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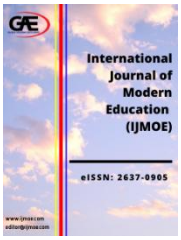

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ENHANCING STUDENT DEVELOPMENT IN CREATIVE MULTIMEDIA TECHNOLOGY: A CONTENT ANALYSIS OF EDUCATIONAL PRACTICES IN MALAYSIA

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Abstract:

This research examined how Malaysia's educational practices support the development of students enrolled in the Creative Multimedia Technology (CMT) program. A qualitative content analysis was conducted to complete the research study using a combination of the curriculum, institutional guidelines, and articles from published literature reviews to find common pedagogical trends and barriers. Based on the content analysis, there are three core themes identified throughout the analysis: (1) integration of project-based experiential learning; (2) industry-aligned competencies play a critical role in

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enhancing graduate employability and workforce readiness; and (3) digital creativity significantly enhances student engagement, motivation, and collaborative learning experiences. Furthermore, Malaysian institutions increasingly integrate collaborative digital platforms and industry-oriented learning environments to strengthen practical skill development. However, there are also barriers that hinder the successful execution of these three themes, such as infrastructure readiness, the long-term success of collaboration with industry, and the adoption of emerging technologies such as virtual reality and interactive media. Strategies identified to significantly enhance student success include enhancing digital resources, creating stronger partnerships between educational institutions and companies, and ensuring continuous learning for educators. These findings offer practical and policy-relevant implications for higher education institutions, curriculum developers, and policymakers seeking to strengthen CMT education and improve graduate readiness for the digital creative industry.

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Keyword:

Competency, Creative Multimedia Technology (CMT), Pedagogical Integration, Student Engagement

Introduction

Changes to teaching processes are due to the fast-paced progress of the global digital environment and how this affects CMT education (Creative Multimedia Technology). Advanced tools and pedagogical methods are required to build student capabilities in order to improve the effectiveness of learning (Adnan et al., 2021). Creative multimedia technology, or CTM, is an interdisciplinary field of study that employs digital technology and an interactive learning environment to improve the efficacy of education by applying multiple formats and media in the creation of new and unique ideas (Plodkaew et al., 2025). CTM is another interdisciplinary area of study that utilizes digital tools and interactive environments to enhance learning efficiency and support creativity by using a variety of media formats (Alhulail and Singh, 2023). This methodological approach allows the learner to develop the technical skills required to be digitally competent (i.e., meet the needs of the workforce of tomorrow (DeWitt and Alias, 2023).

The integration of Technology with national educational advances in Malaysia has positively impacted the way teaching is delivered. The transformation from the traditional chalk-and-talk approach to a digital learning environment is a result of the extensive use of information and communication technologies (ICT) in the delivery of education. (Salsidu et al., 2017). Strategic coordination is evidenced by the seventh initiative of the Ministry of Education, which specifically targets the improvement of teaching in the classroom through the systematic use

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of technology (Jalel et al., 2023). The Ministry of Education has launched an ambitious educational action plan aimed at improving the quality of Malaysian students to be comparable to developed countries, by focusing on critical, creative, and innovative thinking skills (Hassan et al., 2023).

The Malaysia Education Development Plan makes evident its commitment to this transformation through the integration of Critical Thinking, Entrepreneurship, and ICT literacy into the curriculum; thus creating people with technical and creative skills (Hoe et al., 2019). While some progress has been made towards implementing digital pedagogy in practice, Malaysian teachers often lack creative digital pedagogical skills, which hinders their ability to effectively integrate digital technology and promote student creativity (DeWitt and Alias, 2023).

In order to meet the rapidly evolving digital technology environment and the growing demand for digital creative skills in Malaysia, higher education institutions are focusing more on improving Creative Multimedia Technology (CMT) programs. The goal is to develop graduates who not only have the technical skills necessary to function in a digital workplace but also the ability to think critically, innovate, and adapt to changing work environments. Student development in this field is increasingly being recognised as a key priority in the national agenda; thus, it is important to consider the methods through which students acquire technical skills and how they apply those skills in complex, real-life situations ("Journal of Learning and Teaching in Malaysia", 2021).

However, there is a growing focus on CMT education in Malaysia; there has yet to be a meaningful methodology behind assessing the existing education quality and methods for supporting student development and readiness for industry. Most current research looks at either digital pedagogy or integration of technology independently without consideration for how experiential learning, competency-based skills aligned with the industry, and their creation overlap within Malaysian CMT programs (Adnan et al., 2021). In addition, there continues to be a gap between the skills gained from higher education and the changing nature of the digital creative industry, where businesses today have new expectations around practical skills, teamwork, and adapting to the use of new technologies. Therefore, more research should be conducted that examines the relationship between current teaching methods, national goals for education, and preparing individuals for the workforce.

This disparity emphasizes the urgent need to investigate the obstacles that prevent educators from effectively implementing mobile learning and multimedia activities produced by students, which is important to bridge the gap between traditional pedagogy and the demands of the digital economy (Ariffin et al., 2018). Consequently, this study aims to analyse the extent to which current educational practices in Malaysian higher education institutions align with the Malaysia Education Development Plan 2013–2025, specifically focusing on the integration of creative multimedia technology to develop holistic, entrepreneurial, and balanced graduates (Leow and Neo, 2023).

Objectives

1. To identify key pedagogical themes and industry-aligned competencies emerging from the content analysis

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2. To examine the challenges and propose strategic improvements for enhancing student development in CMT education
3. To examine the integration and effectiveness of key educational themes, specifically project-based and experiential learning, industry-aligned competencies, and the role of digital creativity in shaping student engagement.

Literature Review

The educational sector has been significantly influenced by the new improvements in the digital sector. This impact can be seen in the new methods of teaching and learning in fields of education that involve digital creativity and multimedia. Malaysian educational policies, such as the Malaysia Education Blueprint, address changes in the classroom with the use of information and communication technologies (ICT) and the incorporation of new pedagogy that requires the use of higher-order thinking, as well as the preparation of students to be productive in the digital economy (Hoe et al., 2019; Jalel et al., 2023). These efforts demonstrate the Malaysian government's focus on producing technologically savvy graduates capable of supporting knowledge-based industries. While these policies have been implemented, structural and teaching challenges remain that hinder the proper integration of digital technology in higher education. A notable challenge is the gap that remains between what is expected in the policies and what is done in the classroom. Although the higher education institutions in Malaysia have been encouraged to use new pedagogy that is technology-based, most of the teaching staff have been seen to rely on teaching methods that are traditional, such as lecturing and teaching with the aid of a textbook (Adnan et al., 2021). This disparity tends to create a gap between what students want in terms of learning and what teachers are willing to provide in terms of teaching. Current learners utilize mobile technologies, multimedia channels, and interactive learning resources, while academia may not replicate every aspect of these digital learning phenomena. This discrepancy may further restrict the experiential and practice-oriented learning opportunities available in mainly creative multimedia technology (CMT) disciplines, where digital tool usage is imperative (Ariffin et al., 2018).

The challenge is further complicated by the willingness of educators to embrace innovative digital pedagogies. CMT educators are not only expected to impart knowledge but also to provide opportunities for students to interact in open and creative learning contexts to play and work with various multimedia and digital collaboration technologies. Nevertheless, research has shown that numerous educators still struggle to adapt to these changing circumstances because of the insufficient digital pedagogical skills and the limited experience with the latest technologies, such as interactive media, immersive environments, and virtual reality (DeWitt & Alias, 2023). Therefore, the lack of technology-assisted learning practices is apparent in educational institutions, potentially curtailing students' creative and technical skills.

According to Kolb's (1984) Experiential Learning Theory (ELT), learning is more meaningful through a cyclical learning process of: 1) Concrete Experience, 2) Reflective Observation, 3) Abstract Conceptualization, and 4) Active Experimentation. The theory states that through participating in engaged learning experiences, students create a better understanding through active learning experiences than they do through passive learning experiences (theoretical learning). In the area of Creative Multimedia Technology, experiential learning plays a significant role in the production process and requires students to apply theoretical concepts and design a project through practical application, such as digital design, video production, and

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collaborating with their peers across a variety of multimedia platforms. However, if the teacher primarily teaches or presents lectures without providing a hands-on learning experience, it is unlikely that the student will fully realize the benefits of experiential learning, particularly concerning student creativity and technique mastery.

The second greatest concern, aside from the pedagogical-related issues, is the disconnect between the training students receive and what the digital media industry expects from them. Digital media industries expect their new hires to have sound technical knowledge/skills; however, that is only part of what the digital media industry is looking for in their new hires. They want employees who can work productively with other employees, and they want individuals who are innovative and able to find solutions to problems. This concern falls within the framework of human capital theory, which posits that education and training are a means of increasing the economic value of an individual and ultimately the productivity of a nation through the acquisition of skills that are relevant in the labour market (Becker, 1964). In this regard, the higher education sector is fundamental in the process of creating and developing human capital, and the degree to which higher education is able to do this is predicated on the relevance of the curriculum with respect to the dominant skills and technologies of industry. The relevance of this issue is evident in the collaboration of various institutions with the industry in the Creative Multimedia Technology programs. The degree to which the partnerships are sustainable and effective is determined by the state of the relevant infrastructure, the extent of industry collaboration, and the availability of modern digital technologies.

Given these challenges, there is a clear need to examine how current educational practices in Malaysian creative multimedia technology programs support student development and align with both pedagogical principles and industry expectations. By analyzing curriculum documents, institutional guidelines, and relevant academic literature, this study seeks to identify key pedagogical themes, evaluate existing challenges, and propose strategies to strengthen the integration of experiential learning, industry-aligned competencies, and digital creativity in CMT education. Such insights are essential to ensure that creative multimedia technology programs effectively prepare graduates with the skills, creativity, and adaptability required in the rapidly evolving digital economy.

Research Methodology

Conceptual Framework

This study utilises both Experiential Learning Theory (Kolb, 1984) and Human Capital Theory (Becker, 1964) as the basis of its conceptual framework, which serves as the roadmap for examining how student development in CMT occurs and how the graduates are prepared for the industry. Human Capital Theory posits that education and training are strategic facilitators of productivity and enhance the skills and economic value of individuals involved in CMT through student development and providing graduates with qualifications to be successful in the workforce. Therefore, the framework delineates three independent variables (IVs), and those variables will jointly influence the dependent variable (DV), which in this case is student development in CMT. As stated in Figure 1, the model includes curriculum documents, institutions, and published literature reviews to establish similarities between pedagogical practices and documented challenges, as well as provide evidence that supports using a

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framework for improving student outcomes in student development within CMT and preparing students for success in the workforce.

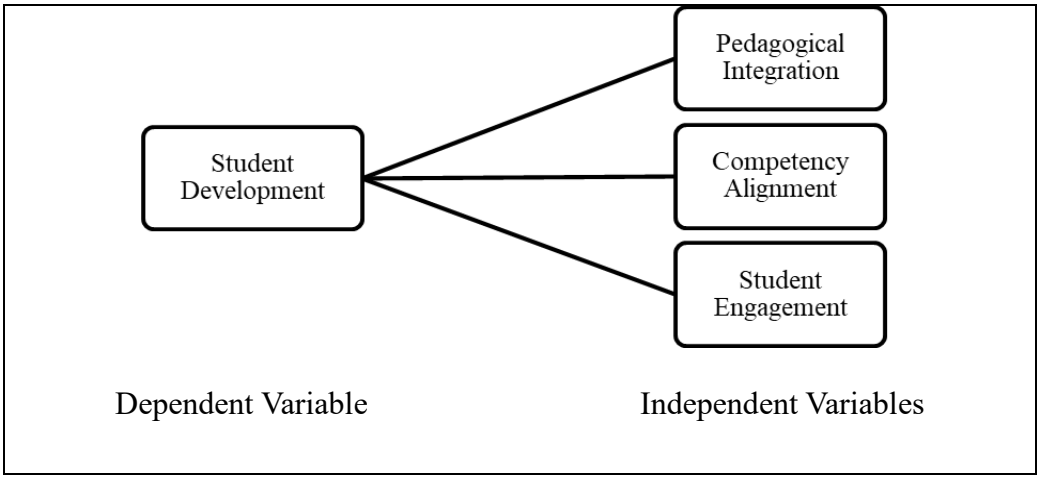

Figure 1: Conceptual Framework

Source: Author's own work

Research Design

This study employed a qualitative content analysis approach to examine how curriculum documents, institutional guidelines, and published literature reviews were used to identify the common pedagogical patterns and challenges that contribute to student development in creative multimedia. The idea behind selecting content analysis was to systematically code and interpret the text-based data so that patterns and themes could be discovered. NVivo 11 software was then utilised to group the data into clusters and generate insights from the data across multiple documents.

Data Analysis Procedure

NVivo 11 software was used for qualitative thematic content analysis of the collected documents. Curriculum documents, institutional guidelines and academic literature were imported into NVivo and systematically coded. Open coding was completed first to identify the recurring concepts, keywords and pedagogy practices associated with student development in CMT education. Each code was grouped into a larger concept based on conceptual similarity through the iterative process of comparison until three major themes emerged: 1) integration of project-based experiential learning; 2) industry-related competencies; and 3) digital creativity in student engagement.

To provide greater analytical consistency, data were triangulated across the three document groups to identify recurring patterns and similarities across institutions. The themes were then interpreted using the conceptual frameworks of Experiential Learning Theory and Human Capital Theory to explain how educational practices facilitate student development and workforce readiness in Malaysian CMT programs.

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Sample

The study's method consisted of qualitative document analysis in relation to educational practices supporting the development of students in Creative Multimedia Technology (CMT) programmes in Malaysia. The data collected came from three significant sources: the Curriculum, Guidelines, and Published Academic Literature. A total of fourteen documents dated from 1984 to 2025 were reviewed for this study, including Government Blueprints, Institutional reports, and Academic Publications. The analysis was conducted using a peer-reviewed method along with the attached literature review as evidence supporting the analysis.

Table 1: Sources of Data for Content Analysis

Data Category	Type of Documents	Number	Purpose
Curriculum Documents	Program structure, course syllabus, and learning outcomes from Multimedia University, 2023; Includes experiential learning components, studio-based production courses, and internship modules (Universiti Teknologi MARA, 2023); Strong digital media and interactive design curriculum, industry collaboration exposure (Universiti Malaysia Sarawak, 2023); Industry-aligned multimedia production and digital tools integration (Asia Pacific University of Technology & Innovation, 2023).	4	Identify pedagogical practices
Institutional Guidelines	Malaysian Qualifications Agency (MQA) – Programme Standards (Malaysian Qualifications Agency [MQA], 2020); Malaysia Education Blueprint 2015–2025 (Ministry of Higher Education Malaysia, 2015); Malaysia Digital Economy Corporation (MDEC) (Malaysia Digital Economy Corporation, 2022); TalentCorp Malaysia – Critical Occupations List (Talent Corporation Malaysia, 2023);	4	Examine institutional alignment
Academic Literature (Peer-Reviewed – Supporting Literature Review)	Peer-reviewed journals such as Experiential Learning by Kolb, D. A. (1984), Human Capital Theory by Becker, G. S. (1964), Project-Based Learning by Thomas, J. W. (2000), Digital Creativity in Education by Henriksen, D., Mishra, P., & Fisser, P. (2016) and Industry–Academia Collaboration Perkmann, M., et al. (2013). Educational Reform Through Industry Collaboration by Sah et al., 2026	6	Triangulation and contextual support
Total		14	

Source: Author's own work

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Sample Curriculum Documents

The selected Malaysian higher education institutions that provide either Creative Multimedia Technology or a similar course were examined in detail to find any of the available course curriculum documents about them (i.e., program structure, course descriptions, expected student knowledge/skills, and assessment rubrics) that have been through official publication/publicity channels, which ensured their reliability and transparency for use in teacher-training programs. Only documents determined as having relevance to the same teaching methodologies, relation to industry expectations, and components of digital creativity were selected.

Institutional Guidelines

We collected institutional-level documents, including teaching/learning policies; frameworks for industry collaboration; guidelines for internships; and digital learning strategies, that illustrate the institutional priorities with respect to experiential learning, engagement with industry, and the use of technology in CMT education.

Academic Literature (Peer-Reviewed – Supporting Literature Review)

In order to provide context and triangulate results, multimedia learning, project-based learning, industry-aligned competencies, and digital creativity were investigated using an integrated database of peer-reviewed papers and policy reports. The materials in Table 1 reflect literature within defined theoretical constructions published between 1984 and 2016; additionally, we prioritised new literature published since then to better align with technological changes.

Result

The results are drawn from document analysis of curriculum documents, institutional guidelines, and academic literature, which is supported by a literature review, complemented by NVivo-assisted clustering of key themes.

Pedagogical Integration

Figure 2: NVivo Word Cloud Analysis of Pedagogical Integration
Source: Author's own work

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The word frequency analysis generated through NVivo 11 reveals a strong emphasis on experiential and practice-oriented pedagogical approaches within CMT education in Malaysia. Predominantly used, "pedagogical," "practical," "hands-on," and "apply" refer to a central focus for learning activities to be structured primarily as applied/hands-on experiences; therefore, the implication is that CMT program learning activities utilise active strategies that follow the principles of experiential education because knowledge is constructed through direct involvement and reflective practice (Kolb, 1984).

In support of this theory, the prevalence of words like "teamwork," "innovation," "skills," and "experience" points to the collaborative and creative nature of the curriculum. These patterns indicate that multimedia education emphasizes problem-solving, working on cooperative projects, and completing innovative tasks, which are all necessary skill sets within the digital creative industry. Supportive of this concept is research that finds that project-based and collaborative learning environments provide students with increased levels of engagement and help them acquire more skills in technology-intensive fields (Thomas, 2000).

Moreover, using many words that contain the terms "competency," "knowledge," and "program," indicates that the institution prioritizes molding capabilities that relate to industry. This supports the theoretical assumption that postsecondary education will serve to create human capital in order to develop curricula that enable students to gain the necessary skills needed to meet the qualifications for jobs in the workforce (Becker, 1964).

The research indicates that CMT in Malaysia is continuing to develop from content-centred instruction toward learner-centred and practice-oriented pedagogies. Nevertheless, the effectiveness of experiential learning depends on the degree to which institutions are able to accommodate experiential learning, notably educator skill level and level of technology infrastructure support. Without continuous institutional support, experiential learning may continue to be integrated in an inconsistent manner for the various institutions.

Competency Alignment

Figure 3: NVivo Word Cloud Analysis of Competency Alignment

Source: Author's own work

The second frequency analysis of words indicates that CMT education in Malaysia is highly focused on industry, with four of the most frequently used words being collaboration, innovative, industry, and interactive, which have all been established as defining features of

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participatory modes of learning. The second frequency analysis of the term collaborative also shows that institutional practices have an industry focus and support the establishment of partnerships with academic institutions to develop collective knowledge and provide students with exposure to industry experiences. This finding matches the literature that supports the increasing use of university-industry partnerships to promote a curriculum that is responsive to the changing nature of business and to enhance the employment prospects of graduates (Perkmann et al., 2013).

The number of times industry, project, real, and technologies were found in the analysis corresponds to the practical focus of educational programs and their alignment with current market expectations. All four words point to an educational environment that tries to replicate a real-life learning environment with a strong emphasis on using interactive digital devices and new technology. Thus, their inclusion demonstrates the institutions' commitment to producing students who can meet the needs of the workforce, as well as the theories supporting human capital in that post-secondary institutions are a form of long-term investment in training and developing the skills needed for employment (Becker, 1964).

Furthermore, each of the words "innovation," "interactive," "support," and "engage" is indicative of a framework for teaching and learning of dynamic (vs static) technology-enhanced learning environments. The patterns found within this data set indicate that “innovation” is a component of the skill-based outcome and is also a pedagogical method for encouraging student engagement through digital interactivity. Previous studies have also shown that implementing technology-based and innovative teaching models helps improve student engagement and creative capacity in a digital education environment (Henriksen et al., 2016). In total, the findings from this study support the overall theme of ongoing industry partnerships and innovation-based pedagogy within the CMT programs. The results of the analysis indicate that Malaysian institutions are proactively developing an interactive, collaborative learning environment in response to the rapidly changing digital industry landscape.

Moreover, while there is a growing recognition among Malaysian institutions of the necessity to develop competencies in an industry-aligned competencies, the continuing challenge lies with maintaining the long-term relevance of the curriculum due to the continued rapid change of digital technology, as well as the expectations of the workforce. This would suggest that there is an overall structural issue in balancing the long-term academic curriculum consistency with the need for it to respond to industry.

Student Engagement

With regards to the shifts in the types of learning environments towards more immersive and technology-enhanced environments, it reflects a broader transformation in the preferences that students have for how they learn in the digital environment. At the same time, there may be an effect of unequal digital infrastructure between different institutions and varying levels of educator readiness on the levels of engagement for students between different institutions.

Research on thesaurus frequencies would indicate a structure of Malaysian Creative Multimedia Technology (CMT) education as being experiential, collaborative, and integrated with the industry. The number of occurrences for words (such as "hands", "practical", "apply", "experience") suggests that learning is primarily through practice, which parallels the principles of experiential learning for active participation and reflection (Kolb, 1984).

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Conversely, the number of occurrences for "collaboration", "innovation", "industry", and "interactive" indicates that universities in Malaysia have made long-term efforts to integrate actual industry practices into their programs and thus increase the relevance of their curriculum to the workforce in Malaysia (Perkmann et al., 2013).

The implications of the above patterns in pedagogical and institutional practices have significance for student engagement. Project-based, active, and technology-enhanced learning environments are widely regarded as major predictors for cognitive and behavioural engagement, especially in creative and digital disciplines (Henriksen et al., 2016). By incorporating hands-on multimedia production, collaborative projects, and interactive technologies, the CMT program creates immersive learning experiences that enhance motivation, engagement, and creative problem-solving. Compared to the traditional lecture-based approach, immersive learning environments encourage greater engagement.

According to Becker (1964), programs with strong alignment to industry and employability outcomes will appeal to prospective students who are looking for credentials to support their future careers. The confidence of students in the value of a program will also improve when an institution has provided the appropriate (visible) support structures, including partnerships with industry, opportunities for internships, and access to current-day digital technologies; this may also enhance the trends of students who enroll in a program. Studies have suggested that perceived relevance of programs in terms of academics as well as institutional support are key determinants in a student's ability to persist and subsequently make an enrollment decision regarding post-secondary education (Tinto, 1993).

The findings suggest that supporting experiential learning, collaborating with industry, and developing a strong technological infrastructure will enhance opportunities for students to be engaged and, therefore, will enhance both the attractiveness and competitiveness of CMT. The necessary continued investment in digital resources, educator training, or skill upgrade, and long-term partnerships with industry are essential if enrollment trends are going to continue to grow and programs are to remain viable as Malaysia continues to adapt to the growing needs of the digital economy.

Conclusion

This research looks at the role of various educational practices in student development within Creative Multimedia Technology (CMT) programs, by assessing curriculum documents from these programs as well as institutional guidelines and peer-reviewed articles. The results of this study show that Malaysian institutions of higher education are increasingly incorporating activities from industry that are related to the field of study within the curriculum of CMT, using experiential learning theory (Kolb's 1984) and human capital theory (Becker's 1964). The key themes mentioned previously are twofold: they help graduates gain experience and collaborative skill development as well as innovative thinking processes in a digital context.

This report addresses the challenges of the physical environment as well as a lack of adequate educator training in digital pedagogy, along with the level of long-term partnerships with the industry, and the slow adoption rates of future technology applications such as virtual reality and interactive media. These limitations can hinder the realization of experiential learning cycles and undermine human capital development, with CMT education as a targeted area of investment. Our findings show that consistent investment in digital infrastructure and

professional development for educators and systematic long-term industry engagement is significant for achieving student development targets. All these issues need to be addressed proactively. Thus, Malaysian higher education institutions can strengthen and enhance the effectiveness of CMT programs in terms of quality, relevance, and growth, producing graduates who are prepared for the digital business needs of the future environment and to improve their quality of life, being proactive, innovative, and efficient to meet the needs of our society and the new world.

Integrating the human capital framework with the experiential learning perspective is one of the contributions of this study to previous research about student development in Malaysian CMT programmes. In addition to the theoretical implications, the findings provide directions on sustainable industry partnerships, ongoing educator development, and investment in digital infrastructure, which are critical aspects of curriculum relevance in a changing digital economy.

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Author Contribution Statement:	All authors contributed significantly to the development of this manuscript. Suguna Olakanathan was responsible for the conceptualization, analysis, and interpretation of the study results. Siti Nur Shahira Dahari handled the methodology and data collection. Rabiatul Adawiyah Kamarulzaman and Rohayu Ahmad contributed to the literature review, drafting, and critical revision of the manuscript. Siti Hasma Hajar Mat Zin provided overall supervision of the study. Nur Sherina Zainal Abidin proofread the manuscript. All authors read and approved the final version of the manuscript prior to submission.

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