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Micro-credentials in higher and vocational education: An innovation or a disruption? A review of the literature

Jeremy Hanshaw[A]

[A] *Transdisciplinary International Tertiary Education Specialist, Academic Sessional Advisor, University of Leicester*

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Correspondence

jeremy.hanshaw@gmail.com [A]

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Abstract

This article examines the literature on micro-credentials within the context of higher education and vocational education. It considers whether they are an innovative force for good or a disruptive force for evil. Are they, as the literature suggests, a means of creating agency, affording equity, access, and participation in higher and vocational education for those who otherwise lacked the time, money, opportunity, or confidence to apply for further study or/and felt disenfranchised from the learning experience, or/and found the whole concept of a qualification daunting? Are they, as posited in the literature, an excellent conduit to higher and vocational education for those wishing to sample an academic or vocational subject without committing to a full degree course? Or are they, as pre-supposed in other literature, an over-simplistic alternative to the traditional academic credential, a cynical attempt to dumb down knowledge, turning higher and vocational education into a series of stackable credentials aimed at satisfying the job market, and the neoliberal thirst for more and more dollars to fund our institutions, but failing to meet the finer subtleties of the academic experience? I examine and critique the literature around this debate and argue how we might harness micro-credentials to sustain innovation and disruption positively, leveraging them to move forward within education in general and higher and vocational education in particular.

Introduction

I start by briefly defining micro-credentials and considering some of their affordances within the higher education (HE) and vocational education and training (VET) sectors. The second section addresses the disruptive element of micro-credentials, reviewing and critiquing the idea posited by some of the literature that they are negatively disruptive and a threat to the academy. The third section looks at the potential of micro-credentials to create agency and contribute to equity, access, and participation in higher education to be positively disruptive, as evidenced in the current literature. Finally, based on this debate in the literature, recommendations are made on how we might leverage micro-credentials in HE and VET in the future.

Definitions

I will start by discussing the definitions of micro-credentials (MCs) and micro-credentialing (MCg). The literature on defining MCs is extensive yet increasingly, and rightly, narrow as we systematically agree upon a definition through refining and defining our terms, which previously bound educators and innovators in respect of MCg (Oliver & UNESCO, 2022).

As recently as five years ago, practitioners did not have an agreed definition of MCs. Educators, in our discussions, did not know what they were, did not have a clear distinction between an MC and a digital badge, did not know whether they should contain learning of subject matter as well as the earning of a qualification, or whether they could or should be stacked. Five years later, vocational and higher education sectors arguably agree on what MCs are but disagree on how they might best be deployed to benefit learners. In the following paragraphs, I shall consider the former and the latter.

I will now consider the numerous characteristics of an MC; these characteristics will lead us to numerous affordances of MCs. An MC is, as the name suggests, micro, a small unit of learning that is credentialed, i.e., assessed. The European Commission defines MCs as:

> A documented statement awarded by a trusted body to signify that a learner upon assessment has achieved learning outcomes of a small volume of learning against given standards and in compliance with agreed quality assurance principles. (European Commission, 2020)

The Commission states that MCs demonstrate credit volume and are aligned with national and European Qualification frameworks. They may be offered face-to-face, online, or blended learning means and can be formal or informal. It belongs to the owner and is sharable, portable, stand-alone, or part of a more extensive portfolio, triggering an award or digital badge (European Commission, 2020). The New Zealand Qualifications Authority (2020) defines them as "a sub-set of training schemes that certify achievement of a coherent set of skills and knowledge and that have evidence of need by industry, employers, [community of people] and/or the community."

UNESCO (Oliver & UNESCO, 2022) has identified the following features in MCs, which give rise to multiple affordances, namely:

- being human-centric,
- promoting both equity (United National Sustainable Development Goal Four) and digital transformation/aiming to bridge the digital divide,
- possessing diversity in stakeholders,
- forming an agreement on the scope and definition of MCs,
- agreeing on how to quality-assure, recognise, regulate, and incentivise them,
- being flexible, portable, transferable, and transparent,
- having agreed on learning outcomes/achieved competencies and
- ensuring they are not over-regulated.

I would suggest that an MC be preferred over a *digital badge*, the latter being a broader term. By their very nature and definition, MCs are *small* and *assessed* parcels of learning. In my learning journey, I realised that MCs can be distinguished from badges through the lens of assessment (Hanshaw, 2023); writers invariably refer to digital badges when there is little or no assessment (Grant, 2016).

There is now general agreement, if at times consternation, that MCs can be *stacked*. Lockley et al. (2016) argue that pegging MCs to existing frameworks can be cumbersome. Gibson et al. (2016) put forward that stackable MCs are a new means of identifying skills, experience and knowledge and that there is the possibility to use badges in all three stages of the learning journey: paths *into* learning, paths *during* learning, and *lifelong* learning pathways which the European Commission (2020) comments on the lack of consistency and standardisation in MCg. Thus, MCs can be bundled together to create a series of awards, potentially culminating in and triggering a more significant award. For example, a series of 15-credit MCs could be stacked to form 60 credits, thereby triggering an exit award of a 60-credit certificate or 120-credit diploma at the required and achieved level. A capstone assessment is likely an excellent strategy to double-check that learning outcomes/achieved competencies have been demonstrated before triggering the stacked exit award. Theoretically, high-level MCs could be stacked to form the credits necessary to trigger a degree-level qualification at the undergraduate or postgraduate level. However, as the literature will reveal, this affordance has its critics.

Affordances

Affordance can be defined as what is furnished or provided by an agent to a party or parties. For example, numerous environmental affordances exist for animals (Gibson, 1979). These can be for good or bad and are complementary: the environment complements the animal and vice versa (Gibson, 1979). In this context, the agent is the MC and the party, or parties, are the learners.

McGreal and Olcott (2022) outline the multiple affordances of MCs within higher education, using the case study of Deakin University (DeakinCo, 2017), which considers how an organisation might achieve a competitive advantage in their strategic deployment of MCs. They posit that short courses that lead to micro-credentials can afford employees and employers flexibility and "just-in-time training… empowering employees to upskill, learning how to function in emerging new critical areas for an industry" (McGreal & Olcott, 2022, p. 5). Emergent knowledge or skills, or those required urgently, need an urgent and manageable response not provided by a traditional degree. MCs can be deployed in this space quickly and achievably, resulting in timely and empowering success.

MCs have multiple affordances in an HE/VET context. Gibson et al. (2016) consider MCs for supporting learning journeys: bringing visibility and transparency to the learning, teaching and assessment journey, illuminating the affordances of learning to stakeholders, and providing a new means of identifying skills, experience and knowledge "through an open, transferable, stackable technology framework" (p. 115). They also consider the importance of MCs in sustaining life-long learning and argue that MCs enable the institution to leverage the building of professional networks.

Wilson et al. (2016) consider how MCs are often contrasted with degrees: MCs, unlike degrees, may be issued by employers and professional bodies and accessed flexibly by learners, and they help institutions move away from a seat-time model towards a competency-based curriculum, by which they mean MCs are "disruptive innovation" (p. 164). Lockley et al. (2016) consider them a disruptive technology (questioning the status quo). A European Commission report on MCs, Micro-credentials in the EU and Global (2020), finds that there is disagreement amongst experts as to whether educational institutions will get disrupted by companies offering MCs. Wilson et al. (2016) reflect on how MCs in the university system are like David and Goliath: David is the upstart MC, Goliath the institution. The story talks of Goliath being fierce and bigger than others, with a sword and spear to attack and a large shield to defend. This is how one might imagine the neoliberal university: its size, ease of defence with lawyers for a shield, and sharp tools for attack. David, conversely, had only his faith. Coleman and Johnson (2016) endorse this David and Goliath analogy, arguing that MCs have provided HE with the ability to recognise detailed aspects of learning; they enable the endorsement of competencies, capabilities and skills: those that go unrecognised within the traditional academy or in the transcript.

Disruption

Disruptive innovations create footholds in markets where no market existed, turning the non-consumer into the consumer. However, their success for mainstream consumers is quality-dependent: they do not become popular until they possess sufficient quality to satisfy the mainstream consumer (Christensen et al., 2015). This suggests MCs, if disruptors, might provide open access opportunities for learners to get a foothold in post-secondary education where before, no such opportunity existed, turning the non-learner into a learner. The quality of the MC offering will vary between awarding organisations. However, one would have thought that if a reputable institution were administering the MC, perceptions of quality should be satisfied, and expectations should be met. The debate is whether MCs as disruptors are unseating or augmenting the traditional university credential. In the later part of this article, I shall consider whether MCs are inferior to traditional credentials or have the potential to unseat or contribute to unseating. For now, it is worth noting what Kumaraswamy et al. (2018) highlight - "Many years ago, Peter Drucker noted, 'The greatest danger in times of turbulence is not turbulence itself, but to act with yesterday's logic'" (p. 19).

A key question is whether *disruption* is positive in creating opportunity where none existed or is harmful in displacing or replacing something qualitatively inferior. Replacement is a subjective term: who or what is being replaced? If the traditional degree is being replaced by MCs, that may displace the traditional academic. However, it may afford opportunities to learners. Is raging against the disruptive element of MCs an example of acting with yesterday's logic against an innovation? One person's negative disruption may be a positive innovation for another.

Micro-credentials as negative disruptors

MCs have their critics, including those who regard them as reductionist and a threat to traditional education. Ralston (2020) is one of MC's greatest critics, calling MCg "dangerously reductivist" (p. 95) and "a moral hazard" (p. 96):

> It reduces higher learning to a list of hard skills and technical competencies that bolster employer workforce development and heighten employees' earning potential. Soft skills and human competencies to, for instance, 'learn to learn' are arbitrarily excluded from micro-credential curricula (Ralston, 2020, p. 95).

MCg can enhance career development and personal growth (Grugulis & Vincent, 2009), something that Ralston concedes. However, Ralston suggests that "Micro-credentialing contributes to the decline of the traditional degree. It paves the way for the total substitution of degree programs with micro-credentials" (p. 95). Has any traditional degree programme ever been substituted by MCs in global higher or vocational education? Not to my knowledge. That is not to say that MCs might not go on to replace some traditional university awards. However, this has not happened to date.

Artificial Intelligence (AI) has been posited as replacing teachers in learning, teaching, and assessment. However, the reality is that AI likely augments and adds value to the traditional practitioner (Crawford et al., 2023). AI cannot replicate the human touch in learning, and it is essential to recognise the crucial role humans play in education and navigating changes in technology (Osamor, 2024). Generative AI can bring advantages in terms of efficiency for both educators and learners (Rudolph et al., 2023). Indeed, AI "presents the opportunity to re-emphasize that a university can serve the common good and shift towards a better future" (Popenici et al., 2023a, p. 103), fostering respect for learners and academics as we move towards a common goal. However, we are likely quite unprepared for AI, which will force institutions to ask themselves what they are doing: humans might be removed from the learning and assessment processes altogether, resulting in no one learning anything, and technology without human morality poses some threat (Popenici et al., 2023b). Whether it poses an existential threat remains to be seen, although perhaps not seen for very long, by us anyway, should that be the case.

MCs could be associated with the perhaps lesser threat of the evils of neo-liberalism and market-driven education as "microcredentialing generates a consistent stream of revenue through planned obsolescence, perpetual servicing, and moral hazard" (Ralston, 2020, p. 17). However, Desmarchelier and Cary (2022) provide an interesting critique of Ralston's position. Do MCs pander to the neoliberal ideology ornate? They ask:

> What is sacred about a traditional degree structure? We see the undergraduate/postgraduate degree structure as firmly embedded globally in neoliberal education systems that require the expenditure of (usually large) amounts of money from varying mixtures of private individual and public government sources (Desmarchelier & Cary, 2022, p. 5).

Desmarchelier and Cary (2022) argue that the demands of neoliberalism are strongly present in traditional degree programmes: "Universities are increasingly beholden to economic imperatives, and efficient delivery of learning is a goal at most institutions" (p. 5). Andrew (2023a) asserts that "universities are increasingly managed and neoliberalised, corporatising and commercialising" (p. 18) and investing in real estate empire-building rather than funding academic positions (Andrew, 2023b). This suggests that university leadership is already strongly influenced by the demands of neoliberalism, with MCs having little influence on the property empire ambitions of university boards.

These statements resonate with anyone who has worked in the academy. Why is MCg the target for these accusations, rather than "the fastidious micromanager, marked by an inward deep feel of failure" (Andrew, 2023a, p. 18)? Or the endless marketing missions overseas to recruit international dollars? The competition for research funding or tenure may be more brutal than the effects of MCg upon the academy and the academic.

Does academic snobbery play a part in the disdain towards MCg from some corridors of the academy? At the heart of this, perhaps, is that MCg is usually considered vocational, which is "strongly perceived" as being "second choice" (Keevy, 2020, p. 1). This view is only heightened by those who consider the academy sacred. Ralston (2020, p.12) notes:

> What is lost in the conversion of higher education to a microcredentialing delivery system is the rich educational experience whereby teacher-scholars share new vocabularies, culture and dispositions… in an ongoing and mutually edifying conversation. Also abandoned is the higher purpose of education, namely, to serve society at large, not simply corporations and industry.

Is HE being *converted* into MCg? Why can learners and teachers not share essential learning moments in a micro-learning environment? Are these 'edifying conversations' not instances of micro-learning themselves? I would argue that Ralston's position results from a philosophical aversion to MCs as being negatively disruptive, threatening to displace or replace him as a traditional academic rather than affording opportunity for micro-learning when, perhaps, learner and teacher are in the same space but not necessarily the same place, for example, online.

Do MCs generate revenue at the cost of ethical responsibility? MCs contribute to the decline of the degree (Kazin & Clerkin, 2018) and undermine the very mission of HE by promoting efficiency and profitability (Ralston, 2020). However, do they pose as significant a threat as using university money to develop property empires rather than fund academic positions? Ralston (2020) posits: "Administrators who invested in microcredentialing as a revenue generator will sometimes have to shirk their ethical duty to act in the best interests of students in order to maximize profits" (p. 17). Why is this truer for MCg than any other HE or VET learning vehicle? Managers instruct administrators, and it is the managers who drive the fulfilment of financial and recruitment targets as well as pass rates for programmes at all levels of HE and VET: "Institutions are more interested in getting students 'over the line' in a timely fashion than in facilitating opportunities for authentic excellence" (Andrew, 2024, p. 1). It may perhaps resonate with some readers that it is commonplace for recruiting universities in the so-called developed world to occasionally abandon much of their ethics in respect of entry requirements to satisfy recruitment targets for degree and vocational programmes in the highly competitive and lucrative international student recruitment market, at all levels of the HE and VET sectors. It could equally be argued that neoliberal demands and the 'shirking of ethical duty' were present in education long before MCs arrived.

Ralston asserts that MCg's "focus on vocational education allies it with vested industrial and corporate interests… For Marxists, credentialism suggests bourgeois values that, when pursued by proletariat members, generate a version of false consciousness" (Ralston, 2020, p. 18). Do MCs align themselves with such vested interests more than traditional programmes? To graduate from Harvard, Yale,

Princeton, MIT, Oxford, or Cambridge is undoubtedly the epitome of academic power and often privilege, vested self-interest, affording opportunity for the few at perhaps the expense of the many: not so much bourgeois, middle-class, as elite, upper-class. There is undoubtedly greater 'false consciousness' in the elevation of the so-called elite into positions of power and privilege than in widening participation in the education of the 'proletariat', which Ralston appears to argue against.

The contention here seems to be that MCs are less than whole by their micro nature. However, degree programmes are already unbundled into modules or courses, lectures and seminars, assessments and tutorials. None of these moments in the learning journey educates the whole person all at once. Therefore, the claim that MCs are less than whole is undoubtedly a lame claim, as neither is the traditional degree in its parts.

Desmarchelier and Cary (2022) grapple with this: "A consideration when unbundling learning occurs is the maintenance of rigour and quality and the cohesiveness of the learning offered. To produce quality-assured micro-credentials from existing material requires significant development" (p. 7). This has a significant development cost, and while Ralston is right that unbundling traditional degrees is a source of material for MCs, such MCs can have an efficacious effect on learners' learning if undertaken with judicious rigour (Desmarchelier & Cary, 2022).

Ralston (2020) argues that "microcredentialing does not liberate learners' potentialities or meet the needs of lifelong learners" (p. 96). Desmarchelier and Cary (2022) "reject the generalised assumption that micro-credentials only pertain to industry-specific skills and competencies and have demonstrated how universities respond in ways that develop learning-to-learn proclivities." (p. 7). There is undoubtedly a place for MCg within HE and VET to develop discrete skills and promote life-long learning through discrete parcels of learning. However, Lewis and Lodge (2016) argue that the:

> A reductive MC approach to professional practice generation and CPD should be used for lower-order or vocational skills that can be simply noticed. The level of granularity does not provide the nuances required for higher-order processing and the subtleties of knowing, being, doing, and valuing. A more holistic approach is required for the complexities of uncertain workplaces (Online).

Grant (2016) states the opposite: MCs are particularly relevant to enhancing nuanced understanding and allowing more transparency and an evidence base. A mature debate indeed leads us to a familiar place, in the realisation that whether any credential has higher value is determined by how it is administered, delivered, assessed, moderated, awarded, and quality assured, as well as to the, sadly, familiar space of equating the vocational with the lower order (Lewis & Lodge, 2016). The inherent snobbery towards, or rather against, the vocational education and training sector (Meade & Feldman, 1966) will continue to have a deleterious effect on HE as it excludes the vocational from the HE table, creates a barrier for learners and learning, creating an unnecessary divide that need not exist, hindering opportunity to HE to broaden and expand its offering, hampering VET by impeding integration within HE, and discouraging learners from pursuing a vocational route.

Wheelahan and Moodie (2022) are also vociferous critics of MCg:

> Rather than presenting new opportunities for social inclusion and access to education, they contribute to the privatisation of education by unbundling the curriculum and blurring the line between public and private provision in higher education (p. 1288).

Public-private partnerships are not new (Breton & Lambert, 2003). If MCg contributes to new partnerships, why is that a problem, and why is that preventing new opportunities for social inclusion and access? Wheelahan and Moodie (2022) assert: "They [MCs] accelerate the transfer of the costs of employment preparation, induction, and progression from governments and employers to individuals" (p. 1279). That is an interesting interpretation of individuals choosing to up-skill or re-skill for employability or enhancement. Do degree programmes not transfer costs from governments and employers to individuals? Governments, decreasingly, and employers rarely fund degree programmes contemporaneously; individuals fund themselves. However, should degree programmes be dismissed because they transfer costs from the government and employer to the learner? Perhaps they should be critiqued on this basis, if not dismissed as such.

Wheelahan and Moodie (2022) themselves critique:

> Microcredentials contribute to 'disciplining' higher education in two ways: first by building tighter links between higher education and workplace requirements (rather than whole occupations), and through ensuring universities are more 'responsive' to employer demands in a competitive market crowded with other types of providers (p. 1279).

I consider both of these affordances as positive drivers of MCg: to have tighter links between HE and industry and to be more responsive to the needs of employers, demonstrate accountability to the needs of society as a whole, employers in particular, and learners specifically. By 'whole occupations,' do the authors mean doctors, dentists, lawyers, and politicians? MCg can contribute to universities and vocational institutions being more useful, responsive, accessible, affordable, and less overbearing as a learning proposition. However, the authors dismiss this, arguing that MCs "are gig credentials for the gig economy" (Wheelahan & Moodie, 2022, p. 1281) and do not challenge the status quo, and those not attending elite institutions must still second-guess the labour market when it comes to upskilling.

It is hard to imagine that snobbery can ever be eradicated in education, and there are those whose interests it serves who would never wish to do so. However, as for the proletariat, second-guessing and upskilling may be all we can hope

for, so why deny us that? MCs provide a vehicle to improve ourselves, whoever we are, stand out, and go further, wherever we are, "at the right time and for the right job" (Wheelahan & Moodie, 2022, p. 1281).

Those that oppose MCs are often type-cast as moth-balled die-hards (Wheelahan & Moodie (2022):

> Opponents of microcredentials are cast as those who wish to maintain higher education as an ivory tower and support elite structures of higher education, who are conservatives resistant to change and who deny any role for higher education in supporting people to gain credentials they need for a meaningful career (p. 1281).

MCs are perhaps not the antidote to elitism in higher education; its opponents are not necessarily conservatives in ivory towers, and degree programmes can and do contribute to meaningful careers. However, there is no doubt that an MC is more accessible than a whole degree (even when a degree is divided into years of study) for cost and time reasons (Tehan & Cash, 2020). They may not revolutionise education for the better; indeed, they have not. However, they may make it better for many by creating vocational and higher education opportunities. After all, MCs cannot only be for the lucky few (Oliver & UNESCO, 2022).

Wheelahan and Moodie (2022) argue that rather than investing in MCs, "progressive, democratic societies should seek to ensure that all members of society have access to a meaningful qualification that has value in the labour market and society more broadly" and to enable individuals to live valuable lives (p. 1279). Rather than focusing on this to the exclusion of MCs, I argue that MCs can be a conduit to achieving this, given their ability to afford access and equity on the grounds of affordability and time/financial/academic/cognitive manageability. MCs can be a powerful tool for enabling equity, access, and participation. Likely, society does not deny people experiencing homelessness a meal because they have not yet provided them with access to a job and a safe place to sleep. Higher and vocational education should not deny learners and would-be learners access to MCs just because not all societies have access to education; contrary, it may just be the antidote, if not the panacea. That small gift to a homeless person may go some way to alleviating their poverty, or at least sustaining them today; MCs can go some way to alleviate intellectual and skill-set poverty and increase and expedite access to new vocations and new intellectual spaces. That, indeed, is something Ralston et al. (2020) can get behind.

Marshall (2010) reminds us:

> Disruptive change is problematic for dominant organisations as the natural tendency is to protect existing structures and activities, particularly when those are currently seen as successful (p. 181).

This supports the view that innovation displaces traditional structures. However, with MCs, can they not augment and complement? I shall consider this below.

Micro-credentials as agency

The term 'agency' can mean "action or intervention producing a particular effect," for example, "canals carved by the agency of running water" (Bab. la, 2023). Here, we do not consider carving canals but knowledge, skills, and more fulfilling lives by the agency of MCs.

It is not only learners but industry or society as a whole that can benefit from nimble, rapidly deployed MCs. By their very nature, MCs enable HE and VET to respond quickly to individuals' educational needs, enable learners to upskill and find "more meaningful and lucrative participation in the workforce", as well as afford "dipping their toes in the water" for further traditional higher education study with many universities promoting MCs as stackable for credit to provide pathways into macro qualifications" (Desmarchelier & Cary, 2022, p. 6). Emergent skills and knowledge need to be acted on now, not when the next group of first-year students graduate in three or four years. Rather than threatening the traditional degree, this is a different beast altogether: put crudely, this is the corner shop, not the department store. When one needs something urgently, one goes to the corner shop. Further, the idea of 'dipping your toes in the water' is powerful. A learner can sample computing with an MC to see if it is what they want, without needing to get part-way through a lengthy degree programme only to discover they would instead stack shelves than work in IT.

Turning to life-long and life-wide learning, contrary to the idea that only an arts education can afford the beauty of intellectual exploration, learners may use MCs to further develop themselves in any area of interest, need, or desire, such as numeracy, literacy, family health and well-being, writing, or participation in lobbying and the democratic process, whereby contributing to life-wide learning (Desmarchelier & Cary, 2022). MCs can, therefore, afford lifelong learning and life-wide learning that are available where required or desired. The idea of MCs being deployed better to enable participation in activism or the democratic process is robust. To those who take aim at the verb 'invest in', this is precisely what most learners do with a traditional degree: it is not free. It is an investment in cultural capital. However, arguably, it is increasingly a form of taxation as student debt can remain with learners for life. At the same time, the degree might become a financial ball and chain; an MC could, dare we dream, be a means of emancipation, though, as we have seen, this view has critics, as it should. However, what if we should dare to dream?

Arguably, the most potent agency of MCg is in its affording equity, access, and participation in higher education. As Desmarchelier and Cary (2022) note:

> Rather than forcing potential students into lengthy, expensive degrees, micro-credentialed offerings that can be accessed as either lifelong or life-wide learning needs that arise, mean more and cheaper access to education than previously available (p. 8).

MCs can, therefore, promote equity, access, and participation in HE and VET through affordability and the more realistic undertaking of smaller chunks of learning, contributing to

lifelong and life-wide learning. The European Commission (2020) observes that "affordability has become one of the drivers for the growing use of micro-credentials. Particularly, in the US, there is evidence that people are starting to question the benefits of paying for traditional qualifications that may not prepare them for the new digital society" (p. 40). Varadarajan et al. (2023) take up this point: "Financial barriers to undertaking microcredentials do not comprise significant barriers for learners. Higher education institutions can offer microcredentials in smaller units at lower costs than full-term tuition fees" (p. 14).

The term *tuition fees* reminds us that higher and vocational education are already vultures at the neoliberal sacrificial altar, dividing up the spoils. Rather than accelerating the consumption of dollars and barring access to those who cannot afford to sit at the table, MCs can ameliorate this by enabling more people to learn more about it. Time and cost are two of the greatest barriers to HE (Tehan & Cash, 2020); MCs reduce them both. Fear of failure and a perceived lack of success are two of the greatest barriers in HE and VET (Hanshaw, 2023); MCs put learning into more manageable chunks, reducing that fear and enabling learners to see success in incremental steps.

MCs have the potential to alleviate student drop-out rates (Pirkkalainen et al., 2023). They also put learning in the hands of the learner, who can more readily decide what they learn and when (Hanshaw, 2023), which will logically contribute positively to retention rates on programmes of study. These are powerful, positive affordances.

MCs can enable the dissemination of learning and credentialing on a global scale. Desmarchelier and Cary (2022) argue that MCs enable learning to be internationalised in an unprecedented manner:

> The digital allows for global access to education in a way never seen before. A course can be offered by an Australian university and have participants from South America, Asia, and Europe, making for an enriched learning environment for students (p. 9).

Though this is equally true of any, or most other, packages of learning and assessment, the affordance of MCs leveraging equity, access, and participation within HE and VET makes global access to such learning opportunities even more powerful: again, more people can learn more about more. It can also enable open access, for example, the Open Education Resource Foundation (OERu), based at Otago Polytechnic in Aotearoa, New Zealand, which is making a landmark contribution in providing open access resources to learners and scholars:

> One of the most innovative organizations in the world to combine online learning, OER and open systems across digital formats with a diverse system of micro-credentialing. OERU offers a range of short courses and seminars for non-credit that are stackable together into traditional credentials with partner universities (McGreal & Olcott, 2022, p. 12).

This stackability further empowers learners, as they can use MCs to contribute to or even trigger awards within the traditional HE or VET systems in a more affordable, time-friendly, and less daunting manner than the traditional chunk of learning that is a degree. This brings us to another powerful affordance of MCg: integration into the university curricula.

The integration of MCS within the curriculum is a complex and contentious issue. McGreal and Olcott (2022) argue that integration can "make them [MCs] easy to use with clear validation metrics, and, in this way, make micro-credentials a value-added benefit for all stakeholders" (p. 6). This is a clever way to deploy pre-established and robust quality assurance mechanisms to achieve economy of scope to the benefit of the institution, employers/industry, and learners by creating targeted discrete parcels of learning that can be incorporated into more extensive programmes, or through stacking, can trigger larger awards, with capstone assessments for added rigour in high stakes credentials: where the institution or industry require reassurance that learners are sufficiently capable in the target knowledge or skill-set, whether traditional (e.g. English for Coastguards) or emergent (e.g. how to administer the COVID vaccine).

I have already considered how MCs can enable emergent, urgent knowledge and skills to be developed and recognised in a more expeditious manner than the traditional degree. However, this new learning can then be integrated into the curriculum. This can provide added value in the exchange of knowledge. Further, by redesigning curricula into a series of MCs, where an institution is seeing a low rate of admission or high dropout rates, MCg the curriculum could enable enhanced learner success (Hanshaw, 2023). Thus, "embedding micro-credentials within the curriculum has the potential to affect how students understand their social and cultural capital" (Pollard & Vincent, 2022, p. 852). This could also be done by integrating the students' knowledge and skills into the curriculum, not just their lecturers. Students could be encouraged to redeploy their ideas into MCs to the benefit of many. This is harnessing expertise as we have never seen before. Not to forget the expertise within faculty, however:

> Micro-credentialing represents a potential seismic shift in the global landscape of higher education. Most institutions will have pockets of highly innovative learning and teaching practice driven by committed academic staff. To make micro-credentialing successful, these need to be harnessed and directed at a whole of institution level (Demarchelier & Cary, 2002, p. 9).

However, to harness this potential, HE and VET sectors need to stop arguing over whether MCs are an existential threat when they have proved themselves not to be and engage in the serious business of making them work:

> Micro-credentials [need to] become more widely accepted and standardised, meaning that national strategies would need to be strengthened, micro-credentials aligned with national qualifications systems and the policies for the common assessment strategies of micro-credentials outlined (Pirkkalainen et al., 2023, p. 43).

This is not such a tall order. Traditional degree programmes are integrated or stand-alone, and reputable institutions seem to succeed in turning out quality graduates. Why cannot MCs do the same? Boud and Jorre De St Jorre (2021) warn us not to deploy MCs only in unbundling existing qualifications "until these are reformed to be transparent in meeting the minimum standards of achievement required for each designated outcome. Without this, flaws associated with macro-credentials will inadvertently undermine micro-credentials" (p. 19).

Unbundling existing qualifications need not be an issue – since COVID-19, the unbundling of HE has already commenced (Varadarajan et al., 2023); if minimum standards are agreed upon and transparent if achieved competencies/ learning outcomes are accurately and clearly assessed and moderated, in short, if there is capability in academic practice. Perhaps the problem can become its solution: rather than MCs being reductionist, they can inspire and build capability in manageable chunks of learning, teaching, and assessment practice across institutions within HE and VET. This task is more manageable for practitioners and learners than grappling with a whole programme all at once. Is grappling with the complexities of MCs within HE and VET worthwhile? Ask a pertinent question: Should institutions engage in MCs at all?

> The critical strategic reset question for university leaders is not how we engage in micro-credentials. The first question is, should we engage at all, or to what degree? Does this trend align with the institutional mission, the programmatic strengths of academic programmes, and the increasing importance of good judgment in strategically allocating institutional resources? Indeed, like online learning and open education, one can effectively make the case for all institutions to be involved in workforce and economic development; however, at the end of the day, the related question is how involved? (p. 15).

The answer to this question depends on *whose* interests one's institutional strategy serves. Is it the interests of the registrars, the programme leaders, IT, and Finance that bulk at the amount of work and money involved in integrating stackable MCs into the current curriculum, or in using the current curriculum to create a stack of them, then assessing them, moderating them, reviewing them, recording them, and creating a repository that learners can access and even employers to display or validate them? Alternatively, is it in the interests of the learners, the would-be learners, the never-would-have-been learners, who could seize the opportunity to undertake manageable, less frightening, affordable, time-friendly, stackable, transferable, validated, assessed chunks of learning and assessment of their choosing, that complement the traditional offering with life-long and life-wide learning, and do not replace it? Widening Participation (WP) has long been a central agenda of institutions I have worked for in the United Kingdom and New Zealand – in theory. MCs afford the potential to revolutionise the WP agenda in practice. Therefore, the overarching question is, are we up to the challenge to make a real difference in the lives of many by making our degree offerings more nimble to change and more available, affording change for the betterment of us all, not just the lucky few (Oliver & UNESCO, 2022).

Conclusion

In this article, I have briefly defined MCs as small chunks of assessed learning that are developed, administered, and awarded with the quality assurance that one would expect from an institution of high standing. I have reflected on some of MCs' most vociferous critics: MCg dumbs down learning; is an unethical revenue generator; does (or does not) enable higher order processing; contributes to the privatisation of the academy; constrains institutions, and rather than liberating learners, forces them into paying for what employers should be paying for – upskilling or re-skilling.

I have also uncovered some powerful affordances of MCs as positive agents: enabling quick responses to changing needs of individuals, organisations, or societies; for learners to sample a subject area or field of practice with an MC without committing to a lengthy and costly degree; provide life-wide as well as life-long opportunities for personal and societal growth; to put the decision of what to study and when more in the hands of the learner rather than the institution; afford equity, access, and participation by virtue of MCs reducing time and money constraints; promote new learning that can be integrated into the curricula; alleviate a fear of failure or lack of success by redesigning existing qualifications into manageable chunks whereby improving recruitment onto programmes and retention rates within programmes; enable greater access to education for more people in more places, who can come together and learn together; provide a student voice to knowledge generation and dissemination by integrating the learning of learners into the curricula; and act as a conduit to capability building within the academy in the development of curricula and quality assurance in manageable chunks of subject matter and practice.

Finally, I am struck by two things: first, the positive affordances of MCg appear to significantly outweigh the critics' claims of negative affordances in size and number. This is following my honest attempt to research the literature without bias in this space.

Secondly, the ideas of those who argue that MCs are a disruptive force for evil are just that: ideas. There is little evidence to suggest the claims to be true. We can claim that MCs are a "moral hazard" (Ralston, 2020, p. 96). However, there is no evidence of one learner or academic being displaced or harmed by them. It can be argued that MCs develop higher-order processing skills or do not; however, no evidence supports such claims. However, the examples of MCs being an innovative force for good are logical. We do not need evidence to understand that an MC is cheaper and more accessible than a degree (however, evidence can be provided); it can respond faster to a changing environment than a degree; an MC can provide meaningful learning in areas of personal growth and development; it puts learning decisions, what to learn and when, into the hands of the

learner, not just the institution; it is an excellent way to 'suck it and see' before enrolling on a degree programme or macro qualification; the learnings from MC knowledge generation and skill acquisition can be integrated into the curricula; more people can come together to learn what they want and when they want; and MCs make academic programmes and academic developments more manageable in size and task. This is logical and common sense. As positive disruptors, MCs provide a foothold into learning, making learners of non-learners or would-be learners. They have yet to displace the academy or the academic, that is, to be negatively disruptive, except for the debate on their potential disruption, which distracts from the more critical task of educational enhancement, especially post-COVID, where many institutions feel disjointed.

Therefore, moving forward, I recommend that we stop disappearing down the rabbit hole of debating whether MCs are good or bad, whether they are best seen as vocational or HE, but look at how we might harness them for the betterment of the many:

> There is strong hope that micro-credentials can advance the equity agenda, bringing accessible and affordable focused learning and skill building to vulnerable communities, enabling achievement of the United Nations Sustainable Development Goal 4 (Quality education) (Desmarchelier & Cary, 2022, p. 8).

Let us travel in hope.

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