E-B
Environment - Behaviour
Proceedings Journal

A QoL 2025 Cherating

https://www.amerabra.org/
09th Asia-Pacific International Conference on Quality of Life
Holiday Villa Beach Resort & Spa, Cherating, Malaysia, 17-18 Oct 2025

e-IPH
e-International
Publishing House Ltd.,
United Kingdom

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

Akmal Ahamed Kamal[1]*, Siti Zuraida Maaruf[1], Mohd Khairezan Rahmat[1], Wang Ling[2]
*Corresponding Author

[1] Department of Art and Design Education, Faculty of Education, Universiti Teknologi MARA, UiTM Puncak Alam Campus, 42300
Puncak Alam, Selangor, Malaysia,
[2] Faculty of Industrial Product Design, Chengdu Academy of Fine Arts, Sichuan Conservatory of Music, Chengdu City, Sichuan
Province, China

2020235026@student.uitm.edu.my; sitiz610@uitm.edu.my; mohdk787@uitm.edu.my; 422821454@qq.com
Tel: 60179636021

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

_____

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, 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, determine suitable teaching approaches, learning activities, and assessment methods for the module, and validate the integration of interactive multimedia features to enhance student engagement. Accordingly, the study addresses the research question of 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 is essential in Malaysia's diverse schooling system, reflecting its multiethnic and indigenous composition. Banks (2015) defines it as an approach that promotes equity, inclusivity, and social justice in education. Recent research (Rahim et al., 2024; Lim & Abdullah, 2023) confirms its continued relevance in promoting harmony and respect across communities. In Malaysia, multicultural education is embedded in the Education Act 1996 and the National Education Philosophy, which emphasizes unity through diversity (Hashim & Rossidy, 2021). However, studies show that cultural content is often treated as supplementary, with teachers relying on conventional teaching approaches that neglect cultural narratives and indigenous perspectives (Abdullah, 2018; Kamarudin, 2019). Therefore, innovative pedagogies are needed to embed cultural heritage meaningfully into the curriculum. Recent evidence reinforces this need. Hajianfard, Mokhtar, and Rafee (2024) found that Malaysian art students increasingly express multicultural identity through their artwork, while Hu (2023) highlighted how modern pewter crafts embody multicultural values through the fusion of tradition and innovation. These studies demonstrate that integrating art and culture in education fosters both heritage preservation and shared identity. In response, the present study develops the Mc-TCIM, a multicultural module for Visual Arts Education (VAE) that integrates traditional crafts from Sabah, Sarawak, and the Orang Asli communities. VAE offers substantial potential for nurturing creativity, identity, and intercultural understanding (Ministry of Education Malaysia, 2016). However, lessons remain overly theoretical and exam-oriented (Rahman et al., 2021). The Mc-TCIM addresses these limitations through interactive multimedia, hands-on cultural exploration, and student-centered learning—aligning with 21st-century needs for visual literacy, digital competence, and intercultural awareness (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 was refined before being distributed 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 ≤ 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 a 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. There is a consensus on suitable activities for teaching and learning about 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. There is a 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 meaningful insights into the development of the Multicultural Traditional Craft Interactive Module (Mc-TCIM) as a culturally responsive pedagogical tool in Malaysian secondary schools. Expert consensus highlighted three key aspects: multimedia integration, active learning strategies, and reinforcement activities that affirm cultural identity.

Experts strongly supported the use of graphics, videos, and 2D/3D visuals for enhancing comprehension and engagement, reflecting the growing importance of multimodal learning in Visual Arts Education (Rahman et al., 2021; Hashim & Nasir, 2020). Usability and interactivity were prioritized over aesthetics, emphasizing both digital and print formats to suit hybrid classroom contexts (DeVellis, 2016; Gay, 2018). Similarly, practice, demonstration, and simulation were the most endorsed teaching techniques, aligning with Vygotsky's (1978) Sociocultural Theory that promotes social interaction and experiential learning. Reinforcement through art appreciation, e-folios, and presentations encouraged reflection and collaboration, consistent with culturally responsive pedagogy that integrates identity and understanding (Ladson-Billings, 1995).

Implications. The study carries significant implications for Visual Arts Education practice, curriculum design, and educational policy. By embedding traditional crafts from Sabah, Sarawak, and the Orang Asli into interactive, student-centered activities, the Mc-TCIM

provides a flexible framework that supports inclusivity and national unity (Kamarudin, 2019). It demonstrates that culturally responsive pedagogy can be effectively implemented through creative, hands-on learning experiences that balance cultural heritage with digital innovation. Beyond this specific module, the findings offer a scalable model for embedding multicultural values within the national curriculum to strengthen Malaysia's commitment to holistic and culturally grounded education.

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. Expanding 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.

While the findings of this study provide meaningful contributions to the development of culturally responsive teaching tools, several limitations must be acknowledged. The research relied primarily on expert consensus through the Fuzzy Delphi Technique, which—although rigorous—did not include classroom implementation or student feedback. As such, the practical effectiveness of the Mc-TCIM in real teaching environments remains to be thoroughly examined. Future studies should therefore conduct pilot testing or longitudinal evaluation to assess usability, student engagement, and learning outcomes. Additionally, expanding the module to include other cultural elements such as performing arts, music, or digital crafts may further enhance its inclusivity and educational value. These future directions would strengthen the evidence base and ensure that the Mc-TCIM continues to evolve as a sustainable and adaptable tool for promoting multicultural education.

Acknowledgement

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.

References

Chu, H. C., & Hwang, G. J. (2008). A Delphi-based approach to developing expert systems with the cooperation of multiple experts. *Expert Systems with Applications, 34*(4), 2826–2840. https://doi.org/10.1016/j.eswa.2007.05.034

DeVellis, R. F. (2016). *Scale development: Theory and applications* (4th ed.). Sage Publications.

Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice* (3rd ed.). Teachers College Press.

Hashim, R., & Nasir, N. (2020). Visual literacy in Malaysian classrooms: A study on the role of visual arts in enhancing learning. *Asian Journal of University Education, 16*(3), 13–25. https://doi.org/10.24191/ajue.v16i3.11080

Hajianfard, R., Mokhtar, E. S. B., & Rafee, Y. B. M. (2024). The perception of multiculturalism in Malaysian visual art university students' paintings. *Harmonia: Journal of Arts Research and Education, 24*(2), 411–426. https://doi.org/10.15294/harmonia.v24i2.9373

Hsu, C. C., & Sandford, B. A. (2010). The Delphi technique: Making sense of consensus. *Practical Assessment, Research, and Evaluation, 12*(10), 1–8. https://doi.org/10.7275/pdz9-th90

Hu, W. (2023). Getting multicultural concepts from Malaysian modern pewter craft designs. *PIJ: Pakistan International Journal of Multicultural Studies, 2*(0), Article 367. https://doi.org/10.5281/zenodo.1234567

Ishikawa, A., Amagasa, M., Shiga, T., Tomizawa, G., Tatsuta, R., & Mieno, H. (1993). The max-min Delphi method and fuzzy Delphi method via fuzzy integration. *Fuzzy Sets and Systems, 55*(3), 241–253. https://doi.org/10.1016/0165-0114(93)90251-C

Kamarudin, M. F. (2019). Multicultural education in Malaysia: Issues and perspectives. *Journal of Social Sciences and Humanities, 16*(1), 1–12.

Kuo, Y. F., & Chen, P. C. (2008). Constructing performance appraisal indicators for mobility of the service industries using Fuzzy Delphi Method. *Expert Systems with Applications, 35*(4), 1930–1939. https://doi.org/10.1016/j.eswa.2007.08.068

Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal, 32*(3), 465–491. https://doi.org/10.3102/00028312032003465

Murray, T. J., Pipino, L. L., & Gigch, J. P. V. (1985). A pilot study of fuzzy set modification of Delphi. *Human Systems Management, 5*(1), 76–80. https://doi.org/10.3233/HSM-1985-5108

Murry, J. W., & Hammons, J. O. (1995). Delphi: A versatile methodology for conducting qualitative research. *The Review of Higher Education, 18*(4), 423–436. https://doi.org/10.1353/rhe.1995.0008

Rahman, N. A., Zainal, Z., & Samad, A. A. (2021). Enhancing students' engagement through visual-based learning in art education. *International Journal of Academic Research in Progressive Education and Development, 10*(2), 556–567. https://doi.org/10.6007/IJARPED/v10-i2/10319

Richey, R. C., & Klein, J. D. (2007). *Design and development research: Methods, strategies, and issues*. Lawrence Erlbaum Associates.

Rubin, R. S. (2002). Will the real SMART goals please stand up? *The Industrial-Organizational Psychologist, 39*(4), 26–27.

Sidek, M. N., & Jamaludin, A. (2005). *Instrumen penyelidikan pendidikan dan sosial*. Universiti Putra Malaysia Press.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.