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Gaps in the Quality Assurance of Micro-Credentials

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Abstract

Micro-credentials have emerged as a flexible, personalised approach to skills development, serving a variety of learner and industry needs. These credentials offer opportunities for learners to upskill or reskill in a more focused and accessible manner, while enabling employers to address specific skills gaps efficiently. Despite their rising popularity and potential to transform education and workforce development, significant questions surrounding the quality assurance persist. Issues related to the standardisation, transparency, and transferability of micro-credentials pose challenges for both learners and employers seeking to validate and recognise them across different contexts. This paper examines the critical gaps in the quality assurance of micro-credentials, focusing on key areas such as standardisation, recognition, assessment rigor, and alignment with industry standards. It explores the complexity of integrating micro-credentials into existing educational ecosystems and the need for consistent practices that ensure credibility and comparability. Through an analysis of existing literature, this study highlights the pressing need for robust frameworks and alignment mechanisms that guarantee the quality and value of micro-credentials. Furthermore, it highlights the importance of collaboration between educational institutions, industry partners, and policymakers in building a sustainable infrastructure that ensures the integrity and portability of micro-credentials within the broader educational and employment landscape.

Introduction

The rise of micro-credentials marks a significant shift in education across many countries, offering a flexible alternative to traditional degree programs. They allow learners to acquire specific skills quickly and affordably, catering to the demands of an evolving job market. The concept of "micro-credentials" has been shaped by various authors and European projects, often referred to by different terms such as nanodegrees, micromasters, alternative credentials, undergraduate or postgraduate certificates, expert or specialisation certificates, and focus diplomas. These labels are also associated with a diverse range of definitions, including academic certificates, short online courses, digital credentials, digital badges, and open badges, reflecting the broad spectrum of formats and purposes they serve (Antonaci et al., 2021; Brown et al., 2021; Van der Hijden & Martin, 2023; Virkus, 2019).

Brown et al. (2021) note that the term 'microcredentials' first emerged in Google search results in 2013. Micro-credentials are most commonly defined as small, certified learning achievements gained through study, work, or life experience, verifying a learner's knowledge, skills, or competencies. As compact, verified skill sets, they can be awarded after completing short courses or through recognition of prior learning (Van der Hijden & Martin, 2023). Designed to address societal, personal, cultural, or labor market needs, micro-credentials equip learners with specific competencies. These credentials are owned and controlled by the learner, shareable, transferable, and may have standalone value or complement other micro- or macro-credentials. They are backed by rigorous quality assurance, adhering to recognized standards (European Commission, 2022, p. 13; UNESCO, 2022, p. 6).

Micro-credentials exemplify flexible learning pathways, a concept endorsed by the United Nations' Education 2030 Agenda. This Agenda defines flexible learning pathways as entry and re-entry points accessible at any age and educational level, aimed at enhancing connections between formal and non-formal education systems. These pathways emphasise the recognition, validation, and accreditation of knowledge, skills, and competencies gained through non-formal and informal education (UNESCO, 2015, p. 33).

Cote and White (2020, p. 8) identify several key challenges within traditional education that micro-credentials have the potential to address:

- The long duration of study programs;
- The relative inflexibility of programs;
- Inadequate recognition of prior learning;
- Slow or limited innovation in pedagogy;
- Insufficient student supports for career-readiness;
- Weak alignments to labour market needs;
- Limited commitment to online and digital-enabled learning.

Conversely, micro-credentials offer significantly greater flexibility for learners, workers, businesses, and industries. Their duration is often short, allowing for more efficient learning pathways. These programs can typically be started at any time, often online, and adapted to suit the learner's schedule. Micro-credentials provide 'just-in-time' or 'on-demand' learning, which is ideal for individuals aiming to reskill or upskill in targeted areas to meet specific career goals and transitions. They can also be designed to recognise and certify prior learning, making them adaptable to a wide range of learner backgrounds. Although pedagogical innovation is still evolving, it could be rapidly implemented in this context. Micro-credentials are frequently tailored to address specific career skills, knowledge, and competencies aligned with industry and workforce needs. While delivery methods may include online, face-to-face, or hybrid modalities, micro-credentials often have a distinctly digital focus, particularly in relation to the badging and verification of achievements (Steel et al., 2022).

However, the MICROBOL survey, based on a single response from each European country, found that the main reason for promoting micro-credentials was to enhance learners' competitiveness in the labor market, followed by academic purposes and recognising credits or prior learning (Lantero et al., 2021). In contrast, a Canadian survey revealed that 74% of respondents from 19 post-secondary micro-credential providers cited access to further education as the primary motivation (Duklas, 2020).

Micro-credentials have been widely adopted by universities, online learning platforms, and industry training organisations to meet the dynamic skill requirements of the workforce (Brown et al., 2021). However, the rapid growth of micro-credentials has raised concerns regarding quality assurance (QA) standards. Effective QA is crucial to ensure these credentials' credibility, relevance, and value (Brown & Duart, 2024). This paper examines the existing gaps in the quality assurance of micro-credentials and explores potential avenues for improvement.

Gaps in the Quality Assurance of Micro-Credentials

Traditional higher education programs adhere to well-defined QA standards to ensure educational integrity, often overseen by national or regional accrediting bodies. However, micro-credentials, given their short-term and skills-based nature, often fall outside traditional QA mechanisms, leading to potential gaps in consistency and recognition.

Research has identified several critical challenges in the QA of micro-credentials (Ahsan et al., 2023; Brown & Duart, 2024; Kušić et al., 2022; Pawilen et al., 2024; Tamoliune et al., 2023; Van der Hijden & Martin, 2023; Varadarajan et al., 2023; Wheelahan & Moodie, 2024). These can be grouped as follows:

Regulatory and framework gaps

- Absence of standardized frameworks and evaluation mechanisms.
- Fragmented or insufficient regulatory frameworks.
- Lack of comprehensive national legislation.

Quality Assurance mechanisms

- Inconsistent or immature QA practices across sectors.
- Inadequate or insufficient QA mechanisms.
- Limited engagement or response from QA agencies.
- Significant variation in assessment and validation methods.

Integration with existing systems

- Challenges in integrating micro-credentials with existing education and training systems.
- Difficulties ensuring long-term recognition and portability across industries and educational institutions.
- Underdeveloped multi-actor ecosystem supporting micro-credentialing.

Stakeholder engagement and alignment

- Inadequate engagement with key stakeholders.
- Inconsistent alignment with industry standards and expectations.
- Gaps in public accountability and transparency.

Conceptual and research gaps

- Lack of common definitions and terminology.
- Limited research on the effectiveness and impact of micro-credentials.

Many educational institutions lack comprehensive regulatory frameworks to guide the development, implementation, and assessment of micro-credentials, which can undermine their credibility and acceptance (Ahsan et al., 2023; Brown & Duart, 2024). A significant challenge is the absence of supporting national legislation that clearly defines micro-credentials and outlines QA requirements (Brown & Duart, 2024). Micro-credentials vary widely in structure, length, assessment methods, and rigor. Multiple frameworks exist for different delivery models of micro-credentials (Selvaratnam & Sankey, 2021), making it difficult to establish a unified standard that can be universally applied. This variability leads to discrepancies in how micro-credentials are designed, delivered, and assessed, which can create inconsistencies in quality and recognition (Ahsan et al., 2023) and hinder the development of effective QA processes.

Brown and Duart (2024) report that initiatives to develop specific standards and QA requirements for micro-credentials have been undertaken in only three countries: New Zealand, Malaysia, and Ireland.

Existing QA mechanisms may not be adequately adapted to address the unique characteristics of micro-credentials, resulting in challenges to ensuring their quality and reliability (Ahsan et al., 2023). In many OECD jurisdictions, external QA agencies have not specifically addressed micro-credential-related QA considerations. While some countries have adopted common QA frameworks, many still lack specific standards or requirements for micro-credentials (Brown & Duart, 2024). A significant gap also exists in the recognition and portability of micro-credentials across educational institutions and industries (Van der Hijden & Martin, 2023).

QA protocols for micro-credentials often lack transparency. Key information, such as the competencies covered, learning outcomes, assessment methods, and institutional validation processes, may not be clearly documented. Inconsistent QA processes contribute to skepticism among employers and institutions regarding the value of these credentials, limiting their applicability and perceived reliability (Ahsan et al., 2023). Unlike traditional academic programs that employ rigorous assessment methods, micro-credentials often use less intensive evaluation processes. According to a recent survey of over 500 US employers, while micro-credentials are valued, there is a recognised need to learn how to assess their quality (Collegis Education, 2023 as cited in Brown & Duart, 2024).

This disparity in assessment rigor raises concerns about the validity of the skills claimed by credential holders, impacting the trust and perceived value of the micro-learning experience in both academic and employment sectors (Ahsan et al., 2023; Giunipero, 2023). The lack of robust QA processes in many institutions further undermines the credibility of micro-credentials, contributing to a mixed and largely immature state of institutional practices. As a result, both learners and employers often struggle to trust the quality and relevance of these credentials (Brown & Duart, 2024).

Brown and Duart (2024) emphasise the need for micro-credentials to be integrated into existing QA systems rather than treated as a separate category. This integration is crucial to avoid additional administrative burdens on institutions.

Although micro-credentials are intended to meet specific industry needs, current QA frameworks often lack mechanisms to ensure continuous alignment with evolving industry requirements. This gap can lead to micro-credentials becoming outdated, reducing their practical value for both employers and learners. Moreover, the involvement of key stakeholders - such as employers and industry representatives - in the design and assessment of micro-credentials is often insufficient, leading to a disconnect between educational offerings and labor market demands (Ahsan et al., 2023). To ensure micro-credentials remain relevant to both labor market needs and educational standards, there is a growing need for greater involvement from various stakeholders, including learners, employers, and industry partners, in the QA process (Brown & Duart, 2024).

The absence of a universally accepted global definition for micro-credentials complicates the development of consistent QA standards and practices. This lack of clarity contributes to disparities in the perception and evaluation of micro-credentials (Brown & Duart, 2024; Giunipero, 2023; Zhang & West, 2020).

Further empirical research is necessary to assess the effectiveness of micro-credentials in achieving desired learning outcomes and to understand their impact on employability and career progression (Ahsan et al., 2023).

These gaps underscore the urgent need for further research and the development of rigorous quality assurance frameworks and practices to strengthen the credibility and effectiveness of micro-credentials within the educational landscape (Ahsan et al., 2023; Brown & Duart, 2024). Failure to address these challenges may result in micro-credentials falling short of providing learners with meaningful, recognised pathways for personal and professional development, ultimately limiting their impact on employability and career advancement.

Current Efforts in Quality Assurance of Micro-credentials

Quality assurance (QA) is one of the top barriers to the broader adoption of micro-credentials at scale (Brown & Duart, 2024). Recent years have seen a surge in micro-credential initiatives at international, regional, and national levels, led by policymakers, regulatory bodies, and education providers. Organisations such as the European Commission and UNESCO have started developing frameworks to address QA in micro-credentials. For example, the European Commission conducted an extended consultation process on micro-cre-

dentials, which resulted in a refined European definition and shaped the European roadmap for micro-credentials (European Commission, 2020; Orr et al., 2020). Being part of this consultation process, the Microbol project explored the use and adaptation of tools in the European Higher Education Area (EHEA) to micro-credentials (Lantero et al., 2021). Within the specific context of Massive Open Online Courses (MOOCs), the European MOOC Consortium has also developed a framework of micro-credentials that defines a set of requirements not solely based on the ESG, but also on the assumption that the quality of micro-credentials is safeguarded by the internal quality assurance processes of higher education institutions (HEIs) (EMC, 2019).

A growing number of HEIs, including those in the Erasmus+ European Universities initiative, are working on defining and implementing micro-credentials. The European Consortium of Innovative Universities (ECIU) has focused on micro-credentials, aligning its approach to quality assurance with the European Commission and the Microbol project. Projects like the Erasmus+ co-funded "Stacking Credits and the Future of the Qualification" (STACQ), led by Nuffic, have supported institutions in evaluating and recognising micro-credentials. STACQ developed an online tool assessing criteria such as quality assurance, verification, level, learning outcomes, workload, testing, and identification (ENQA, 2023). These initiatives aim to standardise competencies, assessment criteria, and documentation requirements for micro-credentials, yet widespread adoption remains a challenge due to varying local requirements and regulatory environments (EMC, 2019; ENQA, 2023; European Commission, 2020; UNESCO, 2022).

The research identifies several countries that exemplify best practices in the QA of micro-credentials. These countries have made intentional decisions to adopt common standards and frameworks for the QA of micro-credentials:

- Australia has developed frameworks that support the QA of micro-credentials, with several states actively engaging in this area.
- Specific provinces such as Alberta, British Columbia, and Ontario in Canada have established QA processes and guidelines for micro-credentials, demonstrating a proactive approach to quality assurance.
- The Netherlands is recognised for its initiatives in applying common QA standards to micro-credentials, contributing to a more structured approach in this area.
- Spain has also adopted common standards for the QA of micro-credentials, showcasing a commitment to ensuring quality in this educational offering
- The United Kingdom has guidelines for ensuring the quality of micro-credentials and has implemented voluntary accreditation processes, indicating a mature approach to QA in this context.
- Malaysia is recognised for having established mandatory standards applicable to all higher education providers concerning micro-credentials (Brown & Duart, 2024).

These countries serve as models for others looking to enhance their QA practices for micro-credentials, demonstrating the importance of intentional frameworks and standards in fostering trust and credibility in these educational offerings.

Several digital credentialing platforms exist, offering services for issuing, managing, and verifying digital credentials. Among the most prominent platforms is Credly, widely adopted by organisations to issue digital badges, allowing users to showcase their skills and integrated with various learning management systems (LMS) and professional networks like LinkedIn. Similarly, BadgeCert specialises in issuing verifiable badges, offering institutions the ability to securely manage and track credentials. For those looking to adhere to open standards, Open Badge Factory provides a solution that enables organisations to design and award badges compliant with the Open Badges standard, making credentialing more transparent and interoperable. Canvas Badges (formerly Badgr) integrates seamlessly with LMS like Canvas, allowing educators to track student progress through digital badges.

In addition to traditional platforms, the rise of blockchain technology has enabled the development of highly secure credentialing solutions, such as Blockcerts, which provide tamper-proof and verifiable digital certificates. These platforms are increasingly being adopted by universities and organisations for issuing secure diplomas and certifications. Other platforms, such as CertifyMe, provide an easy-to-use solution for creating, issuing, and managing digital certificates and badges, while Accredible offers a more comprehensive suite for issuing and verifying digital credentials, complete with customizable options and integrations with existing systems. Skillsoft

Digital Badges, as part of an e-learning platform, rewards learners with badges that recognise their acquired skills and completed courses, making professional development more visible and verifiable.

These platforms are transforming the landscape of education and professional development, making it easier for learners and professionals to demonstrate their skills and for institutions to verify those achievements. While these platforms enhance credibility, they do not solve issues related to standardised content and assessment quality.

The study by Brown and Duart (2024) outlines several key lessons learned regarding the quality assurance (QA) of micro-credentials:

- *Importance of clear definitions*: A commonly accepted definition of micro-credentials is crucial for establishing effective QA standards. The lack of clarity in definitions can lead to inconsistencies and confusion in the assessment and recognition of these credentials.
- *Need for robust QA frameworks*: The research emphasises that robust QA frameworks are essential for building trust among stakeholders, including learners and employers. Countries that have developed specific QA standards for micro-credentials serve as examples of best practices.
- *Integration with existing QA systems*: Micro-credentials should be integrated into existing QA systems rather than treated as a separate category. This integration can help streamline processes and reduce administrative burdens on institutions.
- *Stakeholder engagement*: Engaging various stakeholders, including learners, employers, and industry partners, is vital for ensuring that micro-credentials meet the needs of the labor market and educational standards. Their input can enhance the relevance and quality of these credentials.
- *Continuous improvement and monitoring*: The study highlights the need for ongoing monitoring and evaluation of micro-credentials to ensure their quality and effectiveness. Using learning analytics and feedback from students and employers can inform continuous improvement efforts.
- *Addressing gaps in information*: There is a significant gap in publicly available information regarding QA processes and institutional practices for micro-credentials. Greater transparency and disclosure of information can help prospective students make informed decisions .
- *Collaboration among QA agencies*: Collaboration among QA agencies across different countries can facilitate the sharing of best practices and the development of common standards, ultimately enhancing the global recognition of micro-credentials.

These lessons underscore the need for a coordinated and comprehensive approach to QA in the context of micro-credentials, which is essential for their successful adoption and integration into the educational landscape.

Discussion

The increasing prominence of micro-credentials in global education represents a paradigm shift in how skills, knowledge, and competencies are verified and recognised. However, while their flexible, modular nature has the potential to meet specific labor market and personal development needs, this study reveals significant gaps in the QA mechanisms governing these credentials. Addressing these gaps is critical to ensure the credibility, transferability, and value of micro-credentials in both academic and employment contexts.

One of the key findings in this paper is the absence of standardised QA frameworks across different regions and sectors. This challenge is compounded by fragmented regulatory environments that struggle to integrate micro-credentials into existing educational systems. Without a universal framework, micro-credentials lack consistency in assessment rigor, validation methods, and transparency, resulting in skepticism from employers and institutions about their value. This issue is mirrored in the MICROBOL and Canadian surveys, where stakeholders expressed differing views on the primary purposes of micro-credentials. While labor market competitiveness was a key driver in European countries, Canadian institutions focused more on providing access to further education (Lantero et al., 2021; Duklas, 2020). These contrasting priorities underscore the need for a shared understanding of micro-credential goals to support a cohesive QA approach.

Moreover, the disparity between traditional higher education QA standards and those applicable to micro-credentials reveals a gap in institutional readiness. HEIs have well-established mechanisms for QA in degree programs, often overseen by national accrediting bodies. However, micro-credentials, with their shorter durations and skills-focused nature, often fall outside these mechanisms. Consequently, institutions face challenges in adapting existing QA systems or developing new ones that accommodate the unique characteristics of micro-credentials. This gap risks undermining the trustworthiness of these credentials, as noted by Ahsan et al. (2023), who identified inconsistencies in assessment and QA processes as barriers to broader acceptance.

The integration of micro-credentials into existing systems is another critical issue. As this paper highlights, QA frameworks for micro-credentials are not yet fully aligned with traditional education systems, leading to difficulties in ensuring their long-term recognition and portability across industries and educational institutions. This lack of integration limits the potential for micro-credentials to serve as meaningful components of lifelong learning pathways, as envisioned by the UNESCO Education 2030 Agenda (UNESCO, 2015). The importance of seamless integration is emphasised by Brown and Duart (2024), who argue that treating micro-credentials as a separate category from traditional education only adds to the administrative burden on institutions, complicating their implementation.

Stakeholder engagement and alignment with industry standards emerge as critical elements for the success of micro-credentials. The involvement of employers and industry representatives in the design, assessment, and QA processes of micro-credentials remains insufficient, leading to a disconnect between educational offerings and labor market needs. This gap risks rendering micro-credentials outdated or misaligned with evolving industry requirements.

The issue of transparency in QA processes is also significant. Institutions often fail to provide clear documentation regarding competencies, learning outcomes, and assessment methods for micro-credentials, contributing to a lack of trust from both learners and employers. This opacity hinders the ability of prospective students to make informed decisions about their educational investments and reduces the perceived value of the credentials in the job market. Greater transparency in institutional QA processes is essential to build confidence in micro-credentials and ensure their alignment with recognised standards.

The study also identifies conceptual gaps, particularly in the lack of a universally accepted definition of micro-credentials. This lack of clarity complicates the development of standardised QA frameworks, as different institutions and countries operate with varying definitions and criteria. The absence of a common understanding leads to discrepancies in how micro-credentials are assessed and valued, both within and across borders. This fragmentation poses a significant challenge to the global recognition and portability of micro-credentials, a key factor in their long-term success and adoption.

Finally, this research underscores the need for continuous improvement and monitoring in the QA of micro-credentials. The dynamic nature of the labor market and evolving educational needs require QA frameworks that are not static but are continuously updated to reflect new industry standards and learner expectations. The use of learning analytics, feedback from employers, and ongoing research into the effectiveness of micro-credentials can inform such improvements, ensuring that they remain relevant and valuable to both learners and employers.

Conclusions

In conclusion, while micro-credentials present significant opportunities for flexible, targeted learning and lifelong skill development, their full potential is hindered by considerable quality assurance challenges. The absence of standardised QA frameworks, inconsistencies in recognition and assessment, and a lack of transparency are key obstacles that must be addressed to enhance their credibility and value. Coordinated efforts at national, regional, and global levels are essential to develop unified standards, foster transparency, and ensure greater stakeholder engagement. Educational institutions, employers, and accrediting bodies must collaborate to create scalable, rigorous QA processes that support the credibility and long-term recognition of micro-credentials. Only through these concerted actions can micro-credentials realise their potential as a meaningful and integral part of modern educational and professional pathways, providing learners with reliable and recognized tools for career advancement and personal growth.

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