



Exploring the Potential of Micro-credentials and Digital Badging: Collaborative Cluster Final Report

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This report is the result of the micro-credentials and digital badging collaborative cluster, formed as part of the Year 1 work of the QAA Scotland Enhancement Theme, Resilient Learning Communities.

The report was compiled by Mailie Besson, University of Aberdeen, Anne Tierney, Heriot-Watt University and the members of the Exploring the Potential of Micro-credentials and Digital Badges collaborative cluster.

The collaborative cluster was formed from participants from ten universities in Scotland and JISC, which supports the digital infrastructure of higher education in the UK.

Participants

Leads

- Anne Tierney, Heriot-Watt University
- Robin Westacott, Heriot-Watt University

Stakeholder groups

University staff

- Morven Shearer, St. Andrews University
- Sally Smith, Edinburgh Napier University
- Anne Tierney, Heriot-Watt University
- Robin Westacott, Heriot-Watt University

Customers

- John Kerr, University of Glasgow
- Nicola Milton, St. Andrews University
- Julie Strachan, Robert Gordon University

Employers

- Joy Perkins, University of Aberdeen
- Mary Pryor, University of Aberdeen
- Sam Thornton, JISC

Students

- Alen Mackinlay, Glasgow Caledonian University
- Luke Millard, Abertay University
- Katrina Swanton, Edinburgh Napier University

Contributors to wider discussions

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Abstract

The Scottish higher education system has been evolving to adapt to new technologies, massification and internationalisation (Guri-Rosenblit et al, 2007). The conversation around micro-credentials has also been growing within Scotland, allowing there to be a variety of more flexible pathways and access to knowledge and skills development in many sectors (Oliver B, 2019). However, now more than ever, with the impact of COVID-19 and its restrictions across all industries, it is certain that micro-credentials and digital badges are gaining interest within these sectors (Ahmed & Jassim, 2021) and that they could be the solution to the increased demand for reskilling and upskilling (Oliver, 2019).

This report aims to explore different perspectives on micro-credentials and digital badges from four different stakeholder groups in Scotland: university staff, employers, current students, and alumni and other customers of micro-credentials. While keeping in mind that higher education needs to “meet the changing needs and values of increasingly diverse student communities in a rapidly changing environment” (QAA, Enhancement Themes, n,d), the objective of this study is to demonstrate current understanding of micro-credentials and digital badges in Scotland, and their potential within different sectors.

In response to the changing environment, a cluster of Scottish universities have been working together to understand the needs of the population to ensure we are able to provide a range of micro-credentials which are valued by individuals, institutions and employers alike. To help inform this work, a scoping review was conducted and stakeholders were invited to attend an online event and/or to participate in an online questionnaire.

This report contains the findings from our stakeholder surveys and events. All four of these stakeholder groups have an interest in the potential and the mutual benefit that micro-credentials and digital badges can bring through up-skilling, boosting employability and creating transparency between the industries. However, there is a lack of common language and understanding of what micro-credentials are. The challenges that were discovered when discussing the implementation of micro-credentials and digital badges in these environments point to a need for further work to provide a shared language and framework through which micro-credentials can be viewed.

Introduction

The Scottish higher education system has been evolving to adapt to new technologies, massification and internationalisation (Guri-Rosenblit et al, 2007). The conversation around micro-credentials has also been growing within Scotland, allowing there to be a variety of more flexible pathways and access to knowledge and skills development in many sectors (Oliver B, 2019). However, now more than ever, with the impact of COVID-19 and its restrictions across all industries, it is certain that micro-credentials and digital badges are gaining interest within these sectors (Ahmed & Jassim, 2021) and that they could be the solution to the increased demand for reskilling and upskilling (Oliver, 2019).

Micro-credentials are small packets of learning and skills acquisition that may be recognised by a digital certificate or badge (Perkins & Pryor, 2021). They may be standalone, or the starting point for degree-level study. Digital badges may be used to signify the achievement of these smaller units of learning and skills acquisition, so called ‘micro-credentials’ (Perkins & Pryor, 2021), “while focusing on specific knowledge, skills or competences and being heavily market/society-driven” (Resei, et al, 2019).

Although literature and practice suggest that micro-credentials and digital badges are extremely valuable and helpful to those who obtain them, there are still many barriers

preventing their successful implementation (Brennan, 2020). Some of these barriers are the ambiguous and varied terminology associated with short-term credentials causing a lack of understanding and confusion (Resei, 2019). However, despite these challenges, this study aims to demonstrate that these micro-credentials can not only be valuable, but also mutually beneficial to several domains in order to create up-skilling opportunities and re-skilling opportunities.

During the academic year 2020-21, the Quality Assurance Agency (Scotland), JISC and eight universities across the Scottish higher education sector collaborated on a project exploring the potential of micro-credentials and digital badges, with a further three universities joining at a later date. The project was co-led by Dr Anne Tierney, Assistant Professor in the Learning and Teaching Academy, and Dr Robin Westacott, Director of Apprenticeships at Heriot-Watt University. The project deliverables agreed for the project were:

- Four stakeholder events
 - University staff
 - Employers
 - Customers (Alumni, Graduate Apprentices, Apprentices)
 - Current students
- Four stakeholder surveys
- Four individual perspectives on micro-credentials from the invited events speakers
- A scoping report of international practice
- Project report
- Project evaluation

Methods

Ethical approval was granted by Heriot-Watt University (0938) in order to carry out this study. Each stakeholder group designed an online survey, based on subsets of questions from the MicroBol MicroHE European (Microbol, n.d.) survey. Individuals were invited to take part in the survey prior to attending an online event, at which an external speaker set the scene for the discussions. The main room parts of the events were recorded for data gathering purposes, and discussion points raised in breakout rooms were reported back in the main room.

The survey data and event discussions were analysed thematically and are reported in the following sections.

Stakeholders

Events were planned for each of the stakeholder groups:

- University staff
- Employers
- Customers
- Current students

Events were advertised on the QAA Scotland Enhancement Themes website and distributed via the organisers' networks. Participants were invited to take part in an online survey before attending the event. Each event had an invited speaker who was chosen because of their expertise in a particular area of micro-credentials.

In this section of the report, each stakeholder event will be discussed separately in order to collect and analyse the information, and find the specific results. The data will then be collated in order to find the main data of this project: the mutual benefits and the mutual concerns of micro-credentials and digital badges implementation.

University staff

Survey

The University staff survey was distributed via the QAA website, advertised as part of the University staff micro-credentials event. A total of 26 individuals completed the survey. Although this is a small sample size, the survey does draw from a range of institutions and university roles (Appendix 1, Tables 1a & 1b).

Terminology

Respondents were asked how familiar they were with a range of terms associated with micro-credentials and digital badges. 23 individuals answered this question (Likert scale, scored 0-4). The most familiar terms are “micro-credential” and “digital badge” (Appendix 1, Figure 1). Although competency-based education is also a recognised term, none of the terms are universally recognisable (with a score approaching 4.0).

Admissions and Recognition of prior learning

Only two of the 26 respondents had a formal role in university admissions or recognition of prior learning within programmes of study, therefore more focused work needs to be done with this group to ascertain their perceptions of micro-credentials. However, both respondents said that they would look favourably on micro-credentials issued by UK universities or colleges, or accredited bodies, but were less likely to look favourably on those gained through corporate training programmes. Verifiable digital badges were also looked upon favourably. Standardised, transferable credits were looked upon favourably, but the notion that micro-credentials are stackable towards a more substantial qualification was not looked upon favourably.

Continuous Professional Development (CPD)

Of the individuals surveyed, only one provided CPD within their institution and gave a response to what they considered important with respect to CPD and micro-credentials. Facilitating upward mobility, institutional development opportunities, employee retention and facilitating a culture of continuous learning were identified as being positive aspects of micro-credentials within an institution.

Ten respondents took part in CPD for their own development. Their perceptions of micro-credentials are positive, with similar attitudes towards micro-credentials as the CPD provider (Appendix 1, Figure 2).

Event

The stakeholder event for the academic participants took place on the 3rd of March 2020 via Microsoft Teams. Participants from a range of Scottish Universities, attended, with role profiles similar to those expressed in the survey. After a discussion and explanation on the workings of micro-credentials and digital badges, breakout rooms were created in order for the guests to discuss their own views on these credentials. Finally, reporters from each breakout group presented their main points of discussion and data was collected. The event was led by:

- Anne Tierney, Heriot-Watt University
- Robin Westacott, Heriot-Watt University
- Sally Smith, Edinburgh Napier University

- Morven Shearer, St. Andrews University
- Katrina Swanton, Edinburgh Napier University

The event was opened with a plenary session by Patrina Law, Open University, on her experience as the Director of OpenLearn. The Open University has a mature portfolio of micro-credentials, and Patrina's presentation outlined the importance of offering micro-credentials as a 'taster' for degree level study, the reputation of the provider and the robustness of the accreditor.

This was followed with a breakout discussion, focusing on two questions: 'Where do you see your institution in the micro-credentials landscape?' and 'What do you think the benefits and challenges of implementing micro-credentials will be?'.

Question 1: Where do you see your institution in the micro-credentials landscape?

- Various members from several universities spoke of their initial experience with micro-credentials and their desire to be involved with them. This was seen through their comments such as: 'at the beginning of a journey we all want', 'crucial for the future', 'being early in the journey', 'early stages' and 'a new consideration'.

Through these comments the industries show that they see potential in these short credentials however they have not yet employed them within their areas of work.

- Participants also expressed the benefits that would ensue from micro-credentials being a part of their institutions. They spoke of being able to use them 'to engage students', 'to work better with employers' and to catch up to other industries who are already using them.

This shows how academic staff have an interest in the prospect of offering micro-credentials to their students, because there would be many beneficial elements to their implementation which would allow many people to develop their skills and gain new knowledge.

- Finally, the last point that was made by many while answering this question was a general feeling of doubt towards the organisation of micro-credentials. Some spoke of 'not knowing how to use' micro-credentials.

This shows that micro-credentials are still very unknown to the education sector and that there are uncertainties about taking them onboard.

The responses to this question point to a varied landscape, with universities at different stages of engagement and implementation, for internal and external audiences.

Question 2: What do you think the benefits and challenges of implementing micro-credentials will be?

When analysing the answers from the second question, there were many similarities in the participants answers.

- Firstly, when they spoke of benefits of implementing micro-credentials, participants' collective answers emphasised the Continuous Personal Development (CPD) learning path and the links this would bring to different industries. This was seen through the mentioning of 'upskilling practitioners', 'employability', 'Continuous Personal Development for professionals but also used for entrance to university', 'collaboration' and 'investment'.

All of these benefits show the academics' vision and belief that micro-credentials would be beneficial for the employment and development of those obtaining them, as well as the bridges created between the education and working sectors, the pathway to higher education. This is in agreement with Oliver's findings, where she argues that 'interoperability between [the existing robust system of qualifications and the fledgling yet rather chaotic world of emerging micro-credential] would be to the advantage of learners, employers, providers and policy makers' as micro-credential 'certification is the proof point of skills achieved and knowledge acquired' (Oliver, 2019).

- When discussing the challenges of implementing micro-credentials, the participants seemed apprehensive in terms of several areas. Mainly, the challenge that arose the most was the 'need for a shared language and terminology' as 'definitions [were a] big concern'. There were also concerns for unfit 'infrastructure', with the 'need for an organisational culture change', and a need for 'regulations', 'transferability' and 'validity' of micro-credentials.

These comments show that there is a desire from the academic stakeholders for the educational system to adapt, for micro-credentials to be implemented, as well as a common language when discussing micro-credentials and digital badges (Resei, et al, 2019). It is not only academics who speaks of vague and ambiguous terminology, as Oliver (2019) also states that 'micro-credentials proliferate in name' yet our study fills the gap within Oliver's as it is explained that 'there is little research on whether terms such as micro-credentials or its variants (alternative credentials) are well understood by learners, the prime consumers, or their employers' (Oliver B. 2019). Although there are challenges, these can be faced with solutions which will be explored further at the end of this report.

Event summary

The main finding from this stakeholder event is that there is variation in the way Scottish higher education institutions are approaching micro-credentials, despite there being a great desire to do so. This desire stems from the benefits that micro-credentials would bring to institutions, such as higher employability, more skills-based learning and collaboration between institutions and industry. While these benefits are promising, university staff still hold concerns, such as unclear terminology, lack of infrastructure, complications within the sector and the need for regulations, transparency and validity of the credentials.

Employers

Event

The stakeholder event for the employer participants took place on 5 May 2021. A key aspect of the employer research was to explore awareness and use of micro-credentials in the workplace, for example in recruitment, CPD and upskilling. This work stream was conducted by the employer sub-group for the project:

- Dr Joy Perkins, University of Aberdeen
- Dr Mary Pryor, University of Aberdeen
- Sam Thornton, JISC

Survey

An online mixed-method SNAP survey was launched, to gather micro-credential data from employers and organisations. The survey consisted of free-text and closed-ended questions on the following three themes: micro-credential terminology, use of micro-credentials in recruitment, and benefits and use of micro-credentials in CPD. Organisations who were approached were sent information outlining the nature of the micro-credential study, and the ethical aspects associated with the survey-based research. The survey was aimed at

employers and employees involved in recruitment, senior managers, CEOs, and HR recruiters working in a wide range of employment areas and organisational sizes.

Theme 1: Micro-credential Terminology

There were 41 employer survey responses received from a wide range of employment areas, including: energy and manufacturing; law, teaching and education; information technology; and the third sector. The survey opened with a key question regarding engagement and awareness of micro-credentials. The notable finding was that 80% of respondents were not familiar with the term 'micro-credential'. Despite this finding, respondents were curious about micro-credentials and were receptive to sharing their ideas and viewpoints on this topic throughout the survey.

In this survey more than 80% of respondents also indicated they had never encountered terms related to micro-credentials, such as 'stackable', 'macro-credential', 'nanodegree', 'micro-degree', or 'micro-certification'. There was slightly more awareness of digital badges, although 52% of respondents had still never come across this term. It is clear from the data that micro-credentials and variant terms are not well understood by employer survey respondents. Given employers are prime consumers of micro-credentials, this could be a potential barrier in their use and implementation in the workplace. These findings are replicated in the literature, as Cathrael & Clerkin (2018) describe that 'despite national efforts by Lumina and others to establish universal definitions around micro-credentialing, there remain inconsistencies'.

Theme 2: Micro-credentials and Continuing Professional Development

Respondents were asked about their use of micro-credentials for continuing professional development purposes. The consensus when answering this question was that 'Having the courses accredited to other industry bodies would make them more attractive', 'useful for annual review purposes' and 'engagement with employees'.

Respondents felt they needed more information before being able to answer, for example '*Would like to understand more*' underlining the need for a coherent language to describe micro-credentials.

The remarks indicate employer interest in micro-credentials, but also that employers are slightly cautious and are seeking further guidance and quality assurance regarding the micro-credentials on offer. Employers are also looking for greater understanding and clarity of the array of micro-credentials offered by multiple providers. Oliver's (2019) study finds similar perceptions on the regulations of micro-credentials in order for them to be trustworthy, 'employers are asking for assistance to understand, judge and compare the plethora of micro-credentials presented by potential employees as evidence of capability.'

There were a minority of employers present who had an interest in developing micro-credentials, or who had previously collaborated with a university to produce a bespoke micro-credential. These employers identified that knowing who to contact within a university system, and the complexities of working within a university framework were both seen as challenges to collaboration.

Theme 3: Micro-credentials and Organisational Recruitment

To obtain an understanding of the role of micro-credentials in recruitment and selection, survey respondents were asked about the use and recognition of micro-credentials in the recruitment processes. Mixed views were obtained, as illustrated by these comments: 'micro-credentials are not well known', 'I did not know much about this before', 'key differentiating point between applicants and also demonstrates a desire for lifelong learning', 'it has great potential and I would like to learn more'.

The comments suggest there is real potential in micro-credentials as a mechanism for candidates to promote and raise awareness of their skills and qualities to employers. Given the growing interest and implementation of competency-based selection approaches, micro-credentials are likely to increase in importance and value for job candidates and recruiters alike (Gauthier, 2020).

Event summary

Feedback gathered from each small discussion group highlighted concerns regarding micro-credentials terminology, suggesting further work is required by universities and other providers to demystify terminology for organisations and employers. Building an effective micro-credentials web storefront is vital for providers, so there is a central place where employers can access expertise across each institution, identify learning for employees, and collaborate on the development of new, micro-credentials. Ideas for new micro-credentials topics gathered from the employer event, include project management skills, cyber security, and emotional intelligence. It is also important to develop ways to support collaboration between institutions and employers.

A stronger and transparent message regarding the workforce benefits of micro-credentials and how they can be used is much needed. It was also noted that education providers need to focus more on the benefits and the value to employers, rather than the delivery features when it comes to communicating and promoting micro-credentials. Specific benefits identified by participants from undertaking micro-credentials, include the opportunity to update employees' knowledge quickly; this rapid upskilling was considered particularly valuable for those with diverse roles in smaller organisations. There needs to be some form of quality assurance framework, or a point of standardisation across institutions, perhaps leading to the concept of a build-your-own-degree. Employers also commented on the need for highly practical, at-the-point of need training that addresses specific knowledge, or skills gaps. In summary, there is no denying the interest and value in micro-credentials by participants attending the event. However, it will take longer for employers to be familiar with them and encourage employee uptake because of the current confusing and diverse landscape of micro-credentials.

Customers

Event

This took place on the 27 April 2021 and was directed towards the customers of micro-credentials. A customer is an individual who would be interested in acquiring micro-credentials and digital badges, such as employees searching to up-skill, unemployed searching to re-skill, non-graduates or graduate apprenticeships. This event took place as an online focus group and a questionnaire and was led by:

- Julie Strachan, Robert Gordon University
- John Kerr from the University of Glasgow
- Nicola Milton, University of St Andrews

A questionnaire was completed by 23 respondents (M=6, F=17) with an average age of 45. Out of the 23 respondents, 21 of the participants claimed some form of employment and all participants had some form of qualification achieved in education (undergraduate, HND, Scottish Higher Qualification).

The participants of this event answered questions relating to terminology, benefits and perspective on implementation.

- Participants had a limited familiarity with micro-credentials and related terminology, as 68% of respondents were 'not at all familiar' with common terms. 'Micro-credentials', 'Digital Badges' and 'Competency-based' were the most recognised, unlike 'Stackable credentials', 'Micro masters' and 'Nexus degree' which were the least recognised.

There were differences between the answers from the questionnaire and the focus group, as in the latter 'Stackable' featured heavily, suggesting a difference in audience between the two groups.

These responses show the lack of knowledge surrounding micro-credentials and the confusion caused by the abundance of terminology which often can be used interchangeably. This echoes similar observations from the university staff and employers stakeholder groups. With respect to the terminology of micro-credentials, "different terms are often used interchangeably but actually describe different if related concepts" (Cathrael & Clerkin, 2018).

- In terms of participants' perspectives on micro-credentials, the elements that they were more in favour of accepting were qualifications hosted by a recognised education provider (UK University or College). However, respondents did not consider employer hosted courses or micro-credentials to be as important as traditional degree qualifications or industry/education alignment.

These answers convey distrust in micro-credentials that are not verifiable by reputable hosts, due to the lack of knowledge and regulations surrounding micro-credentials. This is also emphasised by the reliance on traditional educational systems. These findings agree with Resei et al.'s (2019) findings, stating that 'the role of the brand reputation by the institution that offers the micro-credential is important'.

- In terms of micro-credential formats, 'online', 'short', and 'stackable', were viewed as 'important' while 'digitally secured' and 'transferable' were considered vital. As well as these, cost, flexibility and relevance to study or industry were considered important by all the respondents.

This indicates that a more secure framework for micro-credentials is crucial for potential customers to trust them. Resei et al (2019) also agree with this finding, as they found that "the creation of common standardization frameworks, providing a base for newly created micro-credentials, would be required" for micro-credentials to be adopted.

- The content of the micro-credentials that interested the participants significantly were mainly skills-based or personal development based, such as 'digital literacy' and 'advancing skills' as well as 'developing leadership' and 'project management skills'.
- The elements of micro-credentials that were deemed the most important to the participants was the accreditation, verifiability and industry alignment. Feedback showed us that recognition was also viewed as highly desirable, with comments such as, 'CV worthy', 'peer reviewed' and 'linked to existing experience'.
- 4 of the 23 respondents had previously completed some form of micro-credential which they all believed were useful yet not always applicable due to the nature of their study. Respondents found the subject content at least somewhat useful and found the self-study elements useful. It was found that both self-study and assessed activities were viewed highly, with peer-assessed activity seen as more beneficial with tutor feedback.
- When the respondents answered questions regarding their access to micro-credentials in their work place, 82% of respondents would participate in one if it was

funded or offered by their employer, as they perceived them as way to upskill or have more flexibility.

However, most of the respondents were unclear as to their employer's position on micro-credentials and only 60% of respondents thought their employers were aware of the value of micro-credentials. A barrier to the recognition and contribution of these qualifications for evidence of CPD seems to be the reason for this lack of information available to employers. The positive side of this is that out of the 20 responses recorded, 65% thought their employer would be willing to support their studies, at least partially.

Event summary

Overall responses to research were positive, with micro-credentials viewed as a valid means of developing and updating useful employability skills. There was a strong sense that employer engagement and support would impact the decision to engage in micro-credentials, with a general impression that employer knowledge may be lacking in this area. The lack of knowledge or availability of specific skills provision has limited engagement in micro-credentials for some respondents to date.

The data presents a picture of the validity of micro-credentials for respondents, who continued to value traditional qualifications most highly, and saw courses provided by recognised education providers as desirable. The benefit of career development and upskilling was weighted against the need for the qualifications to be recognised and valid, through accreditation and industry recognition.

Finally, as with any educational undertaking, the cost and flexibility of study, along with the time needed to invest in completion are considered barriers to committing to study.

Students

Event

This stakeholder event was planned for May, led by:

- Katrina Swanton, Edinburgh Napier University
- Alen MacKinlay, Glasgow Caledonian University
- Luke Millard, Abertay University

Recruitment proved to be an issue, as the timing of the event coincided with the exam period of many Scottish universities. An online survey was created and sent out to a subset of students in July 2021, in order to gather data on student perspectives on micro-credentials around Scotland. This survey collected data from 30 students from 6 different Higher and Further Education institutions: the University of Aberdeen, the University of Glasgow, Glasgow Caledonian University, Strathclyde University, Glasgow City College and Glasgow Clyde College. A total of 36 students completed the online survey, and their responses are outlined below.

This survey was circulated to students through social media and the data was collected online. Students agreed to their answers being collected and used for a research project and they also informed with regards to their anonymity and confidentiality. This survey had 3 themes including questions on terminology, favourable criteria of micro-credentials and perceptions on the benefits.

When answering the first question about their familiarity with different terminology related to micro-credentials and digital badges:

- Participants were unfamiliar with the majority of the terms relating to micro-credentials with an average of 77% of participants unfamiliar with all the terms offered.
- The terms that were the most unfamiliar were 'nexus degree', 'nano degree', 'micro-master' and 'open badges'.
- The terms that participants were the most familiar with were 'competency-based education', 'short learning degree' and 'digital badges'.
- However, even though there were a few terms that were overall familiar to the participants, these terms were mostly considered 'somewhat familiar'. For each term which was considered overall favourable, 60% of the respondents considered them 'somewhat familiar'.

These results show that micro-credential terminology is unclear to the majority of students. Even the terms that are recognised are only vague conceptions. Once again, Resei et al.'s (2019) 'chaotic terminology' describes our findings perfectly.

- When respondents answered the second question on which micro-credential they would favour depending on different criteria, the most popular criteria were that the credential would be 'issued by a UK university' and 'accredited'. 97% of respondents were favourable to micro-credentials being issued by a UK university, and of those respondents 94% were 'favourable' and 'very favourable', while only 6% were 'somewhat favourable'. 100% of participants were favourable to micro-credentials being accredited, and of those respondents 80% were 'favourable' or 'very favourable' while only 20% were 'somewhat favourable'.
- Respondents then favoured micro-credentials that would be 'digitally secure' and 'transferable', as in both cases the respondents were 97% favourable. However, micro-credentials being transferable appeared to be more important to the respondents than them being digitally secure, as 60% of the respondents who responded favourably to digitally secure micro-credentials were only 'somewhat favourable'.
- The least preferred criteria for micro-credentials was the online format. Although there was still 78% of respondents who were favourable of online micro-credentials, there were 22% who were 'not favourable' of this format. 'Online' credentials are the least preferred criteria compared to the others that had an average of 2 respondents (5%) who were 'not favourable'.
- Qualities such as 'competency based' and 'standardised' were perceived more favourably than 'online'. However, all of these criteria were considered generally 'somewhat favourable' by the respondent population.
- Out of 13 criteria describing micro-credentials, 61% was considered 'favourable' and 'very favourable' while 38% was considered 'somewhat favourable'.

These results show that students across Scotland are mainly optimistic considering micro-credentials which are accredited, reliable, secure, transferable and standardised. Kukkonen's findings are in tune with our study's findings as 'micro-credentials were perceived (by students) to create value in searching for work and in verifying skills and competences' (Kukkonen, 2021). However, there is evidence that these criteria are not all fully understood as many of the participants qualified them as 'somewhat favourable', showing uncertainty. Our main finding agreed with Oliver (2019), that uncertainty of micro-credentials is a cause for the lack of participation: students are not yet adopting micro-credentials in masses, and this could be result of the uncertainty of the benefits of digital credentials.

Most importantly, these criteria were generally perceived as positive. The 'online' format was considered less favourably however it is possible that this is linked to the effect of the

COVID-19 pandemic on learning over the past year, forcing everything to be online therefore students may be less willing to add online formats to their horizons. Bennett describes this lack of participation to be due to 'the difficulty of sustaining student motivation and the lack of face-to-face interaction with lecturers and other students' (Bennett, 2020).

Finally, when answering the final question concerning the value of micro-credentials in Continuous Professional Development, the respondents agreed with all of the statements.

- The statements that were the most agreed with were that 'it makes sense for employers to develop and offer micro-credentials for its employees', 'micro-credentials could increase confidence in a prospective employee's skills' and 'micro-credentials could facilitate an institutional culture of continuous learning'. There was an average of 84.5% of respondents who 'agreed' and 'strongly agreed' with these statements.
- There were few statements that were the least agreed with. Participants did not perceive this following statement as accurate: 'traditional degrees matter more [...] than micro-degrees', as 22% of participants neither disagreed or agreed with it. 'Micro-degrees could facilitate employee retention' was the least agreed with, as 42% of participants neither agreed nor disagreed with the statement. 'Micro-credentials could be considered in recruitment process' was inaccurate as 11.1% of respondents disagreed and strongly disagreed with the statement.
- Overall, all of the statements were generally agreed with. The statements were 'agreed' with by an average of 51.9% of respondents.

These results from this question indicate that students have an understanding of the potential of micro-credentials as they generally agree with all of the answers. The respondents put value in micro-credentials when they could facilitate an institutional culture of continuous learning, facilitate upwards mobility, increase confidence in prospective employees' skills and the participants see value in employers developing and offering micro-credentials to their employees. The results show that there are multiple benefits that are accompanied by micro-credentials, and that traditional degrees are not the sole solution to education as micro-credentials might even bring more advantages. Bennett describes polls stating that 'university degrees have declined in value in the past 10 years' and this could be rectified with the implementation of micro-credentials and digital badges (Bennett, 2020).

Event summary

This survey has shown us a glimpse into students' understanding of micro-credentials and most importantly their perceptions of them. Foremost, it was evident that the students from multiple institutions across Scotland were unclear and unfamiliar with the varying terminology surrounding micro-credentials and digital badges. There were only a few terms that had been recognised, however these were only 'somewhat familiar'. This shows that the diverse terminology is destabilising as it causes confusion and lack of clarity.

Next, what was noticed was that students seem to place value in micro-credentials that would be accredited, reliable and transferable. The 13 different elements that were to be judged favourable or not were mainly perceived as favourable however there was also an abundance of the elements being somewhat favourable. This indicates that there is, again, a lack of understanding in micro-credentials, their implementation and functioning. The only element that was perceived as negative to a larger number of participants was the online format of micro-credentials. Most respondents still perceived online micro-credentials as positive, perhaps as it allows more accessibility, however there were 8 respondents who perceived it as 'not at all favourable' and this may be caused by their experience living through a global pandemic as a student where all elements of life were forced online.

Finally, the third question led to results indicating the mutual benefits and overall benefits of micro-credentials to students. There were multiple answers which conveyed mutual benefits between the university environment and the employee's environment, showing that students have a slight understanding of the mutual benefits of micro-credentials, with an opportunity to facilitate the transition from student life to the working world.

Key recommendations

This study looked at the four major stakeholder groups who have an interest in micro-credentials in Scotland. These four groups all have similar knowledge of attitudes towards and preferences for micro-credentials. Bearing that in mind, our primary key recommendations are relevant to all four groups, unless otherwise stated. The key to these recommendations is a national and collaborative approach that clarifies the landscape and reduces barriers to implementation and accessibility for all stakeholder groups.

Recommendation 1

Agree a clear and universal micro-credential language across providers to improve understanding, reduce uncertainty and promote collaboration amongst all stakeholders.

Recommendation 2

Establish clear micro-credential standards, which are replicable over all providers. This includes provision for credit- and non-credit-bearing micro-credentials, stand-alone CPD opportunities and opportunities to use micro-credentials as a means to re-enter higher education and gather credit for degree-level studies.

Recommendation 3

Create a central, accessible, and national micro-credentials hub, which offers quality assured micro-credentials.

Recommendation 4

Develop robust ways of working between higher and further education institutions and employers.

This study has attempted to ascertain the current perceptions of micro-credentials and digital badges within the Scottish higher education sector. Our findings suggest that all stakeholders recognize the potential of micro-credentials, however, despite the length of time micro-credentials have been in existence, there still remains some mystery surrounding them. There is much to be gained by continuing this work and building on the work previously done within the sector.

Appendices

Appendix 1: University Staff Survey

Table 1a. University staff survey respondents

Institution type	Number of respondents
Post-1992	9
Robbins	2
Ancient	6
Specialist HE College	1
Qualifications authority	1
Declined to say	7

Table 1b. University roles of survey respondents

Role	Number of respondents
Academic	8
Professional Services	12
Senior Management	4
Other	1 (Development Officer)
Declined to say	1

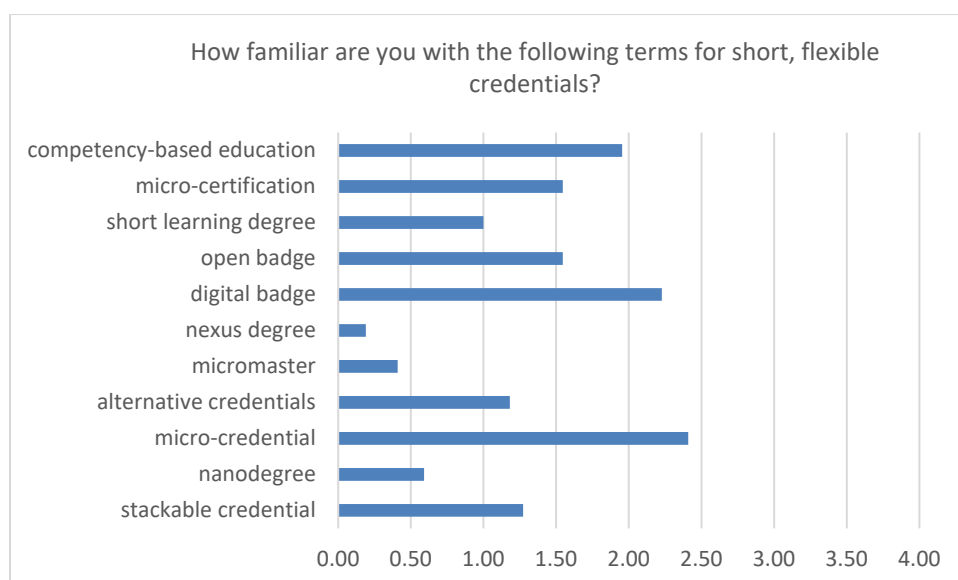


Fig. 1. Familiarity with micro-credentials terminology

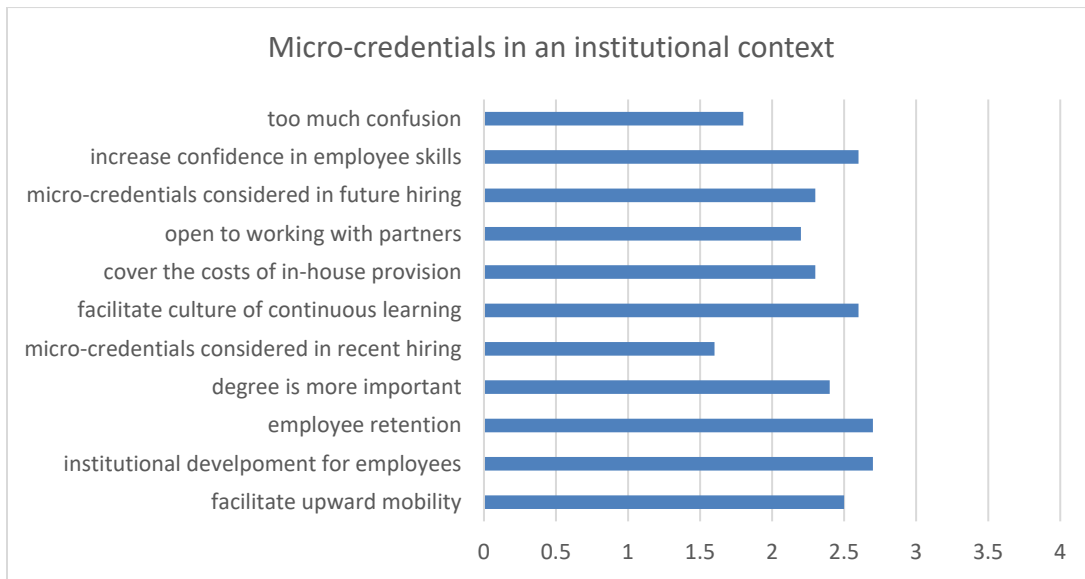


Fig. 2. Micro-credentials for institutional CPD – participants

Appendix 2: Questions put to groups at Employer event

Group 1: Terminology

Do you see the array of micro-credential terms as confusing and a potential barrier to their uptake by organisations and individuals? Briefly explain.

Group 2: Partnership Development

How can universities and employers collaborate to ensure that micro-credentials contribute to student and graduate employability?

Group 3: Micro-credential Design

Do you have any views on the types of micro-credentials, which should be offered by universities?

Group 4: Organisational benefits

What do you see as the benefits and challenges to implementing micro-credentials for upskilling/reskilling in your organisation?

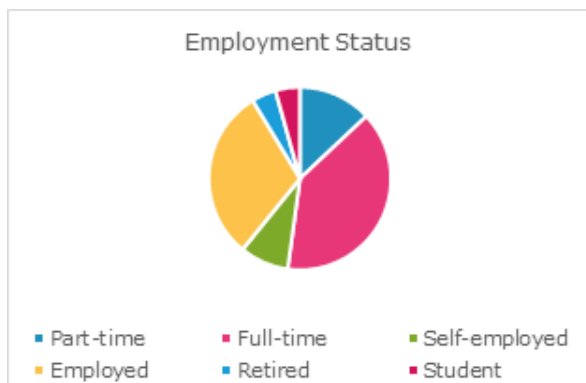
Group 5: Talent acquisition

What, in your view, are the main challenges to the use and recognition of micro-credentials in recruitment and selection?

Group 6: Employee benefits

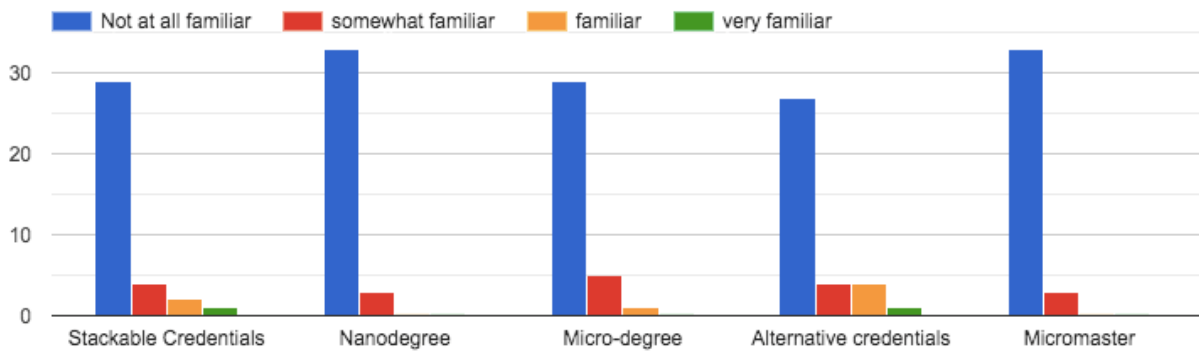
What benefits would micro-credentials (including digital badges) bring to participants in your organisation?

Appendix 3: Customer event statistics

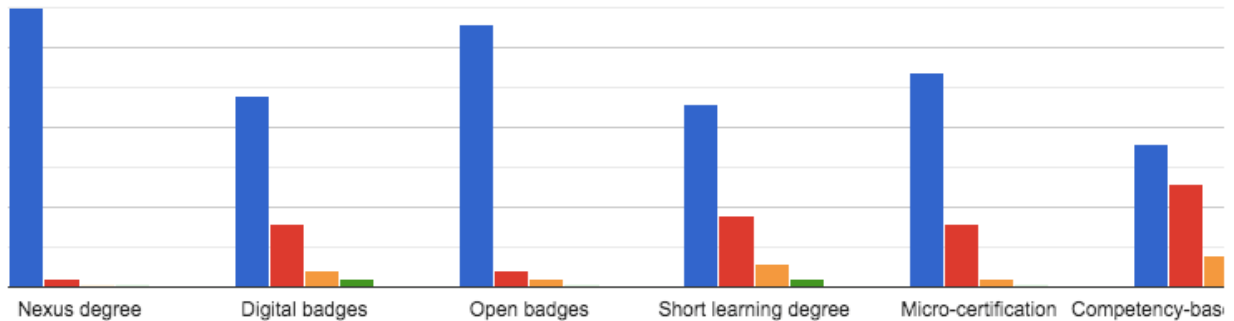


Appendix 4: Student survey

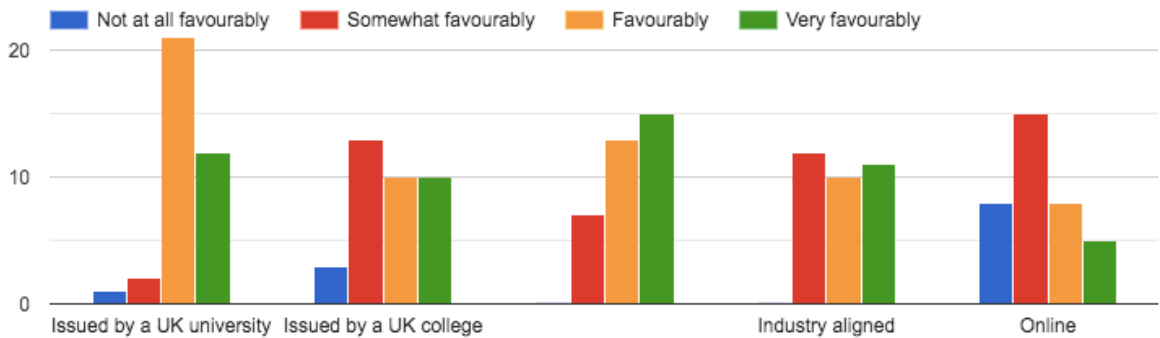
How familiar are you with the following terms for short, flexible credentials?



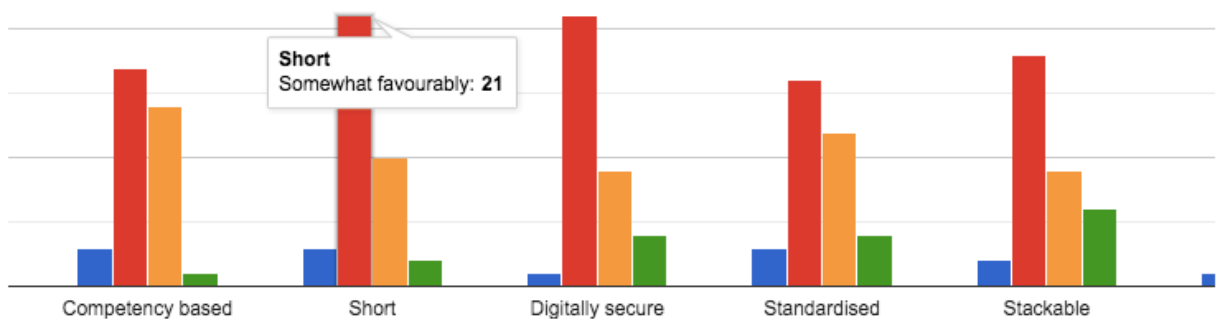
How familiar are you with the following terms for short, flexible credentials?



Micro-credentials are small packets of accredited learning. They may be based on demonstrated experience or work-based learning. They are offered by a range of providers, including professional bodies. This question relates to using micro-credentials to access higher education degree programmes. How favourably would you consider the following features of that micro-credential?



Micro-credentials are small packets of accredited learning. They may be based on demonstrated experience or work-based learning. They are offered by a range of providers, including professional bodies. This question relates to using micro-credentials to access higher education degree programmes. How favourably would you consider the following features of that micro-credential?



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