

Readiness of higher education leaders to implement micro-credentials in Malaysia

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ABSTRACT

Higher education institutions (HEIs) have invested considerable effort in integrate micro-credentials into educational systems framework. However, the readiness of middle leaders and lecturers to effectively support these initiatives remains uncertain. Furthermore, research on the preparedness of coordinators as middle leaders in HEIs is still limited. To address this gap, a study was conducted to explore the readiness of middle leaders for implementing micro-credentials in HEIs. This research involved five informants who serve as coordinators and program leaders within their faculties. The study utilized focus group discussions to deeply investigate the readiness of these leaders, providing valuable insights into their current level of preparedness and their ability to effectively support the implementation of micro-credential programs. The analysis of the data resulted in the identification of five major themes: i) the conceptualization of micro-credentials; ii) training and development; iii) infrastructure; iv) quality; and v) institutional readiness, all of which represent challenges faced by university leaders. The study underscores the importance of top university leaders demonstrating a clear vision and unwavering commitment, which are crucial for the implementation of micro-credentials within the higher education institutions landscape.

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1. INTRODUCTION

The rapid advancements in digital technology, often referred to as digital transformation era, have created an urgent need for higher education systems that are not only resilient but also capable of evolving in response to new demands. One notable development in this area is the rise of micro-credentials, which have emerged as a promising alternative to traditional degree programs. These micro-credentials, encompassing nano degrees, digital badges, and similar certifications, offer a more focused and adaptable approach to education, allowing individuals to acquire specific competencies and skills that are directly applicable to their professional fields [1]. This modular, competency-based framework not only facilitates continuous learning but also supports individuals in maintaining their relevance in an increasingly dynamic global workforce [2]. The importance of micro-credentials is further emphasized by research highlighting their role in fostering a highly skilled and versatile labor force [3], which is crucial in today's ever changing economic environment [4], [5].

In recent years, the rising interest in micro-credentials has been propelled by substantial global transformation in education and societal demands [6]. Traditional universities, under increasing pressure to innovate and meet the evolving needs of modern learners, have begun to expand their reach beyond conventional student populations. This expansion has particularly targeted non-traditional learners and international students situated across a wide range of geographic regions [7]. The widespread shift towards on-line education has further highlighted the promise of micro-credentials, which offer an inclusive and flexible means of acquiring and validating skills in today's dynamic educational landscape [8].

Malaysia's higher education institutions (HEIs) are undergoing a significant transformation by integrating micro-credentials into their educational frameworks [9]. This strategic move aligns closely with the United Nations' Sustainable Development Goal (SDG) 4, which prioritizes inclusive, equitable quality education and the promotion of lifelong learning opportunities for everyone. By adopting online and distance learning, Malaysian institutions are not just broadening their educational offerings but are also committed to fostering a more inclusive and equitable learning environment [10]. This initiative ensures that students from various backgrounds and regions can access, participate in, and benefit from educational opportunities that were previously inaccessible. Additionally, this strategy aligns with the goals outlined in the fourth element of the Malaysia Education Blueprint 2015-2025, which emphasizes the enhancement of educational quality and accessibility nationwide [11].

The global trend towards personalized and competency-based learning models necessitates that academics adopt flexible pedagogical approaches. Traditional lecture-based methods are increasingly being complemented or supplanted by self-directed, student-centered learning experiences that emphasize interactivity. Academics must be equipped to design curricula that address diverse learning styles and needs, integrating innovative methods such as project-based learning and flipped classrooms. This pedagogical adaptability is crucial for serving a global student body with diverse cultural backgrounds and learning preferences. Gaining insights into program structures from the perspectives of middle leaders, senior lecturers, coordinators, and implementers is vital for identifying the steps required to cultivate an environment that supports micro-credentials. Furthermore, ensuring the long-term sustainability of micro-credential courses is essential for enhancing the overall educational ecosystem.

The incorporation of micro-credentials into Malaysian higher education institutions (HEIs) represents a relatively recent initiative, marked by the Malaysian Qualifications Agency's (MQA) introduction of formal accreditation frameworks in 2019. Given its novelty, comprehensive studies on the deployment and impact of micro-credentials in Malaysia are limited. This research gap offers a unique opportunity for scholars to delve deeper into the potential of micro-credentials across various educational disciplines [12]. Malaysia's higher education sector recognizes that micro-qualifications hold significant promise in allowing students to access learning materials tailored to their individual needs, competencies thus promoting lifelong learning [13]. The way forward implementation of micro-credentials largely depends on the commitment of middle leaders at the faculty level. These middle leaders play a vital role in developing materials, implementing curricula, and devising strategies and interactive pedagogical approaches to meet the needs of students pursuing micro-credentials [14].

This research study aims to assess the preparedness of middle leaders—such as program directors, coordinators, and lecturers at the faculty level within Malaysian higher education institutions (HEIs)—to adopt and implement micro-credentials as a recognized and effective form of education and skill validation. By conducting a thorough analysis of the current level of readiness, as well as the associated challenges, opportunities, and best practices, this study seeks to identify the potential obstacles and enablers that could influence the successful integration of micro-credentials into Malaysia's higher education system. Through this investigation, the research aspires to facilitate the development of a more inclusive, significant and learner-centered higher education ecosystem, capable of meeting the diverse needs of individuals while advancing the nation's economic and social progress in the 21st century.

Furthermore, the findings of this study are grounded in comprehensive data and in-depth discussions. The study is bolstered by previous research, detailed background information, and an extensive literature review, ensuring that the results offer significant practical and theoretical insights. The research is also enriched by the practical experiences of the informants, who were actively involved in implementing programs at the grassroots level, including program extensions, distance learning, outreach initiatives, cooperative extension, training, and academic advising. This combination of empirical data and firsthand experience provides a solid foundation for the findings and recommendations presented in this article.

The term 'micro-credential' is still a topic of debate, with no standardized definition and is often used interchangeably with terms such as on-line certificates, alternative credentials, nano-degrees, and micro-masters. Similarly, the implementation of micro-credentials, the support offered, their accessibility, and the capacity of university facilities, access and staff to sustain micro-credentials are also taken into consideration. Understanding that not all micro-credentials are digital [7]. They are also recognized as compact, short-term

learning modules designed to deliver targeted skills, knowledge and competencies tailored to meet societal, personal, society, and labor market needs [15]. As stated by the European Commission, micro-credentials validate a learner's attainment of distinct learning outcomes following the completion of a brief, focused learning experience, evaluated against clear standards [16]. The diversity in terminology contributes to considerable discrepancies in how micro-credentials are defined and perceived globally. However, there is a general consensus on a pair of fundamental elements: the 'educational activities' that lead to a credential and the certification awarded, both widely recognized as micro-credentials [17].

Micro-credentials respond to the growing demand for up-skilling, facilitating career advancement while providing industries with adaptable, skilled workers [18]. These courses, designed to meet specific industry needs, offer targeted learning that broadens students' skill sets and competencies, commonly referred to as up-skilling and re-skilling [19]. This approach not only enhances career prospects but also ensures that learners remain attuned to industry trends. Furthermore, micro-credentials award certifications and digital badges to learners upon completing a module, both of which hold value in the job market. A digital badge is more than a mere visual symbol; it is supported by data that includes details about the issuer, recipient, requirements, and evidence of completion. The use of digital credentials not only boosts learner motivation but also provides meaningful recognition [17].

Micro-credentials vary widely in structure and delivery, reflecting differences in duration, difficulty, and tasks, which must align with specific learning outcomes and assessment methods [16]. To ensure reliability and clearly convey essential content, providers will give a summary that includes key details such as the course outcomes, content detail, description, delivery methods, exams, and quality assessment measures. This make sure that both learners and providers are well-informed about the specific skills needed and competencies assessed in each micro-credentials course.

Previous literature highlights several challenges in developing and delivering micro-credentials for adult learners, distinct from those faced by undergraduate and postgraduate students. One of the primary challenges is the need for adequate staff training, effective time management, and sufficient resources for content creators [20]. While students view micro-credentials as a valuable way to enhance their skills and competencies, educators face the pressure of balancing these new responsibilities with existing workloads and limited institutional support. Additionally, creating high-quality content requires well-equipped facilities and technical support, which are often lacking. These challenges are not unique to Malaysia but are global. Infrastructure and human resource issues can be tackled with enthusiasm and collaboration, turning challenges into opportunities for micro-credential readiness.

The implementation of micro-credential programs will success depends greatly on having skilled human resources, including both academic and support staff, at the faculty and university levels to ensure effective planning and execution [21]. However, managing a large number of on-line students can be challenging, especially since these programs often attract a diverse and international student population. Another important issue is securing international recognition for micro-credential modules before expanding the program, as the global acceptance of credentials like digital badges relies on their portability [22]. There is also concern that micro-credentials might compete with traditional degrees, potentially reducing enrollment in conventional programs as employers increasingly prefer these new certifications. Ensuring quality assurance, as regulated by the Malaysian Qualifications Agency (MQA) and universities, is essential to maintain high standards [20]. While many universities have developed their frameworks for micro-qualifications based on ministry guidelines, inconsistencies among these guidelines could create obstacles that need to be resolved to ensure consistency across Malaysia's HEIs.

Universities must be prepared to allocate sufficient resources, particularly in terms of infrastructure and support, to effectively expand and promote micro-credentials to a global or broader market [23]. Developing high-quality teaching materials for micro-credential programs requires instructors to have access to dynamic, interactive resources, which are essential for effective learning. This necessitates a well-equipped platform with specialized software, video production tools, and other advanced technological resources. The use of these resources, including software, facilities, well-trained personnel, hardware, and the latest educational technology, can significantly enhance the course development process.

Moreover, successful implementation of micro-credentials requires that both educators and students possess strong technological literacy. Developing these critical skills is essential for ensuring smooth engagement with micro-credential programs. Proper preparedness also involves having a competent technical support team to assist with course development and platform maintenance. Clearly, achieving sustained success in offering micro-credentials demands significant financial investment to cover the extensive costs associated with these carefully planned and comprehensive preparations. Therefore, it is crucial for university management to allocate adequate financial resources to support the development, high-quality outcomes, and long-term sustainability of micro-credential programs [20]. Costs associated with developing online platforms, subscribing to third-party services, and acquiring the necessary technological tools are substantial.

Additionally, tackling the issue of human resource and support system is critical, as a fundamental of program is essential for the effective implementation of micro- credential programs [24].

2. METHOD

This study employed a qualitative approach to address the research questions, as qualitative methods were deemed suitable for gaining a deeper understanding of the readiness of academic staff and program coordinators in this context. Through these methods, researchers sought to explore the subjective insights of informants regarding their experiences and knowledge in managing micro-credential programs. Detailed data and feedback were collected through a focus group discussion (FGD) [25], which was chosen for its ability to allow informants to share their experiences and perspectives as middle leaders within their organizations. One FGD session was conducted online with the participation of five informants. The group setting encouraged rich discussions, enabling participants to express their thoughts and experiences openly [26]. The session reached a point of saturation, as the same themes were consistently mentioned by all informants, indicating thorough coverage of the topic [27]. The insights gained from this FGD were crucial in understanding the challenges and opportunities encountered by these junior leaders in implementing micro-credential programs.

Before conducting the focus group discussion, pilot interviews were conducted with two participants not included in the main study to ensure all questions were relevant and aligned with the study's objectives. Based on this pilot study, the interview procedures and questions were refined. Initially, informants were selected based on their experience in the topic. Participant who met the inclusion criteria were informed about the study's aims and methodology, and in-person interviews were conducted to ensure all questions aligned with the objectives.

The research included five informants from two selected higher education institutions in the North and Central regions of Malaysia. The selection criteria prioritized their active involvement in micro-credentials, focusing on roles such as senior lecturers and program coordinators within their respective faculties. The rich data gathered from the focus group discussions (FGD) were meticulously analyzed using thematic analysis to identify key themes and insights essential to the study. These informants, all academic officers, were selected based on specific criteria, requiring them to hold leadership positions program director or program coordinator, as detailed in Table 1. Their roles place them at the forefront of faculty-level innovation and policy implementation. The focus group discussion was conducted online, with all informants enthusiastically agreeing to participate in the sessions, contributing invaluable perspectives and experiences that significantly enriched the study's findings.

The interview open questions related to the informants' understanding of the concept of micro-credentials, their role as middle leaders and coordinators in facilitate institutional plan efforts, including program planning and management, and an exploration of the readiness of middle leaders in HEIs in Malaysia. The focus group discussion session were facilitate by researcher and research assistant, creating a calm and confident for the informants to freely share their knowledge and engage in active discussions during FGD.

Table 1. Research informant

Designation	Zone	Years of experiences in academic
Program Director	Central	9 years
Senior Lecturer	North	5 years
Senior Lecturer	North	3 years
Program coordinator	Central	4 years
Program coordinator	Central	4 years

This discussion was conducted via an on-line platform to ensure all informants could participate, facilitating exploration in-depth of the readiness associated with micro-credentials in the university setting. To provide a comprehensive perspective, informants with diverse experiences, areas of expertise, and backgrounds were selected for the discussion. The researchers adopted a thorough method for data collection, which included recording, compiling, analyzing, integrating, and synthesizing all information, along with exact transcriptions of the FGD.

The focus group discussion session lasted around 80 minutes, beginning with the researchers providing an overview to the informants. The first question focused specifically on the concept of micro-credentials. The discussion then opened up for the five informants to freely share their views and insights. Later, the questions shifted to focus on their readiness for micro-credentials. However, the researchers carefully moderated the session to ensure the discussion stayed within the study intended scope, context [28].

Furthermore, to ensure precision and trustworthiness, the researchers provided informants with an overall of the suggested themes, allowing them to give feedback, validate the results, and confirm agreement. This triangulation method further reinforced the credibility, rigor, and comprehensiveness of the study, leading to a clear conclusion.

3. RESULTS AND DISCUSSION

The analysis of the focus group discussion led to the identification of five key themes. The study revealed that while most middle leaders were optimistic about the future role of micro-credentials in education, they encountered significant challenges in preparing for their effective implementation within their universities. The five themes that emerged from the analysis were conceptualization of micro-credentials, training and development, infrastructure, quality, and institutional readiness, as outlined in Table 2.

Table 2. Themes and sub-themes of interview protocol

No.	Themes	Sub-themes
1.	Conceptualization of micro-credentials	Definition and micro-credentials concept
2.	Training and development	Lecturer's competency and support
3.	Infrastructures	Sufficiency tools, ICT and funds
4.	Quality	Materials, subject matter expert
5.	Institution readiness	Management and clear direction

3.1. Conceptualization of micro-credentials

Malaysian universities have been recognized as among the countries offering micro-qualification short courses. Malaysia is among the select nations known for its comprehensive and accessible educational offerings tailored to meet the evolving demands of various industries and learners worldwide. These courses, offered through micro-credential programs in universities, provide greater access to education and training, making learning more convenient, inclusive, and accessible for all. Informants A stated that:

"...Malaysia leads to micro-credential. its widely offer by higher education institutions...offer supplementary skills, knowledge in micro-credential value to the student, they also can bring back their own previous qualification..."

Moreover, micro-credentials are widely perceived as creating new opportunities and pathways for education access without borders in the current rapidly advancing technological era. The shift towards remote learning and the need for targeted, efficient learning experiences further propelled the implementation of micro-credentials as a viable educational solution. This surge in interest reflected a broader trend of adapting to the changing educational landscape prompted by the pandemic [10]. Educational institutions have extensively developed their individual platforms to introduce micro-credentials, thereby enhancing distance learning opportunities. As stated by informant E:

"...micro-credentials are beneficial for distance learning through technology tools... and as coordinators, we believe the application of new platform in universities gives micro-credentials big potential for new learning..."

The informants indicated that the courses they provided were complementary to the core program, offering micro-qualification subjects that generally supplement and enhance macro-qualifications, as noted by Informant D:

"...micro-credentials complement our primary programs, adding value to the overall educational experience to the participants with the flexible, easy access programs..."

Micro-credentials were designed to offer meaningful learning for employees. In contrast to macro-credentials, which encompass broader academic achievements like degrees or diplomas, micro-credentials focus on specific, often niche skills with outstanding outcomes. This complementary relationship has become evident as individuals seek to enhance their professional profiles. Micro-credentials enable them to acquire targeted competencies that complement the knowledge provided by macro-credentials [2].

The term micro-credentials is well-known within university leaders and academician. Previous studies indicate that HE leaders' embrace of micro-credentials has the potential to create a transformation shift

in how students, professionals, and institutions perceive and engage in lifelong learning [13]. However, the success implementation of micro-credentials can serve as a foundation for broader and more inclusive knowledge development.

3.2. Training and development

The development of micro-credential programs is generally managed by the university's training center, where academic staff serve as subject matter experts. Essential roles within this center, such as content creators and instructional designers, are vital for designing and structuring these programs. However, these centers are currently facing staffing shortages, a challenge that is further compounded by the continuous need for training and development to meet the rigorous demands of creating micro-credential courses across multiple departments and faculties.

The academic staff, who serve as experts in their respective fields, are tasked with developing micro-credential courses as content developers. However, this additional responsibility has led to their being overextended, which has consequently impacted the prime quality of the micro-credential courses. Informants B and D proposed a solution, stating:

“...This system should include skilled instructional designers and content developers who have specialized knowledge and receive continuous training. These professionals can reduce the workload on lecturers and improve the content in micro-courses...”

“...training and development not only for lecturer but staff for micro-credential courses...”

To ensure readiness of materials of micro-credential, by teaming up skilled instructional designers with subject matter experts, engaging and effective educational materials can be developed through targeted training and development. This collaborative approach improves both teaching quality and the learning experience for individuals pursuing micro-credentials [24].

During the debate and discussion in the FGD, a unanimous consensus emerged regarding the technological proficiency of lecturers, indicating a moderate level of competency in technology, ICT, and software. This can be attributed to several factors. Junior lecturers typically demonstrate greater technological adeptness and familiarity with new tools. In contrast, older lecturers often show resistance to adopting technological advancements. Previous studies corroborate this, noting that younger lecturers are generally more comfortable with technology, whereas older lecturers may resist change [18]. As a result, there is less enthusiasm among this group for embracing pedagogical innovations. Informants C noted:

“...new lecturers may grasp new technologies more quickly, but senior lecturers often show less interest and take longer to complete tasks without support from staff... we need more support from third party to develop interactive content and upload to the system...”

In summary, training and development are essential to the success of micro-credential programs. Effective training and development in human resources are critical factors for the success of any program or learning initiative [29]. University leaders should focus on supporting lecturers by implementing robust support systems and enhancing their technological competency through comprehensive training and workshops. Additionally, fostering ongoing professional development is key to sustained success.

3.3. Infrastructures

To ensure lecturers are well-prepared to create high-quality materials, suitable and up-to-date facilities are essential. This includes effective support teams, modern laboratories and classroom, reliable infrastructure and stable e-learning platforms. These resources are vital for lecturers and coordinators to guarantee the program's long-term sustainability and effectiveness.

The discussion findings reveal that nearly all informants agree on the importance of robust infrastructure for successfully implementing micro-credential programs, emphasizing that it cannot rely solely on coordinators' efforts. Strong infrastructure provides crucial support and motivation, enhancing the overall effectiveness of the program.

“...Micro-credentials can be highly appealing if supported by appropriate resources, such as assistance in creating interactive materials, well facilities, update software, and attractive spaces for material development. Most importantly, not our own pocket money to prepare.”

Enhancing the facilities and infrastructure of Malaysian HEIs enables the significant capture of market share. One key market segment is Malaysia's students in rural and remote areas that favor micro-credentials. Micro-credentials learning system facilitates lifelong learning and enhances workforce competencies and expertise while addressing time constraints [30]. Yet, limited funding remains the major hindrance towards its sustainability. Insufficient funding can impede the ability to attract qualified professionals, invest in innovative technologies, and market the micro-credential programs effectively [1]. Nevertheless, it is essential to acknowledge that micro-credentials and on-line distance learning have become integral to modern education. Embracing these methods is crucial for ensuring the university and HEIs sustainability by fostering a competitive and new digital workforce.

3.4. Quality of material

Discussion and feedback from informants, micro-credential materials still require improvement due to limited resources and challenges in effectively managing ICT, which impedes the development of more interactive and engaging content. However, Informant E noted an exception, highlighting that their micro-credential program had received approval from the university. As stated by Informant E:

"...our micro-credential...is that it takes a long time to develop and approved. We lack expertise in creating these resources, means we still need time improve the content ..."

All informants unanimously agreed that to embrace the global reputation of their micro-credential programs, improving the accreditation content's quality is essential. Malaysia's proactive approach towards the accreditation of micro-credentials involves the formulation of national guidelines, reflecting a commitment to maintaining high-quality standards in this evolving educational landscape. Ultimately, these national guidelines serve as a foundation for a robust and quality-focused ecosystem for micro-credentials in Malaysia, supporting the country's efforts to stay at the forefront of educational innovation and relevance [31].

To ensure the development of high-quality materials, the informant expressed confidence in referencing successful universities and examining international models. A notable example they cited is Universiti Sains Malaysia (USM) and Open University, both of which have effectively attracted industry partners and current students to their on-line distance learning programs, particularly in area such as nursing [21]. The processes of accreditation and credentialing are crucial in the advancement and enhancement of educational programs, involving thorough evaluations by accrediting bodies to ensure that these programs meet established high standards and criteria [29].

3.5. Institution readiness

Institutional readiness is key, and all informants agree that the success of micro-credential programs relies mainly on the university management's readiness and effort. As informant D noted:

"...top-level decisions are crucial, as they influence funding, time allocation, facilities, and overall direction for the micro-credential program. Providing clear guidelines and encouraging all lecturers and staff to recognize the significance of each program for the university and society, as well as understanding the benefits, is essential..."

Informant A agreed with informant E stating that institution readiness in term of training and support more are essential to drive progress. Conversely, informants A, D, and E placed a greater focus on the qualities of support stated that:

"...lecturers is not always got time, they need time to equip and ready to all this things. However, they can be provided through training, assistance to complete and also time..."

This finding is supported by previous research, which indicates that institutional readiness is essential for successfully implementing new directions and programs. It plays a key role in boosting employee productivity, reducing stress, and fostering a positive work environment. Effective readiness can significantly impact overall organizational success and staff satisfaction [32].

University management that assumes responsibility for their leadership, decisions, and strategic direction cultivates a culture of transparency and integrity. This commitment not only builds trust among lecturers but also fosters a deeper sense of connection and investment in their academic roles. When lecturers perceive their leaders as accountable and principled, it often acts as a significant motivating force, enhancing their dedication to their tasks and strengthening their sense of purpose within the institution [1].

Moreover, institutional readiness is closely linked to leadership that sets a positive example for the entire organization. When employees observe their leaders taking responsibility, it creates an environment where individuals feel supported, valued, and motivated to give their best efforts. This positive work culture, emerging from effective leadership, can lead to increased employee engagement and, consequently, improved overall productivity within the organization.

4. CONCLUSION

The findings highlight that middle leaders are addressing a range of issues while preparing to implement micro-credentials at their institutions. These challenges, including limited adoption, resource demands, and facility and training needs, also offer significant opportunities for advancement. Efforts to gain global accreditation and manage financial constraints are positive steps toward improving readiness. Crucially, strong support and accountability from top management can greatly enhance the institution's capacity to effectively implement micro-credentials. The study encourages universities to view micro-credentials as valuable tools with considerable market potential, rather than just additions to traditional credentials. By upgrading facilities, providing thorough training, and building a culture of accountability, institutions can successfully and effectively roll out micro-credential programs. Addressing these areas will better equip institutions to deploy micro-credential programs effectively.

Additionally, this may involve adopting proactive hiring approaches to bring on experienced designers and educators, along with establishing internal development programs to enhance their expertise. Ensuring the readiness of academic staff is crucial, covering their understanding of micro-credentials, access to effective training programs, institutional preparedness, accountability, and the availability of high-quality program materials. Strengthening infrastructure, particularly in terms of software and connectivity, is essential, as a reliable connection is key to the successful implementation of micro-credentials. Furthermore, investing in technology hardware, such as latest multimedia equipment and the latest software, will significantly contribute to creating high-quality courses. Addressing these areas will support the successful deployment of micro-credential programs, enabling institutions to meet evolving educational demands and maintain high standards in program delivery.

The practical implications of this research highlight the current level of readiness among higher education leaders for integrating micro-credentials, offering valuable guidance for strategic adoption and implementation. Policymakers can use these insights to allocate resources more effectively, addressing specific needs and leveraging strengths identified in the study. The findings also aid in the development or revision of policies related to micro-credentials, creating a more supportive and efficient integration environment. These insights contribute to SDG4 by improving educational quality and supporting lifelong learning opportunities. By enhancing readiness through better resource allocation, policy-making, and quality assurance, institutions can elevate educational standards and ensure that micro-credentials meet high standards. This supports SDG4 goal of providing equitable, quality education and promotes continuous personal and professional growth through flexible, targeted learning pathways.

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