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(IJMOE)www.ijmoe.comNAVIGATING THE FUTURE:
STUDENT EXPERIENCES WITH MICRO-CREDENTIALS AS A
LEARNING TOOL`Ainatul Fathiyah Abdul Rahim^{1*}, Nur Hazirah Hamdan², Muhammad Syakir³, Mohd Amar Aziz⁴¹ Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA (UITM), Pahang Branch, Raub Campus, MalaysiaEmail: ainatul@uitm.edu.my² Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA (UITM), Pahang Branch, Raub Campus, MalaysiaEmail: hazirahhamdan@uitm.edu.my³ Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA (UITM), Pahang Branch, Raub Campus, MalaysiaEmail: syakiridris@uitm.edu.my⁴ Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA (UITM), Pahang Branch, Raub Campus, MalaysiaEmail: amaraziz@uitm.edu.my

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DOI: 10.35631/IJMOE.727026**Abstract:**

This paper explores the UMC390 Public Expenditure micro-credential platform developed by the Institute of Continuing Education and Professional Studies (ICEPS) at Universiti Teknologi MARA (UITM). As traditional higher education evolves in response to technological advancements and industry demands, micro-credentials offer a flexible approach to skill acquisition. This study presents an infographic representation of the platform's design, including its module structure, learning activities, and assessment methods, while capturing student perceptions and measuring learning outcomes. Using a case study methodology, the research collected data from 322 students, yielding 305 valid responses. Findings reveal high levels of student satisfaction with course content and delivery, indicating that the modular design enhances engagement and motivation. Notably, all participants expressed a willingness to recommend the course, highlighting its relevance and effectiveness. The results suggest that micro-credentials can effectively complement traditional education by providing accessible, competency-based pathways for upskilling. Despite the positive outcomes, the study acknowledges limitations, such as the need for longitudinal research on the long-term impact of micro-credentials. Ultimately, this paper advocates integrating micro credentials into higher education to better align educational offerings with the evolving labour market.



Introduction

Traditional higher education, often characterised by multi-year degree programs, has long been the primary pathway for individuals to acquire knowledge and prepare for careers. However, the global landscape of education and employment is undergoing a profound transformation, driven by rapid technological advancements, evolving industry demands, and the imperative for lifelong learning. This transformation has paved the way for the emergence and proliferation of micro-credentials.

While the term "micro-credential" is relatively recent, the concept of recognising discrete skills and short-form learning has historical roots. Professional certifications and vocational training have long served similar purposes. Micro-credentials, often referred to as digital badges, nanodegrees, or short courses, represent a granular approach to learning, focusing on specific skills or competencies rather than broad disciplinary knowledge. Their flexible, verifiable, and often industry-aligned nature positions them as a crucial component in bridging the gap between academic offerings and the dynamic needs of the labour market.

Key typologies of micro-credentials include skill credentials (short, non-formal learning hours for specific skills), modules (longer, formal learning hours with assessment options), and brief formal learning programs (more extensive and often linked to specific career goals, potentially mapped to qualification frameworks) (Zdunek *et.al*, 2024). This modularity and focus on tangible skills distinguish micro-credentials from traditional qualifications.

Micro-credentials offer numerous benefits for various stakeholders within the educational and employment ecosystems. One of the benefits of micro-credentials as learning tools is that they are often offered online and in shorter formats, allowing learners to acquire new skills without disrupting their existing work or family commitments (Nguyen *et al.*, 2023). They enable individuals to focus on specific, in-demand skills, making their learning highly relevant to current job market needs. Furthermore, earning micro-credentials can enhance resumes, provide verifiable proof of competency, and increase a learner's competitive advantage in hiring and promotion (Chadwick, 2024).

For higher education institutions, universities can quickly develop and offer micro-credentials aligned with emerging industry demands, bridging the skills gap and demonstrating institutional agility (Chadwick, 2024). Additionally, micro-credentials can also strengthen industry partnerships. By collaborating with industry partners to develop micro-credentials, academia and the workforce can foster stronger ties, leading to customised programs, experiential learning opportunities, and curriculum development informed by real-world needs (Musseau, 2024). In addition, the integration of micro-credentials into current degree programs can empower students at higher education institutions by providing them with more specialised skills and increasing the value of degrees in the labour market. All of these benefits demonstrate that micro-credentials play a crucial role as learning tools in education.

Objectives Of the Paper

The primary objective of this research paper is to present an infographic representation of the UMC390 Public Expenditure micro-credentials platform, registered under the Institute of Continuing Education and Professional Studies (ICEPS), UITM. This representation outlines the module structure, learning activities, and assessment methods, providing a comprehensive view of the program's design. Secondly, this paper aimed to capture student perceptions and measure outcomes related to the micro-credentialing learning experience.

Literature Review

Micro-credentials are concise, competency-based certifications awarded to learners upon successful demonstration of specific skills, knowledge, or competencies within a focused domain. They differ from traditional credentials by emphasising modularity, flexibility, and stackability, enabling learners to acquire targeted expertise efficiently without the time and resource demands of complete degree programs. Typically issued by accredited educational institutions, professional associations, or industry organisations, micro-credentials often include articulated assessment criteria and are accompanied by digital badges or certificates that facilitate recognition and portability across educational and professional contexts.

This innovative form of credentialing supports personalised learning pathways and lifelong learning by allowing learners to customise their education in alignment with evolving labour market demands, personal career goals, and skill development needs. In particular, micro-credentials prioritise practical, job-relevant skills that augment employability and provide immediate, recognisable outcomes to both learners and employers. Moreover, they contribute to bridging gaps in traditional education by offering accessible opportunities for upskilling, reskilling, and professional development, thus enhancing learner motivation, engagement, and success (Allen & Seaman, 2021; Commonwealth of Learning [COL], 2025; Lumina Foundation, 2025; AACSB, 2024).

Increasingly, micro-credentials are integrated into broader qualification frameworks through "stacking" strategies that enable accumulation toward formal degrees or certifications, promoting coherence and transparency across educational and occupational sectors. Quality assurance standards and credit transfer mechanisms are advancing globally to strengthen trustworthiness and scalability of micro-credential initiatives (European Commission, 2024; Marshall University, 2025).

Course Quality and Design

High-quality course design is consistently identified as a significant determinant of micro-credential effectiveness. Literature emphasises that relevant, engaging, and structured content enhances learner motivation and engagement, while poorly designed courses act as barriers to successful outcomes. Key factors include the ease of use of the online environment, the usefulness and context-relevance of the content, the enjoyment and engagement fostered by the course materials, and the precise alignment between intended outcomes, assessments, and instructional strategies (Allen & Seaman, 2021). Moreover, well-designed micro-credentials provide explicit guidance on requirements for completion and incorporate regular feedback mechanisms for learners. The scaffolding of modules, clarity of learning outcomes, and inclusion of hands-on, practical elements also strengthen learner experiences (eCampusOntario, 2023).

Learner Motivation and Experience

Learner motivation is driven by personal, professional, and social factors, playing a critical role in completion and overall effectiveness. Studies reveal that learners are attracted to micro-credentials due to personal fulfilment and curiosity, alignment with career progression and job market needs, and flexibility that accommodates work and family commitments, especially among distance learning students. Most importantly, micro-credentials emphasise practical knowledge over purely theoretical knowledge, supporting the application of real-world skills (Brown & Smith, 2022). Motivation is further sustained when employers or professional bodies recognise credentials. However, challenges such as self-organisation and digital literacy highlight the need for appropriate orientation and learner support mechanisms (Tamoliune et al., 2023; Abdul Halim, Luaran, & Lee, 2024).

Another element enhancing the student learning experience is support for self-regulated learning. Micro-credentials promote goal-setting, monitoring progress, and reflective practices critical for sustained motivation and deeper engagement (Digital Promise, 2023). Positive feedback loops also play an essential role, as earning micro-credentials provides reinforcement that encourages continued learning, heightening persistence and motivation (Guggisberg & Guggisberg, 2025). Furthermore, micro-credentials break learning into bite-sized, clearly defined milestones, which offer immediate, tangible success signals and sustain student engagement throughout the learning journey (Ewance, n.d.).

Technology and Learning Platforms

A robust, user-friendly technological infrastructure is essential for the success of micro-credentials, particularly given their frequent online or blended delivery (Garcia & Wilson, 2023). Reliable connectivity, intuitive learning management systems, and accessible digital resources support learner participation and satisfaction. Enhanced features such as interactive content, video, and synchronous/asynchronous communication tools further enrich learning and accommodate diverse learner preferences (Kumar et al., 2022).

Research Methodology

This study employs a case study approach to the UMC390 Public Expenditure on the micro-credential platform, registered by the Institute of Continuing Education and Professional Studies (ICEPS) at Universiti Teknologi MARA (UITM). This case study method enables a thorough and contextual examination of this specific educational platform, providing insight into its design and impact on student learning. An infographic illustrating the UMC390 platform's structure was developed to provide a clear overview of the module layout. This includes five subtopics, complemented by three quizzes, three instructional videos, and a final assessment, all of which are supported by learning activities. These components collectively form the core learning and evaluation processes of the platform.

Data collection involved administering an entrance survey to gather initial student perceptions and baseline data. Throughout the course, the platform's progress tracking feature was used to monitor and manage student engagement and activity completion. Quantitative data was collected to provide a comprehensive understanding of the topic of Public Expenditure. Survey responses and assessment results were statistically analysed to measure the platform's effectiveness in promoting engagement and skill development, thereby capturing students' personal experiences and insights regarding the micro-credentialing process. By focusing on the UMC390 platform as a singular case, the study offers an in-depth examination of how

micro-credential programs operate in a real-world educational context. This case study design contributes valuable knowledge about the practical applications and outcomes of micro-credentials, highlighting their role in enhancing personalised learning experiences.

The population of this study consists of 322 students who have enrolled in the micro-credential platform, particularly for the course of Public Expenditure (UMC390). Public expenditure is one of the topics covered in the Public Financial Administration (PAD370) course that students take in their final semester. For the intake from October 2024 to February 2025, they were divided into nine groups. Based on the total of 322 students, the valid responses for data analysis and representation of participation from nine distinct groups were 305. The reduction in the sample size was due to duplicate and incomplete participation, as indicated by the responses from the exit survey.

Data findings and analysis

The analysis of the UMC390 platform is supported by a series of evidence diagrams, which illustrate its comprehensive structure and key functionalities. These diagrams play an essential role in validating the research findings, visually substantiating the modular design, learning activities, progress monitoring, and certification of completion.

Infographic Structure Layout

The evidence diagrams offer a detailed visual breakdown of the UMC390 Public Expenditure platform as follows:

Module Overview

Outlines the hierarchical organisation of the learning modules, providing a blueprint of the educational content delivered through the platform.

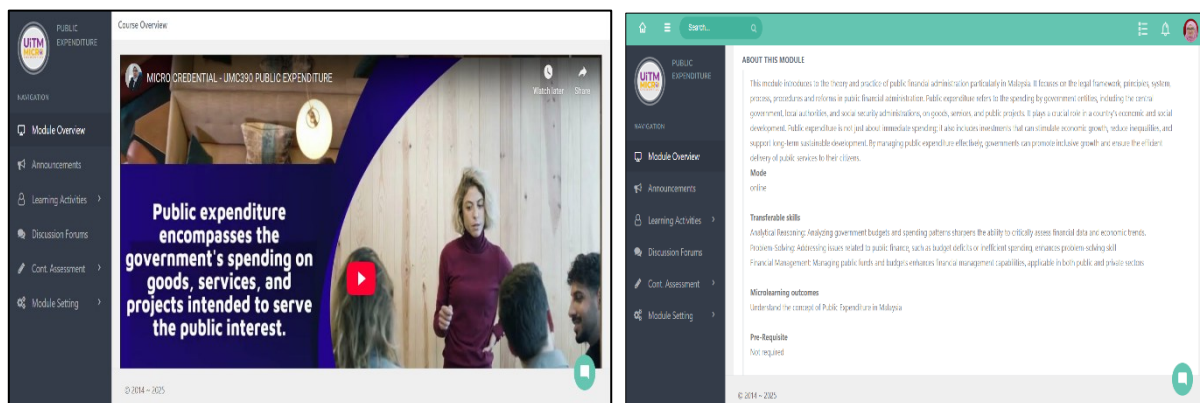


Figure 1: Module Overview Homepage

Source: (UMC390 Public Expenditure Micro-Credential Platform)

Learning Activities

Demonstrates the diverse instructional components, which include five subtopics that scaffold learning progression, three quizzes to evaluate ongoing comprehension, three video teaching materials to enhance engagement and understanding, and one final test to assess cumulative achievement.

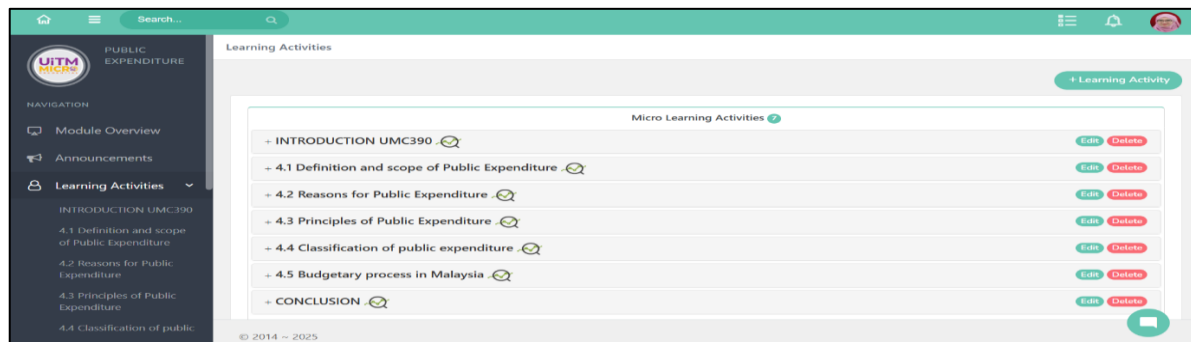
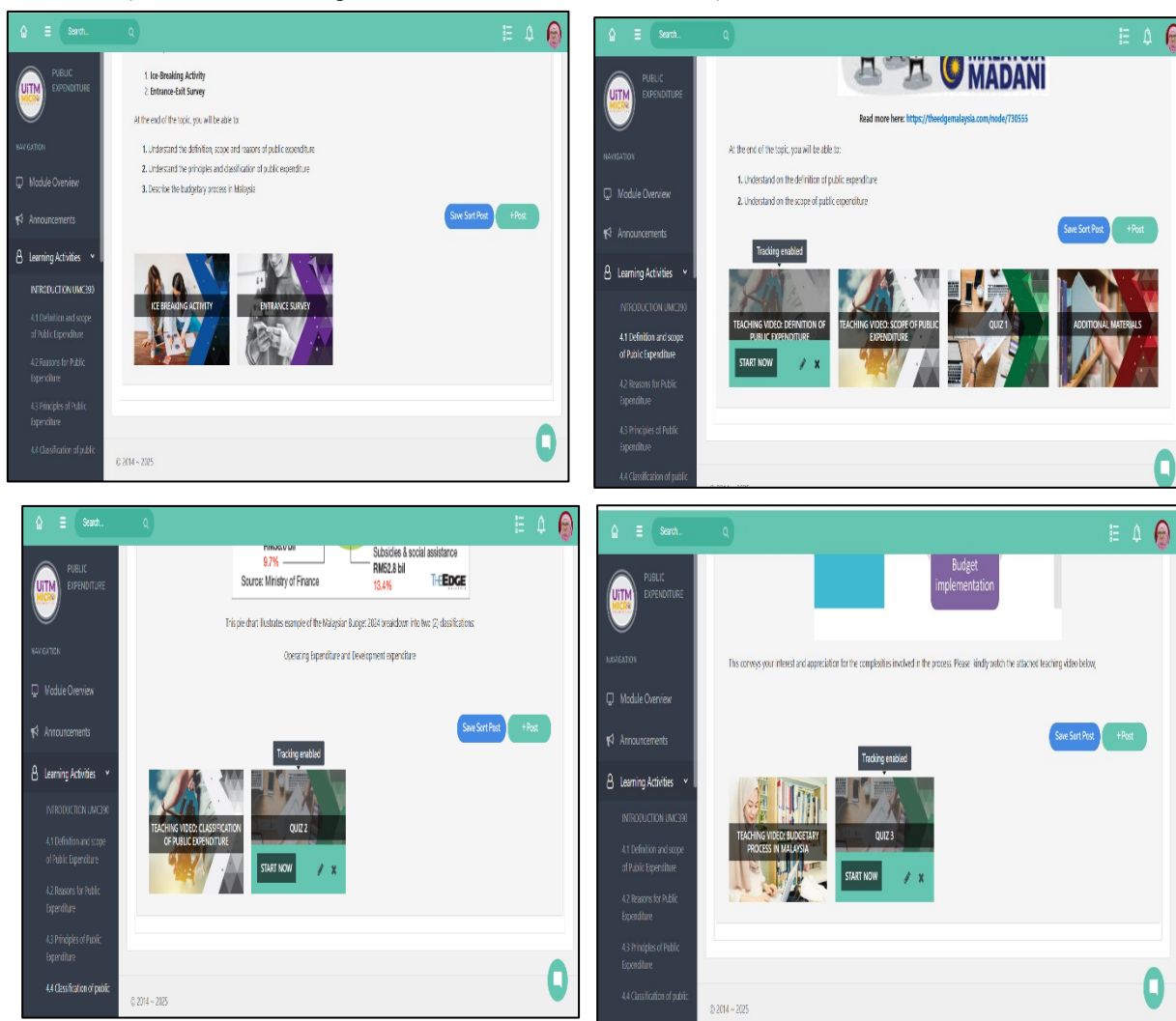


Figure 2: Learning Activities Structure

Source: (UMC390 Public Expenditure Micro-Credential Platform)



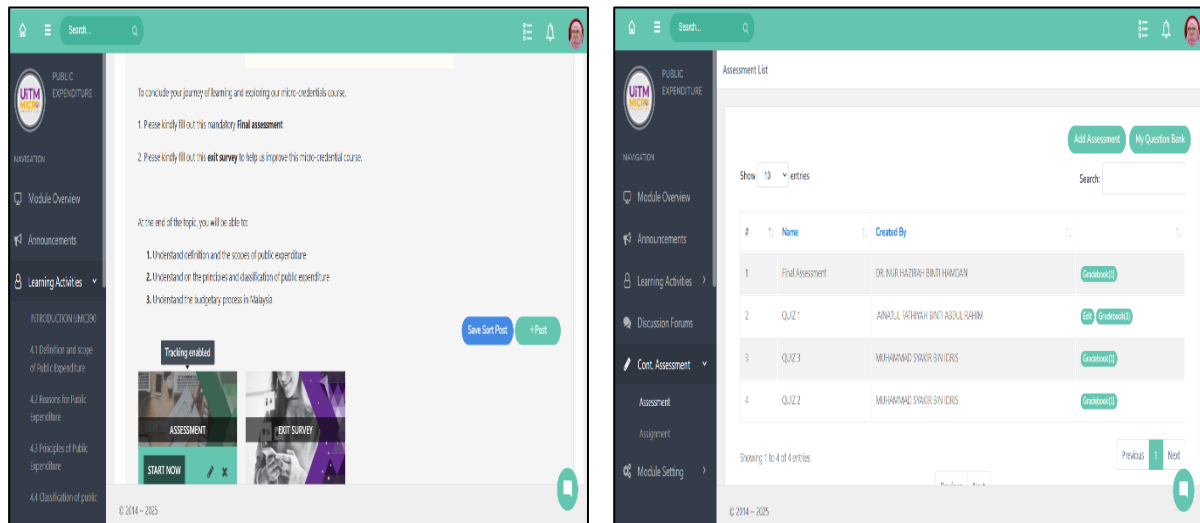


Figure 3: The Compilation of Learning Activities section consists of five subtopics, teaching videos, learning content, and three quizzes.

Source: (UMC390 Public Expenditure Micro-Credential Platform)

Features and Applications

The diagrams further highlight the platform's distinctive features that support student learning:

- **Activity Management:** Visual representations illustrate how activities are structured and managed, allowing both students and instructors to track participation and completion.
- **Progress Tracking:** Integrated progress indicators within the diagrams enable learners and educators to track their advancement through the module, promoting accountability and sustained engagement.

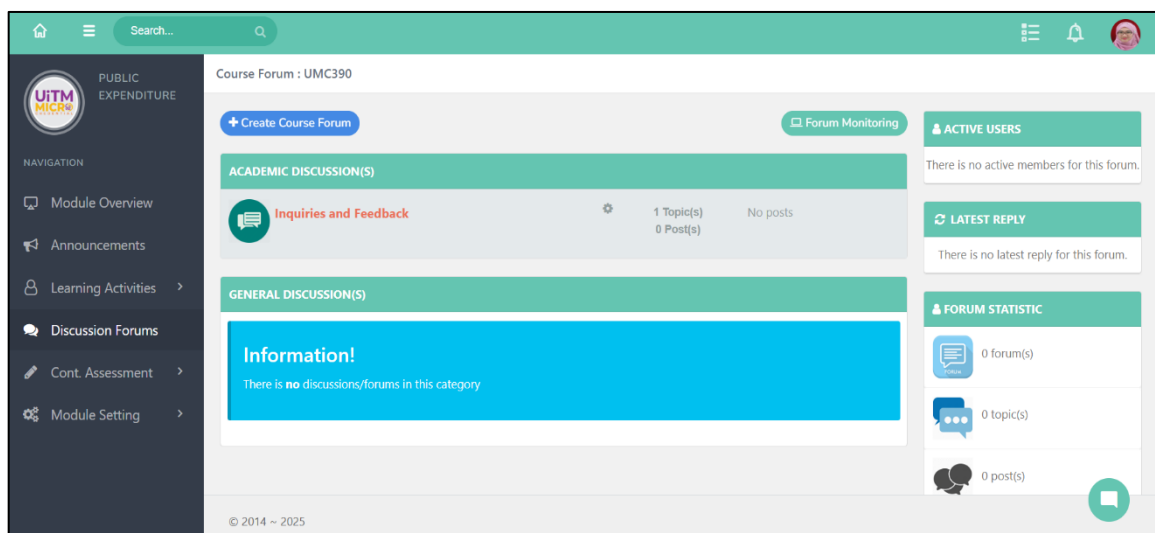


Figure 4: Activity Management to Allow Participation if any Inquiries and Feedback between Educator and Learners

Source: (UMC390 Public Expenditure Micro-Credential Platform)

STUDENT NAME	STUDENT ID	4.1 Definition and scope of Public Expenditure	4.2 Reasons for Public Expenditure	4.3 Principles of Public Expenditure	4.4 Classification of public expenditure	4.5 Budgetary process in Malaysia	CONCLUSION	INTRODUCTION UMC390
ABDUL AMIRUL BIN ABDULLAH	2022877384	100%	100%	100%	100%	100%	100%	100%
ABSHA AFIAH BINTI ABU	2022480016	100%	100%	100%	100%	100%	100%	100%

Figure 5: Progress Tracking of Students by Learning of Activities and Summary by Students

Source: (UMC390 Public Expenditure Micro-Credential Platform)

Certificate Completion Evidence

A dedicated segment of the evidence diagrams details the certificate completion process:

- **Achievement Documentation:** The awarding of certificates is visually depicted, confirming the learner's successful navigation of course requirements.
- **Outcome Attainment:** The completed certificate serves as a tangible record of skills acquired and learning outcomes achieved, reinforcing the effectiveness of the micro-credential system.

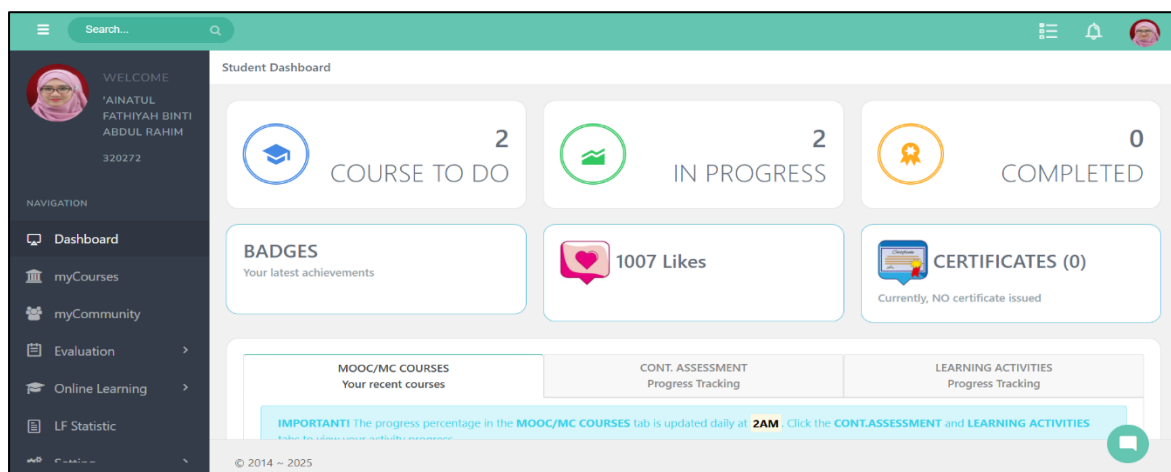


Figure 6: Student Dashboard to Track Achievement and Attain Certification

Source: (UMC390 Public Expenditure Micro-Credential Platform)

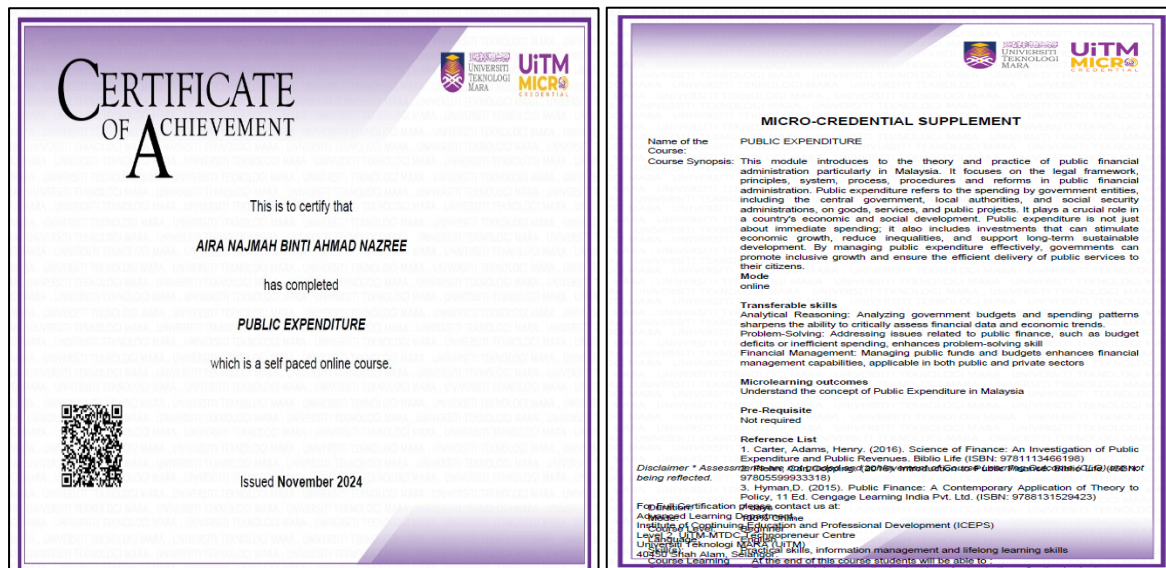


Figure 7: Example of Certificate of Achievement Upon Completion

Source: (UMC390 Public Expenditure Micro-Credential Platform)

In conclusion, by incorporating these diagrams in the data findings and analysis section, the research demonstrates how the micro-credentials platform's structure, features, and documented outcomes collectively underpin enhanced student engagement and measurable skill acquisition. The quantitative findings in the following sections will also support the visual evidence provided by these diagrams.

Analysis of Exit Survey

By using an exit survey, this study aims to capture student perceptions and measure outcomes related to the micro-credential platform. Based on the exit survey mean scores by group for Question 1 (Q1), as presented in Table 1, students generally perceived that the course learning outcomes were successfully achieved and clearly explained. A high level of satisfaction was indicated by the mean averages, which ranged from 4.30 (AM1105B) to 4.70 (AM1105F). The group AM1105F received the highest score (4.70), indicating that its teaching strategies were effective in communicating the learning objectives.

Table 1: Summary of Exit-Survey Mean Scores by Group

Group	Q1 (Mean)	Q2 (Mean)	Q3 (Mean)	Q4 (Mean)
AM1105A	4.58	4.52	4.64	4.31
AM1105B	4.30	4.39	4.55	4.48
AM1105C	4.62	4.65	4.51	4.43
AM1105D	4.67	4.64	4.64	4.39
AM1105E	4.52	4.66	4.66	4.59
AM1105F	4.70	4.74	4.65	4.70
AM1105G	4.66	4.63	4.61	4.50
AM1105H	4.64	4.64	4.64	4.47
AM1105I	4.64	4.64	4.67	4.69

Source: (UMC390 Public Expenditure Micro-Credential Platform)

Question 2 (Q2) assessed the efficacy of the learning materials in terms of student engagement. The overall mean was consistently high, ranging from 4.39 to 4.74, indicating that students found the course materials to be interesting and beneficial to the learning process. Classes AM1105F (4.74) and AM1105E (4.66) had the highest levels of engagement, indicating that videos, readings, and quizzes were used effectively. However, classes AM1105B (4.39) were below average, suggesting a lack of effectiveness in using interactive elements to deliver materials to students.

The majority of students rated the course content highly, with mean scores ranging from 4.51 to 4.66. Overall, these elevated scores suggest that students valued the organisation of the content, the pertinence of the subject matter, and the precision of the information presented in the course. No class received a score below 4.50, signifying a generally favourable evaluation.

The average score of the learning platform in this study was slightly lower than that of other questions, with a range of 4.31 (AM1105A) to 4.70 (AM1105F) in terms of ease of use. It suggests a degree of variability in the digital platform's user experience. Classes AM1105F and AM1105I achieved the highest scores (4.70 and 4.69), respectively, while AM1105A exhibited the lowest score (4.31), which may be indicative of the students' digital skills or technical difficulties.

Table 2: Percentage of Students Feedback by Group

Group	Q5 (%)	Q6 (%)
AM1105A	97.0	100
AM1105B	91.0	100
AM1105C	86.5	100
AM1105D	84.8	100
AM1105E	93.1	100
AM1105F	96.3	100
AM1105G	89.5	100
AM1105H	97.2	100
AM1105I	97.4	100

Source: (UMC390 Public Expenditure Micro-Credential Platform)

According to the student feedback presented in Table 2, the course fulfilled students' expectations regarding the enhancement of their knowledge. All groups exhibited a high percentage of affirmative responses, ranging from 84.8% to 97.4%, signifying that the majority of students were content with the course's effectiveness in enhancing their knowledge and understanding, particularly regarding public expenditure.

Regarding Question 6 (Q6), all students would recommend this course to others. All groups recorded 100% "Yes" responses, reflecting the students' confidence and appreciation for the quality and impact of the course they took. It also reflects that the course was considered highly relevant and valuable by all students.

Overall, the findings indicate that students were satisfied with the course content and delivery. The majority of students agreed they would recommend this course to others. It demonstrates the effectiveness of the teaching approach as well as the high level of student satisfaction with the course through the use of this platform.

Conclusion

This study provides substantive evidence that micro-credentials function as an effective and transformative pedagogical tool, enhancing student engagement and enriching learning experiences within higher education contexts. Through the examination of the UMC390 Public Expenditure micro-credential platform, the findings demonstrate that well-structured, competency-based micro-credential programs substantially contribute to increased student motivation, deeper knowledge acquisition, and the development of practical, job-relevant skills.

Empirical data obtained through student surveys consistently indicate elevated levels of engagement and satisfaction with various instructional components, including multimedia content, assigned readings, and interactive assessments. Such elements collectively foster a positive overall learning experience. The modular architecture of micro-credentials, characterised by explicit learning objectives, applied activities, and timely and constructive feedback, facilitates the efficient and flexible attainment of targeted competencies. This design aligns effectively with the needs of diverse learner populations, particularly working professionals and lifelong learners, seeking adaptable educational pathways.

Moreover, positive student perceptions substantiate that micro-credentials effectively reinforce specialised subject matter mastery, which, in this case, is in the domain of knowledge related to public expenditure, while complementing, rather than supplanting, traditional degree programs. The modality promotes learner autonomy by enabling self-paced progression and the accumulation of meaningful credentials acknowledged by both academic institutions and professional communities. Despite these promising outcomes, the study acknowledges inherent limitations, notably the need for longitudinal research addressing the sustained impact of micro-credentials on career advancement and the challenges associated with broader institutional adoption. Nonetheless, the evidence underscores the imperative for educators and policymakers to embed micro-credentials within curricular frameworks to expand personalised and flexible learning opportunities that respond to heterogeneous student needs and the evolving demands of contemporary labour markets. In summary, micro-credentials emerge as a significant mechanism to democratise higher education, foster lifelong learning, and bridge the gap between academic qualifications and practical competencies. Consequently, they equip learners with the skills and credentials necessary to navigate the dynamic future of education and work more effectively.

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