

Navigating Cultures: Developing Intercultural Competency via Malay Digital Heritage

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ABSTRACT

Declining cultural engagement among younger generations challenges the development of intercultural competency in a globalised society. This study explores the potential of *Konda-Kondi*, a traditional Malay game transformed into a mobile app via the ATUMICS method, to promote intercultural awareness (ICA) among local and international students. The game integrates distinct Malay cultural elements, including *Rumah Kutai* (traditional architecture), *Baju Melayu* (traditional attire), and *Gamelan* (traditional music). A sample of 171 students (122 local and 49 international) participated by playing the game and responding to a post-activity survey. The questionnaire uses a five-point Likert scale. There are three significant findings. First, the result indicates that the game effectively assists respondents in becoming familiar with and interpreting elements of Malay cultural content. The highest mean score of 4.40 corresponds to the item stating that the inclusion of Gamelan music enhances players' appreciation of the game's emotional and cultural atmosphere. Second, the result shows that the game plays an effective role in promoting intercultural interaction and learning. The highest mean score (4.38) suggests that the game increased respondents' awareness of their own culture and inspired them to see traditional games from their own culture featured in similar applications. Third, the highest mean score (4.40) indicates that respondents agreed i) that the *Konda-Kondi* mobile game can help foster inclusive and culturally rich communities, ii) that the cultural elements embedded in the game align well with the goals of education for sustainable development. Overall, this study confirms that culturally rooted mobile games like *Konda-Kondi: The Legend*® can serve as engaging platforms for the younger generation to explore, appreciate, and learn about their own heritage and the cultures of others, contributing to both cultural sustainability and intercultural understanding and competence. These research findings indicate the potential of using traditional games to develop intercultural competencies amongst students of various countries and cultural backgrounds.

Keywords: cultural sustainability, mobile game, game-based learning, heritage preservation, sustainable development

INTRODUCTION

Institutions of higher learning in Malaysia have seen significant growth in international student enrollment, particularly from Asia, the Middle East, and Africa, with an increase of over 50% between 2009 and 2018 (Singh, 2021). Public universities recorded 20% higher enrollment compared to private universities. The main countries contributing to this influx include Bangladesh, China, Nigeria, Indonesia, Yemen, Pakistan, Libya, Iraq, Sudan, and Iran (Malaysian Ministry of Higher Education, 2017). This diversity underscores the importance of developing intercultural competency among students in order to foster understanding and inclusivity across different cultural backgrounds.

Cultural competency is rooted in understanding and respecting the cultural identities, backgrounds, and experiences of communities, educators, and students (Eden, Chisom & Adeniyi, 2024). By adopting culturally responsive teaching strategies, educators can leverage students' diverse cultural experiences to enhance engagement and learning outcomes. In today's educational landscape, cultivating cultural competence has become a vital priority to establish inclusive learning environments that value diversity and promote equitable opportunities for all learners. Fostering cultural competence is crucial for building inclusive learning environments, especially since today's younger generation is often more familiar with foreign cultures than their own heritage. Malay traditional games are not merely for entertainment; they are a vital medium rich in moral values and social wisdom. Therefore, revitalising these games through digital platforms serves as an innovative approach to preserving cultural heritage while simultaneously enhancing cultural awareness and appreciation among students from diverse backgrounds.

RELATED WORK

Recent studies emphasize that educators should provide students with opportunities to critically reflect on their own culture while engaging in meaningful dialogue with individuals from different cultural backgrounds (Zorba, 2023). Developing Intercultural Awareness (ICA) requires learners to critically reflect on their own culture while engaging with diverse global perspectives. For Generation Z, video games have emerged as a particularly effective medium for blending enjoyment with educational themes. By embedding cultural heritage and universal soft skills such as empathy, tolerance, and respect into interactive media, educators and developers can create innovative pathways to strengthen intercultural competency and preserve fading local traditions. Studies have demonstrated that augmented reality (AR), virtual reality

(VR) can effectively support the learning and preservation of heritage culture and have received positive user acceptance (Chung et al., 2018; Fadli et al., 2022).

Traditional games, recognised by UNESCO as Intangible Cultural Heritage, are vital tools for transmitting these social values (Alonso, Luque & Londoño, 2020), yet they face the threat of marginalisation. Malaysia boasts over 200 traditional games, categorised into heavy, light, and creative games. However, rapid urbanisation and a lack of open spaces have severely limited their practice. As younger generations increasingly gravitate toward smartphones, preserving this heritage requires adapting to the digital age. Integrating traditional gameplay into modern technologies, such as mobile applications and AR, has already shown success in neighbouring countries (Rahman et al., 2020), offering a powerful way to bridge the gap between historical traditions and contemporary youth culture. A prime candidate for this digital revitalisation is *Konda-Kondi* (also known as Perik Mata), a traditional Malaysian field game with ancient ties to similar games across Asia, such as India's *Gilli Danda*, and Korea's *Jachigi*. The game centres on dynamic, team-based mechanics using a long and a short stick, requiring players to execute strategic moves like *Sungkit* (flicking the stick), the *Air Swing*, and *Patuk Ayam* (midair tapping) to maximise distance and outmanoeuvre opponents. Transforming physical, culturally rich games like *Konda-Kondi* into interactive digital formats immortalises their unique mechanics while serving as engaging tools to introduce global audiences to Malaysia's heritage.

METHODOLOGY

This study employed a descriptive research design to explain the process of designing and developing *Konda-Kondi: The Legend*®, a mobile adaptation of the traditional Malay game, and to collect user feedback through a survey. The digital transformation of *Konda-Kondi* into the mobile game app "*Konda-Kondi: The Legend*®" was guided by the ATUMICS method, which serves as a design tool for artisans, creators, and designers working on traditional innovation projects (Nugraha, 2019). Figure 1 illustrates the ATUMICS model, which serves as a design tool for artisans, creators, and designers working on traditional innovation projects.

ATUMICS is an acronym representing Artefact, Technique, Utility, Material, Icon, Concept, and Shape. The framework facilitates the integration of traditional cultural elements with modern design principles to produce innovative, culturally grounded products. Through this method, a product is analyzed and developed across two complementary dimensions:

- Micro level which focuses on the tangible and visible aspects of the artefact, encompassing six elements: technique, utility, material, icon, concept, and shape.
- Macro level concerns the intangible aspects that reflect the underlying spirit, motivation, and context of the design, including social, cultural, ecological, and economic considerations.

By applying the ATUMICS method, *Konda-Kondi: The Legend*® was developed as a culturally inspired digital artefact that retains the essence of traditional Malay gameplay while incorporating interactive features and digital mechanics suited for mobile platforms.

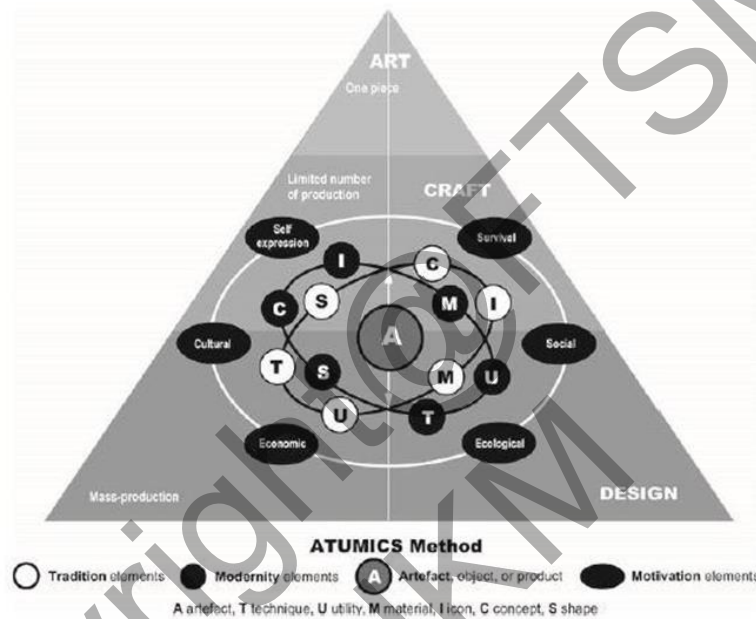


Figure 1. ATUMICS model (Nugraha, 2019)

By analysing both the tangible components (such as technique, utility, and shape) and the intangible cultural context of the original game, developers successfully translated physical mechanics like flicking a stick in an open arena into interactive 3D and AR formats using Blender and Unity. This mobile adaptation not only preserves the core gameplay rules but also enriches the digital experience by embedding authentic Malay cultural markers, including characters modelled in traditional *Baju Melayu* attire, immersive 3D environments showcasing *Rumah Kutai* architecture, and a traditional *Gamelan* musical score.

A survey was conducted to collect data for this study. The questionnaire consisted of four sections, as described below:

- Section A: Demographic Information

- Section B: Cultural Content Familiarity and Interpretation
- Section C: Intercultural Interaction and Learning
- Section D: Contribution to Cultural Cohesion- Sustainable Development Goal (SDG) 4.7

The questionnaire employed a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The survey used a purposive sampling method, targeting second-year students from the Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia. A total of 178 students initially responded to the survey. After removing seven duplicate responses, 171 valid responses were retained for analysis. Table 1 presents the interpretation of the mean score validity levels based on Mahadzir et al. (2024).

Table 1. Mean score interpretation

Mean Score	Interpretation
1.00 – 2.49	Low
2.50 – 3.79	Moderate
3.80 – 5.00	High

RESULTS AND DISCUSSION

Each 3D character in the game was modeled and animated using Blender software. The completed animations were then exported in the .fbx file format to ensure compatibility and seamless integration into the Unity engine for game development. Figure 2 illustrates the 3D modeling process of the characters, featuring traditional Malay attire specifically, a grey *Cekak Musang* and a red *Teluk Belanga* costume. Figure 3 presents the game's interface, which introduces and explains the rules to players. In this figure, the traditional Malay house *Rumah Kutai* can be seen in the background, adding an authentic cultural context to the gameplay environment.



Figure 2. Modelling of 3D characters in Malay traditional attire



Figure 3. How to play the *Konda-Kondi* game

Table 2 presents the demographic profile of the respondents. Local students make up 71.3% of the sample, while international students account for 28.7%. The majority of respondents are male, and most are aged between 18 and 24 years old. The Malay ethnic group represents the largest proportion of respondents, followed by Chinese students (both local and international).

Table 2. Respondent demography (Section A)

Demographic	Primary Groups (Frequency, %)	Minor Groups (Frequency, %)
Student Type	Local: 122 (71.3%)	International (>1 yr stay): 49 (28.7%)
Gender	Male: 96 (56.1%)	Female: 75 (43.9%)
Age	18–24: 169 (98.8%)	Others: 2 (1.2%)
Ethnicity	Malay: 98 (57.3%) Chinese: 53 (30.9%)	Indian, Arab, Indigenous, Others: 20 (11.8%)
Country	Malaysia: 122 (71.3%) China: 44 (25.7%)	Tunisia, Syria, Egypt, Ireland, Indonesia: 5 (3.0%)

Findings for Section B (Table 3) demonstrated that the game effectively helps players familiarise themselves with and interpret Malay cultural content, with an overall mean of 4.29. The highest scoring item (4.40) indicates that incorporating Gamelan music significantly enhances players' appreciation of the game's cultural and emotional atmosphere.

Table 3. Cultural Content Familiarity and Interpretation (Section B)

Question	Mean Score
I can recognize cultural symbols like traditional attire in the game visuals.	4.37
I understand the cultural significance of the Malay house featured in the background	4.29
The gamelan music helps me appreciate the emotional and cultural feel of the game	4.40
I can interpret how cultural elements in the game represent Malay identity.	4.30
I can create new cultural storylines or ideas based on what I've seen in the game	4.08
Overall mean	4.29

Meanwhile, findings for Section C (Table 4) resulted in an overall mean of 4.29. This indicates that the game plays an effective role in promoting intercultural interaction and learning. The highest mean score (4.38) indicates the game boosted respondents' cultural awareness and inspired a desire to see their own traditional games in similar apps.

Table 4. Intercultural Interaction and Learning (Section C)

Question	Mean Score
This game encourages me to share and discuss culture with students from other backgrounds.	4.19
I feel that the game helps bridge cultural gaps between local and international students.	4.29
I learn more about Malay traditions through playing the game.	4.29
I would like to see traditional games from my own culture featured in similar apps.	4.38
Overall mean	4.29

The results for Section D (Table 5) demonstrated strong alignment with Sustainable Development Goal (SDG) 4.7, yielding a high overall mean score of 4.37. Notably, the highest score (4.40) indicated that respondents strongly agreed that the Konda-Kondi mobile game successfully fosters inclusive, culturally rich communities and supports the broader goals of sustainable education.

Table 5. Contribution to Cultural Cohesion-SDG 4.7 (Section D)

Question	Mean Score
Mobile games can help create inclusive and culturally rich communities.	4.40
I am more aware of cultural diversity after playing games that feature traditional cultures.	4.35
Learning through culturally enriched games supports global citizenship.	4.29
I am more likely to respect and appreciate other cultures because of such games.	4.40
Cultural elements in mobile games align well with the goals of education for sustainable development.	4.39
Overall mean	4.37

Overall, the findings from Sections B, C, and D indicate that the *Konda-Kondi: The Legend*® mobile game effectively promotes cultural learning, intercultural interaction, and awareness of sustainable development values. Respondents demonstrated a high level of familiarity and appreciation for Malay cultural elements embedded in the game (Section B), as reflected in the positive mean scores. In addition, the game successfully encouraged

intercultural engagement and reflection on personal cultural identity (Section C), suggesting its potential as an educational tool for fostering mutual respect and cross-cultural understanding. Furthermore, the results related to Sustainable Development Goal (SDG) 4.7 (Section D) highlight that respondents recognized the game's role in supporting cultural cohesion and advancing education for sustainable development. Collectively, these findings affirm that the integration of traditional cultural heritage with digital gaming can create meaningful and inclusive learning experiences that promote intercultural competency and global citizenship.

CONCLUSION

This study reveals that for cultural learning, players showed high familiarity and appreciation for the embedded Malay cultural elements. While for intercultural interaction, the game successfully encouraged cross-cultural engagement, mutual respect, and reflection on personal cultural identity. Finally, for SDG 4.7 alignment, respondents recognised the game's strong contribution to cultural cohesion and education for sustainable development. In conclusion, this study confirms that culturally rooted mobile games like Konda-Kondi: The Legend can serve as engaging platforms for the younger generation to explore, appreciate, and learn about their own heritage and the cultures of others, contributing to both cultural sustainability and intercultural understanding.

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