to directly demonstrate their competencies? We addressed this question by analyzing the keywords in micro-credential descriptions. We searched all 1,552 descriptions for terms we believed would tap into processes of student evaluation and the demonstration of competencies: "assessment," "competence," "badge," "certificate" and "demonstrate." We found that 185 of 1,552 course descriptions contained the term "assessment." However, manual inspections of those usages suggest that these terms usually referred to things other than methods of evaluating students in micro-credential programs. Likewise, 124 descriptions contained the term "competence," but again, manual inspections suggest that few described any concrete assessment procedure, instead using the term as a generic descriptor of course goals (i.e., to develop "workplace and cultural competence and intelligence."). The term "standards" was found in 55 course descriptions, but it too was used mainly to refer to generic standards of quality, not specific standards. Another 38 micro-credential descriptions contained

the term “demonstrate,” but again, manual inspection suggests it was used generically (e.g., “students will demonstrate leadership”) rather than to describe concrete skills. The term “certificate” appeared in 56 descriptions, but it referred mainly to each institution’s relevant certificate programs, rather than any alternative means of receiving those certificates. Only two descriptions contained the term “badge.” One noted that “Digital badges will be awarded for the completion of each module and for the completion of the entire program.” The other similarly noted that “Upon successful completion of all five modules, participants will receive a milestone e-badge, e-certificate and a Certificate of Completion… to recognize the skills attained by the participants and industry standard.” These wordings are contrary to the micro-credential ideal of awarding badges for demonstrated competency, rather than course completion.

iii) Potential for Pathways:

We also searched to determine whether the course descriptions offered information about the potential for micro-credentials to be within pathways leading to stacking, laddering, and transfer credits. Only one description contained the term “stack,” using it in the context of skills that were said to “stack up” to some standard. Only four descriptions contained “ladder” or its variants, none referring to anything resembling the laddering of courses. The term “transfer” appeared in six descriptions, but again, none referred to transfer credits; they, instead, referred to the generic qualities of skills (e.g., transferable skills). As an aside, we note that Trent University aggressively advertises its commitment to granting transfer credits for university and college courses. However, despite offering micro-credentials within its certificate programs, does not mention micro-credentials in its communications regarding transfer credit awards.

https://www.trentu.ca/futurestudents/undergraduate/requirements/transfer-trent-university?utm_source=google&utm_medium=cpc&utm_campaign=transfer_2023&utm_id=transfer_campaign&gclid=Cj0KCQiA6rCgBhDVARIsAK1kGPKTwwlbRl59caeGxs5bBg1HY_G0d0g6M-fU55NRl7iR8WQp NGDA0KOYaAtr_EALw_wcB

iv) Summary:

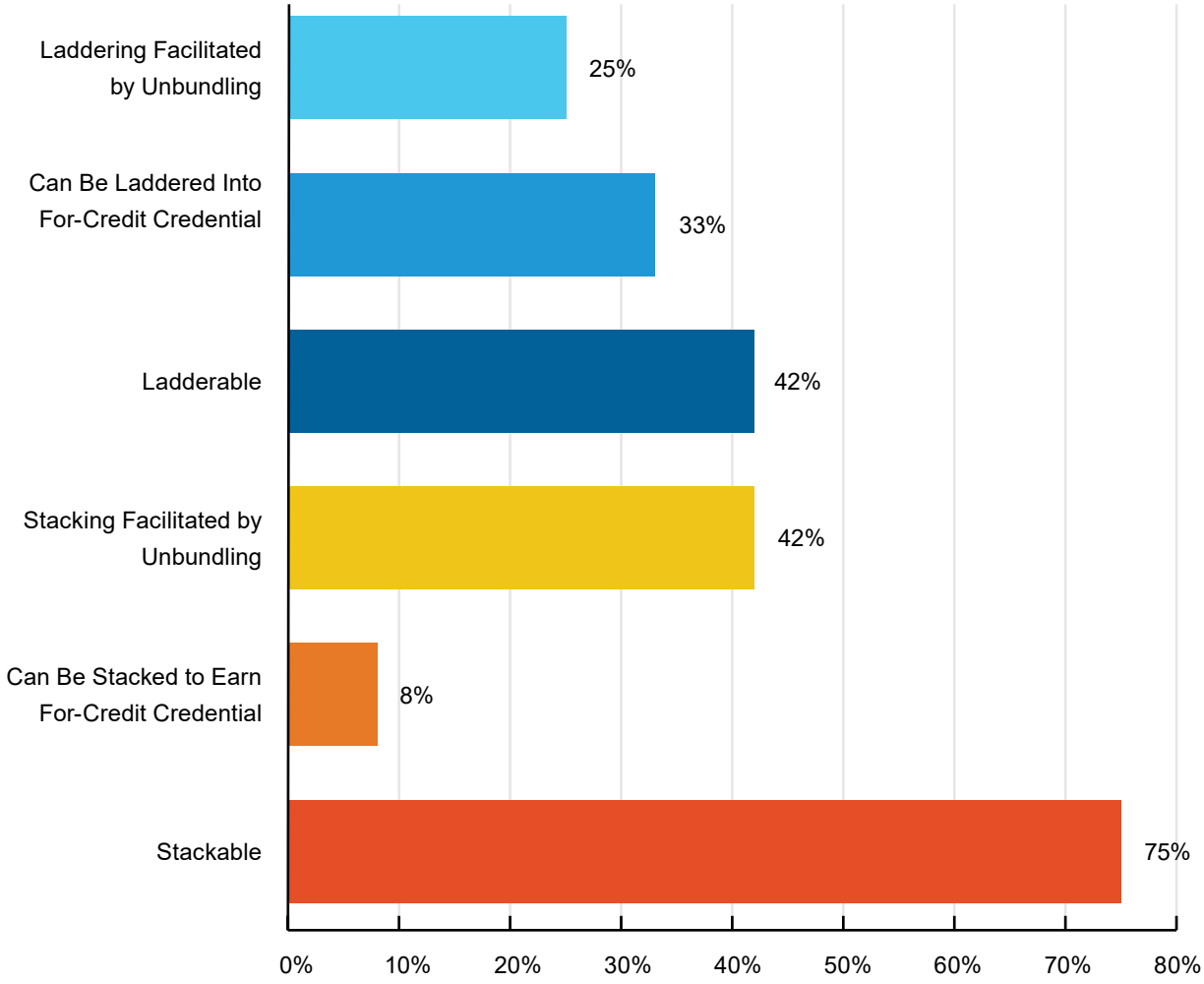
Our data on the titles and descriptions of all the micro-credentials offered by Ontario colleges and universities one year ago suggest that institutions are offering courses that vary widely under the banner of “micro-credentials.” Courses varied widely in their durations and fields of study. Universities advertised more micro- credentials than colleges did, with York, Waterloo, and Lambton being leaders in this area. However, the micro-credential titles and descriptions suggest that they do not advertise independent means of recognizing demonstrated competencies or any pathways to stacking, laddering, and transfer. It is possible that such means and pathways are indeed available at colleges and universities but are simply not advertised in micro-credential descriptions. To further investigate that possibility, we turn to our interviews.

C) Potential

This section addresses the position of micro-credentials within Ontario’s transfer and articulation pathways. Micro-credentials are promoted as providing flexible opportunities for lifelong learning. This flexibility can be maximized in pathways guided by clear protocols for transfer, stacking, and laddering. We next present the themes derived from our interviews to examine whether many such pathways are indeed being forged in provincial colleges and universities.

FIGURE 6

Percentage of Postsecondary Institutions (Represented by Administrators) Offering Micro- Credentials with Various Attributes (n = 12)



i) Stacking

Most micro-credentials offered in Ontario colleges and universities appear to be stackable. Of the 12 institutions represented by administrator interviewees, nine (75%) facilitated stacking. Four (80%) of the five universities and five (71%) of the seven colleges offered stackable micro-credentials, though none offered micro- credentials that could be stacked with those offered by other institutions. Furthermore, none of those micro-credentials were for credit. Only one (at a community college) could be stacked into a for-credit “micro-certificate” for a College Certificate credit. The remaining 11 (92%) institutions only allowed micro-credentials to be stacked into non-credit credentials.

However, even among institutions that facilitated some stacking, not all micro-credentials were stackable. Administrators’ estimates of the proportions of their micro-credentials that were

stackable ranged from 20 to 100%. One administrator from one of the three institutions that lacked stackable micro-credentials reported that their institution was planning to facilitate stacking.

Among the 11 instructors interviewed, three (27%) taught at least one micro-credential that was stackable, though none of their courses could be stacked into a for-credit credential, nor could they be stacked with the micro-credentials offered by other postsecondary institutions. Among the eight instructors who did not currently teach in stackable micro-credential programs, four stated that their institution was planning to make micro- credentials stackable. Nine (82%) of the 11 instructors stated that their micro-credential programs were developed with the potential for stacking in mind.

ii) Laddering

Interviewees reported fewer opportunities for laddering micro-credentials toward larger credentials than for stacking. Of the 12 colleges and universities represented by administrator interviewees, five (42%) facilitated laddering, including two of the five (40%) universities and three of the seven (43%) colleges. None had laddering pathways that granted advanced standing to micro-credentials in larger programs, and none were for credit. Four (33%) had laddering pathways that lead to for- credit programs, while one (8%) had micro-credentials that could ladder into a larger non-credit credential. One (20%) of the five universities had a laddering pathway that led to a for-credit program, and three (43%) of the seven colleges had micro-credentials that could be laddered into a for-credit program.

The administrators described the following laddering opportunities at their institutions:

1. One college allowed certain micro-credentials to be laddered directly into a for-credit certificate.
2. One university allowed certain micro-credentials to be stacked into a non-credit post-graduate certificate, which could be laddered to earn advanced standing in one of its masters programs.
3. Two colleges allowed micro-credentials to be stacked to earn a higher-level micro-credential, which could then be used to receive advanced standing in its related for-credit certificate program.
4. One university only laddered micro-credentials into non-credit continuing-education certificates at the same institution.

Among the seven administrators from institutions that did not have laddered micro-credentials, one (14%) reported that their institution was planning to facilitate laddering, while two (29%) reported that their institutions were considering doing so.

Three (18%) of the 11 instructors taught at least one micro- credential that could be laddered into a larger credential at the same institution. Of them, two reported that on their own, those micro-credentials were non-credit-bearing but also that those micro-credentials could be laddered into non-credit continuing- education certificates. One taught in a micro-credential program that was for credit and could be used for advanced standing in a related master's degree program at the same university. None reported that their micro-credential programs could ladder into related programs at other institutions. Six (55%) instructors stated that such pathways did not exist,

while another four (36%) were unaware of any existing pathways. Among the eight instructors who did not teach in laddered micro-credential programs, one stated that their institution was planning to facilitate laddering, while another stated that their institution was "possibly" planning more laddering.

Among the colleges and universities that facilitated laddering, not all micro-credentials could be laddered. Interviewees' estimates ranged from "so far, one program" to "some" to "the majority."

All ten (100%) interviewed transfer-credit staff reported that their institutions lacked any formalized pathway or articulation agreements with other institutions via which a micro-credential could be laddered into one of their traditional programs of study.

iii) Stacking and Laddering via Unbundling

As discussed in a previous section, our interviewees noted that some institutions are creating micro-credentials largely by unbundling their existing certificate or degree programs. This section examines whether that practice is facilitating the formation of stacking and laddering pathways. Of the 12 institutions represented by administrator interviewees, five (42%) reported creating pathways by rebranding their existing certificate courses into micro-credentials and then "stacking" those micro-credentials back into those certificates. Three (25%) reported having created laddering opportunities by similarly rebranding existing courses into micro-credentials and then "laddering" those micro-credentials, granting them advanced standing for certificates or degrees.

Some administrators were aware that this unbundling process was an easy method of creating such pathways. While discussing laddering, one said the following:

"If you're an institution that has rebranded continuing education certificates that use postsecondary courses into a micro-credential, that would be very easy to do, because let's say, for example, you're–what someone's calling a micro-credential in accounting but really what it is [is] a 4-course accounting CE certificate that's using a 42-hour course–super easy to do. If you do a proper micro-credential, the way I–I don't want to–the way my organization would interpret it, it would be a short, competency-based credential that wouldn't ladder into a diploma or a degree, because a diploma or a degree each run[s] 45 to 60 course hours, respectively."

iv) Transfer Credits

None of the ten institutions represented by transfer-credit-staff interviewees had separate procedures in place for granting transfer credits for micro-credentials. Interviewees offered several reasons for the absence of such protocols. According to one, "…micro-credentials are still pretty new in our Canadian institutions. I mean, that's why." This opinion was echoed by several other staff interviewees who cited bureaucratic red tape as a key reason. One stated the following:

"[Name of Their Institution] is like an old dog. You cannot teach them new tricks. There are several levels of bureaucracy and approval that things need to go through for change."

Other stated reasons included a lack of student demand for micro-credential transfers, as well as institutions adopting a "wait and see" approach before developing new policies. However, despite currently lacking such protocols, many transfer-credit staff reported that their institution would be open to assess and grant transfer credits for micro-credentials using their existing procedures. One discussed this issue as follows:

"It would flow into our regular transfer credit and advanced-standing assessment process. There are some unique characteristics of micro-credentials that we would need to think through when considering granting them."

According to another transfer-credit staff member:

"Those transfer credits, those courses that are in a micro-credential, would follow the same standard procedures that we have that are published on our website."

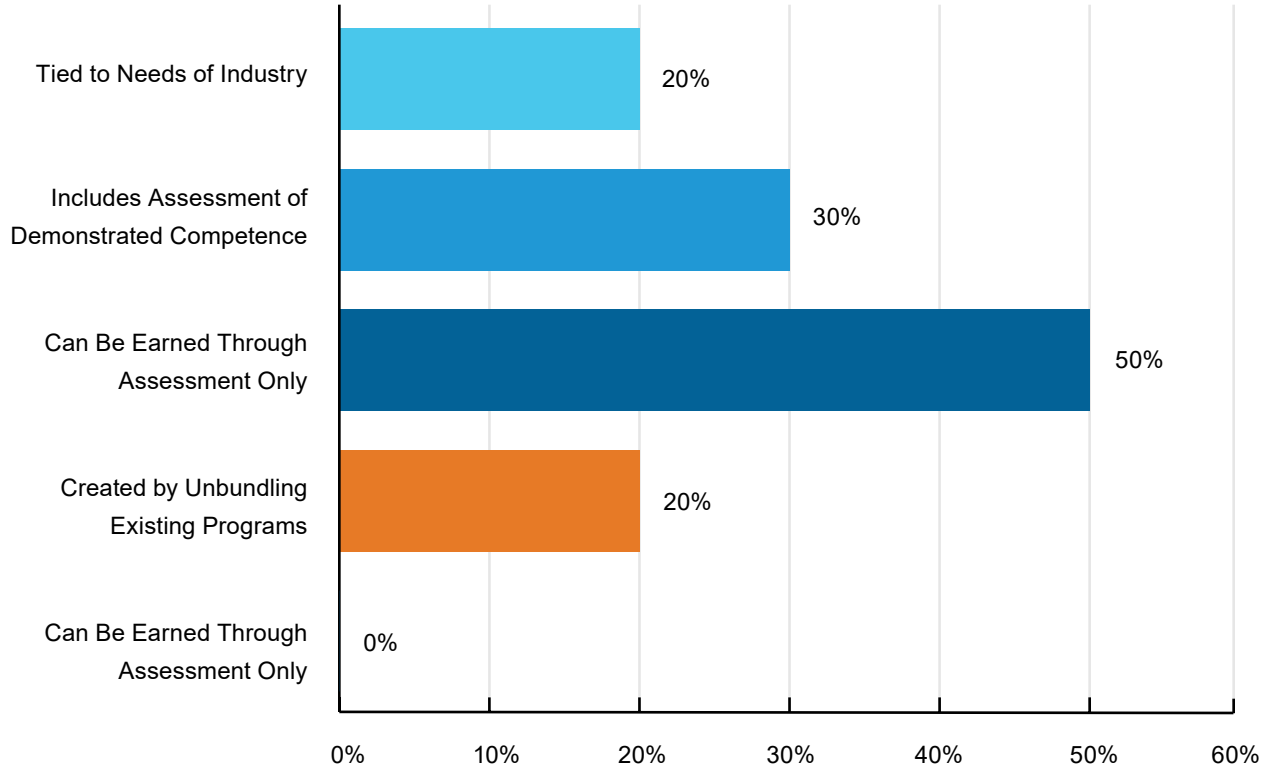
A few staff members reported that their institution would likely use PLAR to award credits for micro-credentials earned at another college or university. One said the following:

"The PLAR-based assessment really is very conducive to competency-based learning. That is where we see a lot of synergies between PLAR and micro-credentials in terms of the assessment of competencies and learning."

None of the staff interviewees reported any problems caused by the absence of specific protocols for awarding transfer credits for micro-credentials, primarily because they had encountered little demand for such transfers. Five (50%) staff members felt that their current protocols could handle micro-credential transfers, while three (30%) did not. Two (20%) were unsure because they had not yet handled any such requests. Only two (20%) staff reported that their institution was planning to develop specific procedures for awarding transfer credits for micro-credentials.

FIGURE 7

Percentages of Postsecondary Institutions (transfer credit staff) with Micro-Credential Transfer Protocols and Their Effectiveness (n = 10).



v) Barriers to transferability and for-credit pathways

Several interviewees identified various barriers to granting transfer credits for micro-credentials. One such barrier was the fact that most micro-credentials were non-credit-bearing. Some interviewees noted that their institutions' stringent transfer policies did not allow them to consider non-credit micro-credentials for transfer credits or advanced standing in their programs.

One staff member detailed their institutions' strict criteria as follows:

"We are pretty rigid in transfer credit eligibility. It must come from an accredited institution, and it must be degree level or at least college level. Micro- credentials currently are not recognized. Even our own are not recognized."

This rule against non-credit courses also prevented some instructors from developing their micro-credentials with transferability in mind, because they saw little point in doing so. When asked whether they had created their micro-credentials with transfer in mind, one instructor stated:

"No, because at present my micro-credential courses can't even get credit at [name of their institution]. They're operating in this gray area parallel to a regular undergraduate program."

The non-credit status of most micro-credentials offered by Ontario colleges and universities created uncertainties regarding their quality assurance and rigour, which complicated the processes of transfer and creating pathways. One instructor said the following:

"I am not--I feel bad saying this, but [I am] going to anyway. I'm not convinced about the rigor of the micro-credentials as they currently are delivered. I feel like they might be a little bit cursory or performative and sort of [a] nominal sort of thing, like, oh, okay, here's a micro-credential."

One administrator claimed to have avoided developing for-credit pathways for their micro-credentials because doing so would elicit academic oversight that could hurt the agility of those micro-credentials. They stated:

"My intention is to never allow our micro-credentials to be stacked into credits. Because I operate outside of academic oversight… I'm not an academic. If we were to make them stackable, then they would have to have some sort of academic oversight and rigor and process. When you look at postsecondary and how long it takes to create a course, well, micro-credentials need to be agile. They need to be nimble. They need to be able to be deployed quickly. My unit is very much pushing away from the stackability of micro-credentials and digital credentials."

Staff reported that their institutions would need to be convinced that micro-credentials were equal to traditional for-credit programs in terms of quality. One staff member explained this as follows:

"If other institutions are backing up the micro-credential courses and programs with the same kind of academic rigor that backs up their regular programs, then we're probably fine."

Other interviewees pointed to the lack of breadth on the part of micro-credentials as a major challenge to their entrance into pathways to for-credit programs. Staff explained that micro-credentials, commonly promoting only a few learning outcomes, cannot match the numerous learning outcomes sought in regular for-credit courses. One staff member discussed the situation as follows:

"If you only have one learning outcome here and we have 12, it just doesn't fit, right? You could be like, oh, sure, this micro-credential might cover one or two learning outcomes, maybe even three, depending on how broad it is, but now that's only, what, 10% of the course or 5% of the course, where with transfer credit, we're really looking for a high level of matching between learning outcomes, so usually [about] 80%, right? That is where I could see it really just being very challenging because they're not complete courses in the traditional sense of a diploma or a degree or something like that, right?"

Another transfer credit staff member expressed similar thoughts about laddering micro-credentials into traditional programs, stating:

"It's all going to come back to the learning outcomes and the course hours that are attached to it. My fear, though, is that a micro-credential may not have enough to cover an entire semester's worth. So, the word 'advanced standing,' whether that means we've given you an entire semester, an entire year, or have reduced your course load by half, or what that looks like, would ultimately depend on what's there with the micro-credential."

Other staff reinforced the challenges posed by micro-credentials' narrowed learning outcomes. A transfer-credit staff member stated:

"I know with micro-credentials, they're often aimed at developing a specific skill. Often, that may be a little bit too specific for us."

Another staff member said the following:

"I think it will be challenging in that a micro-credential is usually a single competency, whereas a course tends to be a bundle of learning outcomes, some of which are competency based [and] some of which are other learning outcomes."

Staff highlighted other potential hurdles to awarding transfer credits for micro-credentials. Several highlighted inadequate documentation. Without detailed course outlines, descriptions, or syllabi, they could not assess any equivalencies between a micro-credential and other courses that are needed to grant transfer credits. One staff member explained as follows:

"This is very similar to the same kind of hurdles we run into with just a regular credit transfer, and that's access to documentation. It's one of the biggest barriers I find students run into when I'm supporting them… If there are outlines, if there are overviews, syllabi, things that can be taken and reviewed and compared, I don't see there being an issue, because a subject matter expert should have the knowledge and, excuse me, flexibility to see the things the student has learned and grant equivalency if appropriate if the information's there. If it's just a trust me, I did 140 hours when I was at Seneca, and they gave me this credential, but I've got nothing to show you exactly what I did, that's where students aren't going to be able to get an exemption. We're going to need to see what did you actually learn, and is it the same as whatever course you're seeking exemption from?"

Beyond allowing assessors to determine equivalencies, staff pointed out that documentation for micro-credentials is important because it helps institutions assess their quality:

"There isn't a standardized set of documents associated with micro-credentials… For example, if one of our requirements for granting advanced standing is 'has that student been assessed

using a variety of means of equivalent rigor?', if that information isn't accessible to us, it's hard to make that determination."

Some staff noted that the existing documentation for micro- credentials may lack the quality of information comparable to outlines and syllabi for traditional courses. One said the following:

"The only thing I would say is the micro-credential would have to have as detailed a course outline or syllabus as other college level courses have. I think as long as the micro-credential had that, there wouldn't be any additional layers of complexity when evaluating."

A few staff members reported that their institutions did not prioritize awarding transfer credits and creating formalized pathways for micro-credentials, because their existing programs were already full due to high demand. One said the following:

"Again, it just all comes down to space within the programs, particularly the high-priority programs. Currently, there isn't space, and historically, there isn't space. The need just isn't there to really be pushing forward on these kinds of things so far."

Other staff explained that their institutions were focused on promoting traditional pathways rather than facilitating transfer pathways for micro-credentials. One described her college's approach as follows:

"Right now, it's more of a focus on pathways that students are already utilizing that we don't promote enough, and then, we'll be looking at creating additional agreements with external institutions, and in my opinion, I believe that some of that focus will be on micro-credentials."

Another stated:

"Yeah, I think it's just a matter of that those articulation agreements at this point haven't been prioritized and that most of the efforts around articulation agreements are still in other places."

Some institutions appeared to be more focused on developing their micro-credential programming than developing specific protocols for transfer or laddering. One staffer said:

"I think micro-credentials are still in the infancy stage and everyone's focussing on getting their own setup, let alone, 'Oh, how can this pathway from this one to that one?' It's like, oh my goodness, let's just get our setup first."

Another staff member stated:

"There's not a focus on creating pathways or laddering with external institutions that have micro-credentials, I think, because we're still confused as to what--where we want to go with micro-credentials. It's not a main focus right now for us."

Finally, some interviewees noted that their institutions were not prioritizing transfer pathways for micro-credentials into their existing for-credit programs, because they believed that both sets of credentials should remain separate. This opinion was described by a staff member as follows:

"There's two schools of thought. They should be a separate short sort of a little thing that industry needs right away, boom, done, or is it something that is meant to follow from or lead into a wider, longer wider credentialism type?"

Several other administrators emphasized that micro-credentials and for-credit programs were each designed for different purposes. One administrator stated:

"I don't think there's the need for it. So, micro-credentials, where we're offering them, have to stand on their own and provide something different. That's how I've been viewing micro-credentials."

Another administrator simply noted that micro-credentials are not laddering into for-credit programs at their institutions, because "They're not supposed to."

vi) Summary

In sum, our interviews suggest that most institutions facilitate the stacking of micro-credentials into either higher-level micro-credentials or certificates.Much of that stacking occurred, however, simply by unbundling existing, non-credit certificate courses, though some institutions did facilitate the laddering of micro-credentials into pathways within which students could eventually earn credits. Importantly, our interviews suggest that no institutions currently have specific procedures in place for micro-credential transfers. Some interviewees reported that their institutions would be open to assessing transfer requests by using either their current protocols or a PLAR process. Staff also highlighted several potential barriers to granting transfer credits, including a lack of detailed documentation for micro- credentials (outlines, descriptions, and syllabi), and institutional norms that regard micro-credentials and for-credit programs as inherently different and separate.

Conclusions

Micro-credentials are being hailed in various provincial and federal frameworks (e.g., Colleges and Institutes of Canada, n.d.; eCampusOntario, 2020; Pichette, 2021) for their capacity to respond quickly to industry needs while allowing students to directly demonstrate their competencies, potentially saving considerable time and money. This study examined key features of micro-credentials offered by Ontario community colleges and universities. All representatives from those institutions reported that they were designing micro-credentials in response to industry needs.

However, they were split regarding whether they allowed students to skip certain course modules and proceed to directly demonstrating their competencies via some assessment process. Furthermore, some colleges and universities appear to be unbundling some of their existing certificate programs and repackaging those "chunks" as micro-credentials. This practice has been called into question by both commentators (Boud & Jorre de St Jorre, 2021; Horn & Arnett, 2017; Pichette, 2021) and several of our interviewees. Other interviewees, however, justified this practice if those unbundled courses met key criteria for micro-credentials, namely responding to industry needs and allowing students to demonstrate their competence.

Our study also examined the potential for and barriers to the stacking, laddering, and transfer of micro-credentials. Most institutions offered micro-credentials that could be stacked into larger, typically non-credit, credentials. However, few colleges and universities offered micro-credentials that could be laddered to earn advanced standing in larger and for-credit programs. Many stacking and laddering pathways for micro-credentials were mere by-products of the unbundling of existing certificate programs mentioned above. No institutions reported having formal pathways that involved other institutions, and none had any specific procedures in place to award transfer credits for micro-credentials. Only a few were planning on doing so.

However, representatives from several institutions were open to using their current protocols to assess requests for micro-credential transfer, noting that they would require detailed documentation, such as course outlines, descriptions, and syllabi, to assess equivalencies in the breadth and quality of various courses. Representatives from a few institutions said they would use PLAR to handle requests for transfer credits for micro-credentials, noting that a challenge exam or holistic portfolio could overcome some of the current barriers to awarding such credits. However, other interviewees did not support the transfer or laddering of micro- credentials, believing those courses were created for other purposes.

Lastly, we examined administrators' and instructors' views on the potential impact of micro-credentials on postsecondary institutions. Most believed their institutions would position their micro-credentials as alternatives, rather than complements, to their traditional programs. Few saw increasing demand for micro-credentials as leading to lower enrollment in their traditional programs, believing that the latter offer breadth and experiences that cannot be replicated by micro-credentials. However, some interviewees believed that industry-provided micro-credentials could be a source of competition for their own micro-credential offerings, noting they were unsure whether either potential employers or learners preferred one or the other.

Overall, we conclude that provincial institutions are currently adopting a largely fragmented and unregulated approach to micro-credentials. Specifically, we provide these answers to our original research questions:

1. Offerings that are labelled as micro-credentials vary widely in their costs, durations, modes of assessment, and content, and many do not appear to have the distinguishing characteristics of micro-credentials.

2. There is no consensus among administrators and instructors about the format of micro-credentials, their positioning in provincial institutions, or the future of those credentials.

3. Many colleges and universities are placing their micro-credentials in stackable pathways, but few are providing opportunities for laddering, and to date, none have protocols for awarding transfer credits for micro-credentials.

Suggestions for Future Research

Our findings suggest several avenues for future research to gauge the potential for micro-credentials to be readily stacked and laddered within Ontario postsecondary institutions, as well as transferred across those institutions.

1. Documentation of Micro-Credentials in Ontario College and Universities:

Effective transfer policies require good outlines, descriptions, and syllabi to judge equivalencies between courses. However, currently, little is known about such documentation for micro-credentials. The descriptions on Ontario's micro-credential portal lacked the level of detail needed to grant transfer credits, though perhaps such details can be obtained from course instructors. Future research could investigate the accessibility and detail of such documentation, as well as the usefulness of the meta-data contained in the digital badges earned after completing micro-credentials.

2. Industry Versus Institutional Micro-credentials:

Interviewees saw industry-provided micro-credentials as potentially competing with those offered by postsecondary institutions but not as being necessarily equivalent. If industry-provided micro-credentials become more prominent in Ontario, many students may seek transfer credits for them if they enrol afterward in colleges and universities. This issue will become particularly acute if industry-offered micro-credentials developed by the likes of Google, IBM, Microsoft, and Udacity become formidable competitors for postsecondary students, as some predict (e.g., 1EdTech Foundation, 2021; Evans, 2021; Gallagher, 2018 Lim et al., 2018; Matkin, 2018; Murgatroyd, 2022; Ralston, 2020). However, we currently know little about those industry- provided credentials. More research is needed to examine the equivalencies between micro-credentials offered by industry versus those offered by postsecondary institutions, specifically in terms of their breadth, assessments, and quality assurance procedures. Research could focus on what might become a decisive issue: whether Ontario postsecondary institutions recognize industry-based micro-credentials as comparable to their own and, thus, as worthy of transfer credits.

3. Student Demand for Transfer Credits for Micro-Credentials:

Surveys could gauge the levels of postsecondary students' demand for being granted transfer credits for their micro-credentials. Researchers could work with instructors and poll their students to ascertain their levels of awareness, concern, and demand regarding transfer credits.

4. Follow-Up Study to Re-Assess Micro-Credentials' Potential for Transfer:

Currently, micro-credentials are very new in Ontario postsecondary education. Thus, these institutions do not appear to be prioritizing the transferability of micro-credentials. However, two to three years from now, micro-credentials are likely to have a stronger presence in Ontario colleges and universities. At that time, a new round of interviews with instructors and administrators could determine whether institutions have made progress in creating and enacting protocols for granting transfer credits for micro-credentials.

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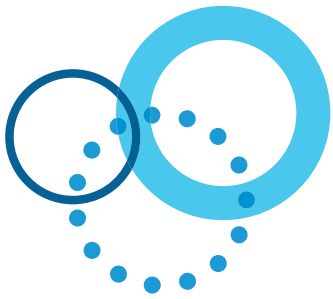

Appendix A

Interview Questions

i. Personal Information:

"What is your job title at this institution?"

ii. Transfer:

"Many stakeholders are concerned with ensuring that credits can be transferred across institutions. By 'transfer,' I am referring to the recognition of micro-credentials awarded by one college or university by its provincial peers. Can you describe any protocols currently in place at your college/university for transferring micro- credentials to and from your institution? Does your institution have any plans to put such protocols in place?"

"In your view, what are the main obstacles to the transferability of micro-credentials?"

"In what ways are micro-credentials at your institution similar to and/or different from its certificate/grad certificate programs?"

"How much overlap should there be between micro-credentials and 'grad certs' in terms of their program features and the roles they serve?

"Do you have any current or planned protocols or procedures for transfers among your conventional degree/diploma/certificate courses?"

"In your view, could any existing transfer practices for those conventional courses be adopted for micro-credentials?"

iii) Stacking:

"Many people who promote micro-credentials want them to be 'stackable.' We use that term to refer to the capacity to have individual micro-credentials combine to form larger 'bundled' credentials, such as certificates, diplomas, and degrees. To what extent are the micro-credentials at your institution stackable? Can you give examples? To what extent does your institution actively facilitate this stacking? Also, does your institution facilitate stacking micro-credentials between itself and other institutions? Can you give examples?"

"Are there any obstacles to stacking within your own institution?" If so, what are they? Are there any obstacles to stacking between different institutions?

"In your view, how important is it for micro-credentials to be stackable within the same institution? How important is it for them to be stackable between different institutions?

iv) Use of industry standards:

"In your view, is it important that micro-credentials be based on the skills and competencies expected by industry?"

"To what extent are the micro-credentials at your institution based on employer needs and expectations?"

"How, if at all, does your institution determine employers' needs and expectation regarding its micro-credentials?"

v) Ability to demonstrate skills:

"In your view, is it important that micro-credentials provide students with a means to demonstrate their competencies and receive credit, independent of course completion?"

"To what extent do your institutions' micro-credentials provide such a means?"

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