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Integrating Cultural Diversity in Art Education: The development of Mc-TCIM through expert validation

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Abstract
This study develops the Multicultural Traditional Craft Interactive Module (Mc-TCIM) as an alternative pedagogical tool to foster culturally responsive teaching in secondary Visual Arts Education. Using the Fuzzy Delphi Technique, expert consensus was obtained on suitable elements, strategies, and content for the module. The findings highlight the inclusion of Malaysian traditional crafts from Sabah, Sarawak, and the Orang Asli, alongside interactive multimedia, to enhance engagement and cater to diverse learning styles. Mc-TCIM provides educators with a framework to integrate multicultural values, promoting cultural sensitivity, collaboration, and appreciation of Malaysia's heritage.

Keywords: Interactive modules; Fuzzy Delphi; Visual Arts Education; Multicultural Education

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1.0 Introduction

Malaysia is a country built upon a rich tapestry of cultural diversity, shaped by the coexistence of Malay, Chinese, Indian, Indigenous, and minority communities. This multicultural reality is not only visible in daily social life but is also deeply embedded in traditional crafts, festivals, and art forms that continue to shape national identity (Abdullah, 2018; Hashim & Nasir, 2020). As schools play a vital role in sustaining this cultural heritage, there is a growing call for culturally responsive pedagogy that acknowledges, respects, and integrates the values, traditions, and practices of diverse cultural groups (Gay, 2018). Visual Arts Education (VAE) provides a significant platform for this integration, as it fosters creativity, self-expression, and intercultural understanding. Despite this potential, challenges remain in ensuring that teaching and learning practices in Malaysian classrooms adequately reflect the nation's multicultural reality. Traditional teaching approaches often emphasize theoretical knowledge over hands-on, culturally rich experiences, which may reduce student engagement and limit opportunities for deeper appreciation of cultural diversity (Kamarudin, 2019). In addition, the increasing demands of 21st-century education require innovative tools and approaches that not only address cultural literacy but also integrate interactive,

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technology-driven elements to sustain student interest (Rahman et al., 2021). In response to these challenges, this study focuses on the design and development of the Multicultural Traditional Craft Interactive Module (Mc-TCIM) for secondary school Visual Arts Education. The module was conceptualized as an alternative pedagogical approach that promotes culturally responsive teaching by incorporating traditional crafts from Sabah, Sarawak, and the Orang Asli. The second phase of the study, reported in this paper, aims to validate the design elements, teaching strategies, and learning activities of the module through expert consensus using the Fuzzy Delphi Technique (FDT). The main objectives are to identify appropriate content and elements for the Mc-TCIM based on expert evaluation, to determine suitable teaching approaches, learning activities, and assessment methods for the module, and to validate the integration of interactive multimedia features in enhancing student engagement. Accordingly, the study addresses the research question, which is how the Mc-TCIM can be designed and developed as an alternative approach to promote culturally responsive pedagogy in secondary Visual Arts Education. By systematically developing and validating this module, the study contributes to strengthening the relevance of VAE in multicultural Malaysia, fostering cultural sensitivity, and promoting inclusive educational practices.

2.0 Literature Review

Multicultural education has long been recognized as essential in Malaysia's schooling system, given its plural society composed of various ethnic groups and indigenous communities. Banks (2015) defines multicultural education as an approach that promotes equity, social justice, and cultural inclusivity within teaching and learning. In Malaysia, multicultural education is embedded in policies such as the Education Act 1996 and the National Education Philosophy, both of which stress unity through diversity (Hashim & Rossidy, 2021). However, research indicates that multicultural elements are often treated as supplementary rather than central in classroom practice (Abdullah, 2018). Teachers tend to rely on conventional pedagogical strategies with limited integration of cultural narratives or indigenous knowledge (Kamarudin, 2019). Thus, innovative approaches are needed to bridge this gap by embedding cultural heritage into mainstream curricula. This study responds to that call by developing the Mc-TCIM, which explicitly integrates multicultural crafts to promote awareness, sensitivity, and inclusivity in the Visual Arts Education (VAE) context. Visual Arts Education (VAE) has been identified as a subject with strong potential for promoting creativity, identity, and intercultural understanding. The curriculum emphasizes skills such as drawing, design, and appreciation, but also highlights the importance of contextual learning, including exposure to cultural motifs, crafts, and traditions (Ministry of Education Malaysia, 2016). Despite these objectives, previous studies suggest that many VAE lessons remain exam-oriented and theoretical, which reduces opportunities for authentic cultural exploration (Rahman et al., 2021). Teachers often lack structured teaching tools that embed multicultural values in practical classroom activities. For example, while students may learn about traditional motifs or crafts, the depth of cultural understanding and cross-cultural dialogue is often limited. The development of interactive modules such as the Mc-TCIM offers a pathway to address these limitations. By combining traditional craft practices from Sabah, Sarawak, and the Orang Asli with interactive digital and visual aids, the module allows students to engage directly with multicultural content in creative and meaningful ways. This approach aligns with 21st-century learning requirements, where visual literacy, digital competence, and intercultural skills are increasingly valued (Yusof & Ismail, 2020).

3.0 Methodology

This study employed a Design and Development Research (DDR) approach (Richey & Klein, 2007), focusing on Phase 2—the validation of the Multicultural Traditional Craft Interactive Module (Mc-TCIM) through the Fuzzy Delphi Method (FDM). DDR was selected for its suitability in systematically developing and validating educational tools, while FDM was applied to obtain structured expert consensus by combining fuzzy set theory with the Delphi process (Murray et al., 1985; Chu & Hwang, 2008). A purposive sample of eleven experts participated, including Visual Arts Education lecturers, experienced teachers, curriculum officers, and researchers. Selection criteria required at least five years of experience, a Master's qualification, and prior involvement in module development or educational research (Hsu et al., 2010; Mohd Jamil et al., 2014). This ensured diverse perspectives consistent with the interdisciplinary nature of the module. The expert instrument was constructed based on six constructs identified during the needs analysis: visual aids, support materials, teaching strategies, time allocation, learning activities, and assessment (DeVellis, 2016; Sidek & Jamaludin, 2005). Items were measured on a seven-point Likert scale using linguistic fuzzy variables (from Strongly Disagree = 1.0 to Strongly Agree = 7.0). This enabled nuanced responses to be quantified as triangular fuzzy numbers (TFNs). The draft instrument underwent refinement before distribution via email and online platforms, with informed consent obtained. Data were analyzed using the FDM. Responses were converted into TFNs (m1 = minimum, m2 = most likely, m3 = maximum) and defuzzified using the Centre of Gravity method to produce crisp values. Consensus was determined using threshold values ($d \leq 0.2$) and a minimum 75% agreement rate (Ishikawa et al., 1993; Kuo & Chen, 2008). Items meeting these criteria were accepted; others were reviewed or excluded. This methodology ensured that the Mc-TCIM module design incorporated validated elements that were culturally responsive, pedagogically sound, and practically applicable in secondary Visual Arts Education.

4.0 Findings

The findings of this study are presented according to the results of the Fuzzy Delphi Technique (FDT) analysis. The expert panel provided their evaluation of the proposed elements for the Mc-TCIM module, covering aspects such as visual aids, support materials, teaching techniques, learning activities, and reinforcement exercises. The analysis confirmed high levels of consensus, with defuzzification values ranging between 0.5 and 1.0, reflecting agreement levels from somewhat agree to strongly agree.

4.1 Visual Art Aids

The results indicate strong consensus on the importance of incorporating a variety of visual art aids into the module. Experts rated graphics such as infographics, charts, and diagrams the highest (defuzzification = 0.930), followed closely by video and audio materials (0.924). Two- and three-dimensional visuals were also highly valued (0.906), while text received a moderate rating (0.809). These findings suggest that visual richness and multimedia integration are central to sustaining student engagement in multicultural visual arts education.

Table 1. Consensus on the Elements of visual art aids that are suitable for the use of the Mc-TCIM module

Elements of visual art aid	Score Fuzzy (*A*)	Defuzzification value	Score rating
Video and Audio	0.924	0.092	2
Text	0.809	0.202	4
Graphics - infographics, graphs, charts, and diagrams	0.930	0.071	1
Visuals (2D & 3D)	0.906	0.100	3

4.2 Support Materials

Support materials were also identified as essential components of the Mc-TCIM. Audio and video resources ranked highest (0.924), emphasizing the need for dynamic and interactive content. Infographics (0.915) and assessment tools such as quizzes and tests (0.873) were also considered important for enhancing comprehension and evaluation. In contrast, sketch notes/mind maps (0.867) and real-world examples such as YouTube or TikTok content (0.864) were rated slightly lower, though still above the consensus threshold. This highlights the need for balance between traditional support tools and contemporary digital references.

Table 2. Consensus on suitable support materials for the development of the "Mc-TCIM" Module

Elements of suitable support materials	Score Fuzzy (*A*)	Defuzzification value	Score rating
Infographics	0.915	0.099	2
Sketch notes (Mind Maps)	0.867	0.143	4
Audio & Video	0.924	0.092	1
Assessment materials such as quizzes/tests	0.873	0.160	3
Real Examples (press clippings, 'YouTube', TikTok, and case studies)	0.864	0.154	5

4.3 Features of Support Materials

When asked about the most important features of support materials, experts emphasized interactivity and engagement. The highest consensus was achieved for materials that are interesting and interactive (0.958), followed by being user-friendly (0.948). Clarity of explanation (0.939) and flexibility for both teachers and students (0.924) were also strongly endorsed. Interestingly, visual elements such as colors, shapes, and animations were rated lower (0.888), suggesting that substance and usability are more critical than purely aesthetic features.

Table 3. Consensus on main features of support materials for the development of the "Mc-TCIM" Module

Elements of the main features of support materials	Score Fuzzy (*A*)	Defuzzification value	Score rating
User-friendly	0.948	0.045	2
Interesting and interactive	0.958	0.025	1
Interesting visual elements (colors, shapes, animations)	0.888	0.133	5
Clear explanations and illustrations	0.939	0.061	3
Teacher and student flexibility	0.924	0.092	4

4.4 Best Form of Support Materials

Consensus also emerged regarding the preferred format of support materials. Experts agreed that both digital copies (such as slides or e-books) and printed modules should be provided. Digital formats (0.906) were valued for their accessibility and interactivity, while printed modules (0.888) supported traditional classroom use. The combination of both formats (0.906) was seen as the most practical approach, ensuring flexibility for different teaching contexts.

Table 4. Consensus on the best form of support materials for the development of the "Mc-TCIM" Module

Elements of the best form of support materials	Score Fuzzy (*A*)	Defuzzification value	Score rating
Digital Copy (Slide Presentation/E-Book)	0.906	0.100	1
Module	0.888	0.133	3
Both	0.906	0.100	1

4.5 Teaching Techniques

In terms of teaching strategies, experts strongly favored practice and demonstration (0.915) and the simulation method (0.864), highlighting the importance of hands-on and experiential learning. Other approaches such as visits to cultural sites (0.855), self-access learning (0.848), and project-based learning (0.845) were also rated highly. Meanwhile, more traditional strategies like problem solving (0.824), question inquiry (0.779), and brainstorming (0.779) were rated lower, indicating that experiential and applied techniques are more effective for multicultural craft learning.

Table 5. Consensus on the most appropriate teaching techniques to use in teaching and learning cultural diversity.

Elements of appropriate teaching techniques	Score Fuzzy (*A*)	Defuzzification value	Score rating
Problem solving	0.824	0.242	6
Question inquiry	0.779	0.196	7
Practice and demonstration	0.915	0.099	1
Brainstorming method	0.779	0.196	7
Simulation method	0.864	0.154	2
Project method	0.845	0.195	5
Self-access method	0.848	0.179	4
Visit method	0.855	0.199	3

4.6 Learning Activities

Experts reached strong consensus on specific classroom activities. Drawing motifs (0.930) and creating 2D patterns and designs (0.930) were ranked the highest, reflecting the centrality of traditional craft-making in the module. Shaping and building crafts (0.924) was also considered vital. Activities such as art appreciation (0.897) and coursework e-folio preparation (0.897) were moderately valued, while theoretical history lessons (0.848) were ranked lowest. These findings underscore the importance of active, creative engagement over passive knowledge acquisition.

Table 6. Consensus on suitable activities to use in teaching and learning cultural diversity.

Elements of suitable activities	Score Fuzzy (*A*)	Defuzzification value	Score rating
Drawing motifs	0.930	0.071	1
Making 2D patterns and designs	0.930	0.071	1
Shaping and building crafts	0.924	0.092	3
History (Theory)	0.848	0.179	6
Making art appreciation	0.897	0.097	4
Coursework e-folio	0.897	0.097	4

4.7 Reinforcement Exercises

Finally, consensus on reinforcement activities highlighted the role of art appreciation (0.915) as the most effective reinforcement exercise, followed by e-folio sheets (0.864) and assignment presentations (0.848). Creative notes (0.812) and worksheets (0.800) were moderately rated, while reflection and self-assessment (0.773) received the lowest ranking. This suggests that collaborative and performance-based reinforcement is more effective than purely individual or reflective tasks.

Table 7. Consensus on suitable reinforcement exercises for teaching and learning about cultural diversity.

Elements of suitable reinforcement exercises	Score Fuzzy (*A*)	Defuzzification value	Score rating
Reflection and self-assessment activities	0.773	0.293	6
Creative Notes	0.812	0.181	4
Worksheets	0.800	0.190	5
Assignment presentations	0.848	0.179	3
E-Folio Sheets	0.864	0.154	2
Art Appreciation	0.915	0.099	1

5.0 Discussion

The findings of this study provide clear insights into the development of the Multicultural Traditional Craft Interactive Module (Mc-TCIM) as a tool for promoting culturally responsive pedagogy in Malaysian secondary schools. Expert consensus highlighted three key aspects: the integration of multimedia, the use of active learning strategies, and reinforcement methods that affirm cultural identity.

Visual and Multimedia Integration. Experts strongly supported the use of graphics, videos, and 2D/3D visuals, noting their role in enhancing comprehension and engagement compared to text-based content (Rahman et al., 2021; Hashim & Nasir, 2020). This reflects the shift toward multimodal learning in 21st-century classrooms.

Support Materials and Usability. Audio-video resources, infographics, and assessments were identified as essential. Usability and interactivity were prioritized over aesthetics, with preferences for both digital and print formats to suit hybrid classroom needs (DeVellis, 2016; Gay, 2018).

Teaching and Active Learning. Practice, demonstration, and simulation were preferred teaching techniques, consistent with Vygotsky's (1978) Sociocultural Theory. Activities such as drawing motifs and crafting foster hands-on engagement, while problem-solving and inquiry methods were rated lower.

Reinforcement and Assessment. Experts emphasized art appreciation, e-folios, and presentations as effective reinforcement, encouraging reflection and collaboration while affirming cultural diversity (Ladson-Billings, 1995).

Implications. Overall, the Mc-TCIM demonstrates strong potential as an innovative pedagogical tool. By embedding crafts from Sabah, Sarawak, and the Orang Asli, it enriches Visual Arts Education while fostering inclusivity and national unity (Kamarudin, 2019).

6.0 Conclusion& Recommendations

This study aimed to design and validate the Multicultural Traditional Craft Interactive Module (Mc-TCIM) as an alternative pedagogical approach in secondary Visual Arts Education (VAE). Using the Fuzzy Delphi Technique (FDT), consensus was obtained on content, teaching strategies, support materials, and reinforcement activities needed for a culturally responsive learning tool. Findings confirmed the importance of visual and multimedia elements such as graphics, videos, and 2D/3D visuals in sustaining student engagement. Support materials should be interactive, user-friendly, and flexible, with both digital and print formats to suit diverse classrooms. Experts highlighted practice, demonstration, and simulation as the most effective strategies, supported by hands-on activities like drawing motifs, creating patterns, and building crafts. Reinforcement through art appreciation, e-folio preparation, and presentations further encouraged reflection and cultural understanding. These results indicate Mc-TCIM's strong potential as an innovative resource that integrates cultural heritage with interactive learning, while fostering inclusivity and national unity. For future development, classroom testing is recommended to evaluate usability and adaptability, alongside teacher training to support effective integration. At the policy level, the Ministry of Education could adopt such modules to strengthen cultural literacy nationwide. Expansion to include other cultural elements such as music, dance, and performing arts would also broaden its impact. Finally, longitudinal research is encouraged to assess long-term outcomes on students' cultural knowledge and engagement. In conclusion, Mc-TCIM represents a culturally grounded innovation that enriches Visual Arts Education while cultivating culturally literate and socially responsible citizens in Malaysia.

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Paper Contribution to Related Field of Study

This paper contributes to the field of education by demonstrating how the Fuzzy Delphi Method (FDM) can be applied to design and validate culturally responsive teaching tools. The Multicultural Traditional Craft Interactive Module (Mc-TCIM) integrates traditional crafts from Sabah, Sarawak, and the Orang Asli, enriching Visual Arts Education with local cultural heritage. The study highlights the importance of embedding multicultural elements into curriculum design while aligning them with interactive and multimedia features to engage digital-native learners. Overall, the Mc-TCIM provides practical insights for educators and policymakers in strengthening multicultural and inclusive pedagogy.

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