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# Micro-credentials: Surveying the landscape

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### Abstract

This paper will discuss micro-credentials (MCs) as a viable emerging form of non-degree qualification which offers flexible, inexpensive contents that closely match learner needs. The opportunities to gain MCs, including language learning, are increasing with higher education institutions and other providers rapidly developing a variety of online MCs. However, the lack of agreed definitions as to what MCs are can undermine their value and uptake. MCs also vary widely in terms of duration, assessment, and whether they can lead to further qualifications or not. In order to overcome these challenges governments are establishing various frameworks for MCs. The EU, New Zealand, Malaysia and the US have all created good practice models to guide both providers and learners. Some of the common features that these agencies have specified in the development of these frameworks will be explained. In addition, the current provision and uptake of MCs in Japan will be described and suggestions made as to how this could develop in the future, especially concerning the role of higher education institutions.

学位を取得するためではなく、学習者が必要とするコンテンツを柔軟にかつ安価に取得できるマイクロ修了書 (MCs) が世界的に増加している。語学学習を含む様々なコンテンツのMCsは、オンラインでの学習が可能となった今日、高等教育機関や他の教育機関で取得できる機会が増えている。しかしMCsの定義がまだ曖昧なこと、それに加えてそれぞれのMCsの取得に必要な期間、評価基準、またMCsが学位などに読み替えられるか否かなど不確かなことが多いため、MCsの価値やそれを利用する機会はまだ限定されているのが現状である。これを打破するため、EU、ニュージーランドやマレーシア、米国などの政府機関はMCsを提供する教育機関と学習者両方にとって有益となるフレームワークを確立し始めている。本稿はこれらのフレームワークに共通する点を明らかにし、また日本において、特に高等教育機関に向けて、このMCsを念頭においた新しい教育のあり方を示唆する。

**Keywords:** micro-credentials, higher education, online qualifications, model frameworks, Japan

## Introduction

Macro-credentials in the form of university degree programs have existed for decades, even centuries, in many countries. As a result of this long history of development, as well as the external monitoring of degree quality, societies in general respect and trust the qualification that an undergraduate or postgraduate degree symbolizes. Micro-credentials (MCs), as the name implies, are a much shorter form of qualification than a degree program (Oliver, 2019). In recent years they have become more and more popular with learners in response to changing job training challenges (Gallagher, 2018), the focus on lifelong learning (Oliver, 2019), and since early 2020, in response to the challenge of the COVID-19 pandemic and its impact on employment (Impey, 2020; Younge, 2021). They have also become popular with higher education institutions as a potential additional revenue stream (Gallagher, 2019) and with major employers as a way of developing existing workers' skills (D'Orio, 2019).

MCs are not degree-based and can offer flexible and inexpensive courses which closely match learners' needs, particularly in subject areas where employees and learners need to upskill or reskill quickly (OECD, 2021). However, the lack of agreed definitions as to what MCs are, a lack of clarity as to who can provide and assess them, and whether they are trustworthy and valid qualifications can undermine their value and uptake. This paper addresses these gaps by answering the following three questions: 1) What are MCs? 2) What kinds of courses lead to MCs? 3) What are the key challenges facing MCs? The main features of four different MC frameworks in the EU, New Zealand, Malaysia and the US, will be described and the implications that these frameworks suggest will be drawn out. Finally, a number of suggestions concerning the development and assessment of MCs in Japan are put forward.

## What are MCs?

Many terms are used interchangeably with MCs including certificates, digital badges (Hartnett, 2021), nano-degrees, micro-masters (Young, 2017) and alternative credentials (Kato et al., 2020). These terms describe both the kinds of courses that are offered and the certifications that are awarded upon completing a course. Different organisations and scholars have slightly different definitions of what MCs are. For example, the US-based Digital Promise states that an MC is a "digital certification that verifies an individual's competence in a specific skill or set of skills" (Younge, 2021). The European Commission (2021) wrote that, "A micro-credential is a proof of the learning outcomes that a learner has acquired following a short learning experience. These learning outcomes have been assessed against transparent standards" (p. 10). Other scholars define MCs as being part of a complicated *credential ecology* (Brown et al., 2020) which includes credit bearing courses, non-credit, bundled and unbundled courses, short courses, badges and awards. For this paper we would like to use a widely quoted definition by one of the leading authorities on micro-credentials, Beverley Oliver, who describes MCs as a "digital certification of assessed knowledge, skills and competencies which is additional, alternate or complementary to or a component of formal qualifications" (Oliver, 2019, p.19).

## What kinds of courses lead to MCs?

Whichever term is used MCs are emerging as a viable form of non-degree qualification (Brown et al., 2021). Brown et al. pointed out that reasons for the increasing popularity of micro-credentials is that, compared to more traditional programs, they are more affordable and flexible; learners do not generally have to pay high tuition fees; and online courses offer great flexibility in terms of time and location which particularly suits those who are already working. Following a survey of 750 US companies, Gallagher (2018) claimed that, at the moment, MCs are seen by employers as supplementary to degree programs, that is, they are very useful to upskill or reskill in the middle or later stages of an employee's career. From a higher education perspective, MC courses can also serve as a lure or sample for longer, more expensive degree courses (Boud, 2021). So, in these circumstances what kinds of courses lead to MCs?

Among a large range of courses leading to MCs, the most common are Massive Open Online Courses (MOOCs) which are increasing rapidly (Shah, 2020). The MOOC provider and referral service, Class Central, reports that the largest MOOC provider, US-based Coursera, moved from 8 million new registered users in 2019 to 76 million in 2020; an almost tenfold increase in just one year (Shah, 2020). After Coursera the next four MOOC providers in 2020 were EdX and Udacity (both US); Future Learn (UK) and SWAYAM (India). This list excludes MOOCs in China as Class Central could not independently validate the data that was available. Courses leading to MCs range from general skills such as language learning, to more specific ones like coding. The top courses for 2020 were personal development, business, art and design, management and leadership, and self-improvement (Shah, 2020).

MOOCs are hosted and marketed on the above-mentioned platforms but the courses themselves are increasingly made in partnership with industry partners (examples include Google and Microsoft) (Oliver, 2021) or with higher education institutions (Fitzgerald & Huijser, 2021). Let us look at one example of a higher education partnership. Future Learn is a UK-based MOOC platform with a number of university validation partners that provide MCs. These include Deakin University in Australia, Dublin City University in Ireland and Coventry University in the UK (Wallace, 2021). Examples of two-week MCs developed with Coventry University include "Cloud Computer Practitioner with AWS Academy Cloud Foundations" and "Data Analytics for Business with Tableau Training" (Wallace, 2021). At the moment such Future Learn MC courses are aimed at the postgraduate level.

Deakin University is particularly interesting as it has been a pioneer of both online courses for traditional degrees and MCs (Jorre de St Jorre et al., 2016). In 2016, it introduced its Hallmark badging system with a clear framework for assessment including reflective testimony and video evidence (Jorre de St Jorre et al., 2016). These badges were introduced as a way for current undergraduates to showcase their learning outcomes or graduate attributes to future employers. One of the potential criticisms of MCs is that they can be seen as purely focused on skills without the wider benefits of a degree (Young, 2019); however, in Deakin's case the badging system emerged in tandem with a degree program (Jorre de St Jorre et al., 2016).

Finally, in this section an illustration of what a MC might look like in the language learning field is given. There are numerous language tests that learners can take to give an

assessment of their competency or skill in a language. International English Language Testing System (IELTS), Test of English for International Communication (TOEIC), and Test of English as a Foreign Language (TOEFL) are three common international tests of English: are they classed as MCs? One well-known classification of educational credentials is that by the European Commission's Open Education Passport (<https://oePASS.eu/>) which divides credentials into four types (examples in parentheses): formal qualifications (degrees); non-formal certificates (MOOC certificate of achievement); recognition of skills (language proficiency exam); and records of experience (certificate of participation) (Camilleri & Rampelt, 2018). In this classification the three international English tests would be seen as recognition of skills, and are certainly a credential. However, it is argued that they are not MCs in that they are not necessarily the result of a short course, nor are they part of, or an alternate to, formal qualifications. So, what would a language learning MC look like? One example is Future Learn's French for Global Communication (Level 1) offered in partnership with King's College, London, and costing \$864 (Future Learn, n.d.). This is offered over a ten-week period and includes 50 minutes a week in a face-to-face lesson. The seven stated learning outcomes include basic factual knowledge and range of vocabulary which matches with the CEFR A1 basic user level. Assessment is by oral and written exams and a portable certificate is issued to successful applicants that can be shared with future employers or institutions. Future Learn labels this course as a MC and it also matches with Oliver's (2019) definition mentioned above: it is a short learning experience that is assessed against recognised standards and is complementary to a formal qualification.

## **What are the key challenges facing MCs?**

Having described what MCs are and what kinds of courses can lead to MCs, the paper will now examine the key challenges facing the development of MCs. Perhaps the most urgent issue for MCs is that there are few validating frameworks that they fit into (OECD, 2021; Oliver, 2019). If a learner takes a degree course that will clearly fit into an existing qualifications system, but this is not the case with MCs. Ideally learners need to know that any MC they earn will be accepted by future employers or educational institutions, and in turn they need to trust that an MC is valid and trustworthy. The validity of MCs is complicated as they vary widely in terms of costs, duration, modes of assessment, and whether they can lead to further qualifications or not. The latter issue can be divided into two important topics connected to MCs: stacking and portability. Stacking is the ability to put one smaller credential towards a larger credential such as a degree, and portability is the degree to which an MC is recognized by other institutions (Kazin & Clerkin, 2018).

Given all this it can be hard to know whether a specific MC is a worthwhile qualification, or as Ralston (2020) stated, "Lacking program accreditation, microcredentials are not comparable in the same way that degrees and certificates are" (p. 91). As a result, organizations across the globe are responding to this situation by creating authorized frameworks that MCs can fit into. They are all slightly different but all are examining similar issues such as defining MCs, deciding who can provide and assess MCs, and examining the possibilities of stacking and portability. In the next section four frameworks from Europe, New Zealand, Malaysia, and the US are examined. There are, of course, other countries and regions which

are developing guides for MCs and have considerable experience in this area; Australia for example, but in the interests of economy this paper describes four different kinds of models that vary in terms of size, scale and scope: The European Union has a regionally coordinated large-scale plan across many countries; New Zealand, a country with a small population and few higher education institutions; Malaysia, an emerging nation with a rich mix of languages and cultures; and the US, which does not have a centralised system but given here is one example developed by a non-profit organisation.

## **European Union**

The EU MOOC Consortium (EMC), a partnership of European university MOOC providers, is working to create a common MC framework by 2025 (ECIU, 2020). This group has had substantive discussions about what MCs are, developing a common European approach, and creating what they call a “roadmap” of actions to be taken leading up to 2025. The educational philosophy behind this movement is to both address skills gaps in employment but also to develop solutions to societal challenges such as sustainability. “Certified MCs can help to make education more accessible, better showcase learning achievements, and enhance career opportunities” (ECIU, 2020, p. 4). The EMC is gradually aligning its framework with national qualifications frameworks in European countries, defining the number of credits that make up an MC, and addressing issues of portability and stacking by aligning different online platforms and using blockchain technology. These will all come together in the form of a digital learning portfolio or learning account called “Europass” to which a learner can upload their accredited MCs (European Commission, 2020).

The European approach is extremely ambitious in its goal to create a common framework applicable to many countries, languages, and institutions. From such a large region with a huge population this paper next turns to a much smaller example, that of New Zealand.

## **New Zealand**

The New Zealand Qualifications Authority (NZQA), which reports to the Minister of Education, recognizes MCs and supports them as a type of alternative educational and accreditation system (New Zealand Qualifications Authority, n.d.). The NZQA (n.d., para 3) has a clear definition of what an MC is: it certifies a coherent set of skills and knowledge; it has a statement of purpose and clear learning outcomes, and there is strong evidence that it is needed by industry or the community. In addition, the NZQA specifies what the registration rules for MC providers are, and provides a step-by-step guide for a potential MC provider to follow in order to be included in the NZQA's register of qualifications. Currently there are three types of providers of MC courses in New Zealand: existing providers such as higher education institutions (100 courses so far); non-regulated providers (five courses so far); and work development councils. This third type of provider is being developed to devise standards for MCs that are approved by employers and industry groups. These are still being discussed and no courses have been created yet (Klinkum, 2020).

While MCs do not necessarily have to be provided online, New Zealand has embraced digital technology and can respond flexibly and quickly to new developments in online learning, including the provision of MCs. New Zealand's framework shows great promise because it has very clear definitions and simple pathways for MC providers. It also fits into a pre-existing qualifications framework which can reassure learners about the validity of MCs that they earn.

## Malaysia

Malaysia has produced a guide to good practice for providers who wish to develop MCs (Malaysian Qualifications Authority, 2020). The Malaysia guide, similar to New Zealand, is a very straightforward and practical document that offers clear definitions of MCs, creates space for them in the current framework ecology, and has an accreditation and portability system for the sharing of MCs.

In the guide it is clearly stated that MCs can be created by unbundling existing higher education courses. Unbundling means that sections of larger degree courses are used as the basis for a shorter MC course (Swinerton et al., 2019). On an optimistic note this is an unequivocal declaration that MCs are part of Malaysia's higher education framework; on the other hand, one of the major criticisms of MCs is that they are a feature of a neoliberal education system which prioritizes the needs of industry over more holistic degree programs. The unbundling of courses is one way in which higher education can maximise profits (Ralston, 2021; Swinerton et al., 2019). This issue will be returned to below.

## United States

In the US there is no overall framework guiding the provision of MCs but States are encouraged to develop their own policies backed up with grants. One organization crossing these State lines is that of the non-profit Digital Promise which is federally funded by the Department of Education alongside various donors such as the Carnegie Corporation and the Bill and Melinda Gates Foundation (Digital Promise, n.d.). Digital Promise has developed numerous projects regarding innovative education, and MCs is one of those. The approach that Digital Promise takes is of particular interest to teachers as the MCs they offer are focused solely on the education sector. The 450 MCs that have been developed are extremely specific and very focused; for example, "competency based rubric design" or "facilitating collaborative discussion." It is not always necessary to actually study for the course as there is an assumption that a learner may already have the appropriate experience to prove their competency in a particular area (Digital Promise, n.d.). Learners do this by providing evidence of their competency which is then assessed by Digital Promise. If successful a learner will receive an open badge which they can use as part of a digital portfolio which is hosted by Digital Promise.

As in Europe, the digital portfolio for teachers, called a Teacher Wallet, uses blockchain technology to protect and safely share learners' qualifications. Such digital certification or badging enables a learner to share many more details of their qualifications, including MCs, than is possible with a traditional transcript (Digital Promise, n.d.). Eventually, this

kind of transparency about what a learner has studied, what the learning outcomes were, and how they were assessed will contribute to the wider acceptance of MCs, and is also highlighting the need for existing macro-credential programs to examine how transparent their assessment processes are (Boud & Jorre de St Jorre, 2021).

## **Discussion**

The next section summarises the main themes from the description of MCs, then moves on to link them with the situation in Japan and finishes by listing some criticisms of the MCs trend.

## **Summary of key points**

In the introduction three key questions were identified. This paper will now return to these questions to summarise the key points that have been made so far.

### **What are MCs and what kinds of courses lead to them?**

Although there is no one definition of a MC, most seem to include the notion of a short course which addresses a specific need, especially a skill, which leads to some form of digital certificate. The increase in the popularity of these courses has been accelerated by COVID-19 with digital technology playing a major role in increasing accessibility to courses (Impey, 2020; Shah, 2020). The provision of online courses is a combination of partnerships between higher education, providers, and industry. But as yet there are relatively few examples of all three collaborating at once (Wallace, 2021).

### **What are the challenges of MCs?**

Various countries and agencies are trying hard to validate MCs so that they can meet their full potential. This paper looked at four of those efforts in order to identify common and distinct features. One common key is to develop partnerships and collaboration, especially to generate trust in the MCs process. In Europe this is being achieved inter-governmentally across countries and institutions, whereas in the US there is more of a focus on quasi-government and privately funded collaboration. Again, in Europe and the US the espoused motivation for providing MCs are both to help retrain workers and to solve societal problems (Digital Promise, n.d.; ECIU, 2020); whereas in New Zealand and Malaysia the focus for providing MCs is clearly employment driven (New Zealand, Qualifications Authority, n.d.; Malaysian Qualifications Authority, 2020). In all four examples, digital technology is an important driver of MC development both in the provision of online courses and in the portability of credentials through digital learning portfolios and blockchain technology. Finally, in all four models assessment is a vital component of assuring MCs are viewed seriously, although there are different models for carrying out assessment ranging from in-house provision to external industry and external provider assessment (Fitzgerald & Huijser, 2021).

The next section of this paper describes how Japan fits in the current trend towards MC development. Japan is chosen as a country of interest as it has a very mature higher

education sector but so far there has been relatively little discussion of the role that micro-credentials can play in that sector.

## Situation in Japan

As Saito (2018) described, Japan does not have an overarching national qualifications framework that would allow Japanese people to more easily showcase their qualifications both at home and internationally, and encourage a better integration of work-based skills and higher education. Under these circumstances it would be understandable if there were currently little focus on MCs in Japan. However, there is some limited evidence that important aspects of MCs have already been developed in Japan.

Firstly, there are a large number of MOOCs available in Japan through Japan-based providers such as Gacco (gacco.org) and Open Learning, Japan (open.netlearning.co.jp). There are also international partnerships between providers such as Coursera and a range of well-known Japanese universities such as Tokyo University (Coursera, n.d.). Many of these courses are accredited by the umbrella body for MOOCs in Japan, JMOOC, which began in 2013 (JMOOC, n.d.). JMOOC describes all three of its course categories as being mainly developed by universities although in category three companies and enterprises are mentioned. It would seem that there is unfulfilled potential for collaboration between industry and higher education in online courses (Fitzgerald & Huijser, 2021). As was stated above, most MCs that are provided through MOOCs and embedded in the description of a course will have the label “micro-credential”, as was illustrated by the Future Learn French course. However, as yet there is no mention of any of the Japanese MOOC courses being made available as MCs in this way.

Moving away from MOOCs, a second sign of potential for MCs in Japan is that provided by digital badging projects. One example comes from Shimane University where a digital badging system was developed for medical students (Elliot et al., 2014). The purpose of the award was to encourage students to study English medical terminology and promote increased learner engagement and motivation. The authors report that the badging system did have this effect.

Thirdly, Spencer (2019) reported on MCs provided by Microsoft Philanthropies which encourages upskilling of workers in Asia through the provision of MCs. One such project was the promotion of teleworking skills among 200 women in seven Japanese cities. Participants first earned an MC and then worked as interns at partner companies.

In sum, Japan does not have an overarching qualifications framework that could include MCs, but there are signs that if the “micro-credentialing craze” (Ralston, 2020) were to reach Japan, then online providers and universities are well placed to take advantage. And within those universities there are staff that are experienced in digital technology and online education who would be particularly sought after to develop online materials, to assess course participants, and to help create an ecology of accreditation which will encourage trust in the validity of new MCs.

## Criticisms

Until this stage this paper has not been particularly critical of MCs but it would be remiss not to highlight various voices that have been raised against the trend, both from a sociological perspective and from practical concerns.

Firstly, there are a number of scholars who are concerned that the rush of public universities in various countries to introduce MCs is reflective of a neo-liberal ideology which promotes education as a commodity to be sold rather than a public good (Ralston, 2020). It is argued that MCs can be used as a way to discipline universities by pushing them to focus on more vocational skills (Wheelahan & Moodie, 2021). The use of technology is also cited, not as a way to democratize education, but again as a way to commodify it. For example, the unbundling of courses into online units changes education into a market form (Castañeda & Selwyn, 2018). MCs do not have to be accessed online but that form does privilege those with access to digital devices, wifi, and suitable private space. The provision of MCs through online courses means that it may not be so helpful to those on the wrong side of the digital divide (Taylor, 2021).

Secondly, MCs have been criticized because they have not been developed in very practical ways; many mistakes have been made. As Boud (2021) pointed out, there are many MCs from early providers that seemed too short and too trivial to be classed as worthy of being called a credential; they also had no link with other qualifications so stacking was impossible; and they were not assessed rigorously enough.

In response to the above critical points it is clear that MCs, whether one agrees or disagrees with them politically or philosophically, are here for the long term (Brown et al., 2021; Fitzgerald & Huijser, 2021). There has been too much investment in them from all kinds of stakeholders for them to just be a fad or learning innovation theater (Maloney & Kim, 2019). Therefore, it is important that those involved in education, especially higher education, should at least be aware of what MCs are, and for many there may be a much greater hands-on-role in the not too distant future.

## Conclusion

This paper has described what MCs are and the kinds of courses that are being developed that lead to an MC. MCs have rapidly expanded in the last few years and the COVID-19 pandemic has accelerated that trend. However, in order for MCs to be widely accepted and used, a number of challenges need to be overcome. Various governments and government-related organizations in many countries are working to create model frameworks and guidelines that will aid a coherent and trustworthy system for MC use. Four such frameworks were examined: the European Union's ambitious plan to link universities in a common credential system across the continent; the much smaller scale but practical frameworks that New Zealand and Malaysia are using to guide higher education institutions and industry; and finally the teacher-centred example developed by Digital Promise in the US. In addition, Japan's potential as a provider of MCs was examined: despite the lack of an overarching qualifications framework Japan has extensive experience of MOOC

provision and a reservoir of online expertise in higher education that could help develop MCs in the future.

This paper has shown that the term MCs is a contested one in terms of definition, provision, how they fit into existing qualifications frameworks and so on. However, it is clear that MCs are going to develop further and have greater potential, but how and in what direction is still unknown. Higher education institutions and academics working in online education are in a great position to inform and develop contents of such courses, and help improve their quality, particularly in terms of assessment.

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