

Navigating Cultures: Developing Intercultural Competency via Malay Digital Heritage

Budaya: Membangunkan Kompetensi Antara Budaya melalui Warisan Digital Melayu

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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 survey of 171 students (122 local, 49 international) revealed that 83.9% recognized these elements as representations of Malay identity, and 85.9% agreed that the game bridged cultural gaps. Aligning with Sustainable Development Goal (SDG) 4.7, participants reported strong positive outcomes. 91.9% felt it fostered an inclusive community, and 91.2% gained awareness of cultural diversity. 93.3% expressed greater respect for other cultures, and 91.3% agreed it supported sustainable education. Ultimately, the findings demonstrate that embedding cultural heritage into digital gameplay offers an effective, immersive tool for cultural integration. This approach actively contributes to Education for Sustainable Development (ESD) and strengthens intercultural competency among diverse student populations.

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

ABSTRAK

Kemerosotan penglibatan budaya dalam kalangan generasi muda mencabar pembangunan kompetensi antara budaya dalam masyarakat global. Kajian ini meneroka potensi Konda-Kondi, permainan tradisional Melayu yang diubah menjadi aplikasi mudah alih melalui kaedah ATUMICS, untuk menggalakkan kesedaran antara budaya (ICA) dalam kalangan pelajar tempatan dan antarabangsa. Permainan ini menyepadukan unsur pelbagai budaya Melayu, termasuk Rumah Kutai (seni bina tradisional), Baju Melayu (pakaian tradisional), dan Gamelan (muzik tradisional). Tinjauan terhadap 171 pelajar (122 tempatan, 49 antarabangsa) mendedahkan bahawa 83.9% mengiktiraf elemen ini sebagai representasi identiti Melayu, dan 85.9% bersetuju bahawa permainan itu merapatkan jurang budaya. Selaras dengan Matlamat Pembangunan Mampan (SDG) 4.7, peserta melaporkan hasil positif yang kukuh. 91.9% merasakan ia memupuk komuniti inklusif, dan 91.2% mendapat kesedaran tentang kepelbagaian budaya. 93.3% menyatakan lebih menghormati budaya lain, dan 91.3% bersetuju ia menyokong pendidikan mampan. Kesimpulannya, penemuan menunjukkan bahawa pembenaman warisan budaya ke dalam permainan digital menawarkan alat yang berkesan dan mendalam untuk penyepaduan budaya. Pendekatan ini secara aktif menyumbang kepada Pendidikan untuk Pembangunan Lestari (ESD) dan mengukuhkan kecekapan antara budaya dalam kalangan populasi pelajar yang pelbagai.

Kata kunci: kelestarian budaya, permainan mudah alih, pembelajaran berasaskan permainan, pemeliharaan warisan, pembangunan mampan

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). 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

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

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). 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. Data was collected using a purposive survey of second-year students from the Faculty of Information Science and Technology. After removing duplicates, 171 valid responses (out of 178) were retained for analysis. The questionnaire utilised a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) across three sections, namely, Section A: Demographic Information, Section B: Cultural Content Familiarity and Interpretation, Section C: Intercultural Interaction and Learning, and Contribution to Cultural Cohesion-SDG 4.7. Mean scores were interpreted based on (Mahadzir et al., 2024) as Low: 1.00-2.49, Moderate: 2.50-3.79, and High: 3.80-5.00.

RESULTS AND DISCUSSION

Table 1 details the respondents' demographics.

TABLE 1. 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 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. Meanwhile, findings for Section C 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. The results for Section D 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.

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.

REFERENCES

Alonso, V. L., Luque, F. X. M., & Londoño, M. D. P. L. 2020. Traditional games and sports as UNESCO's intangible cultural heritage facing tourist strategies, *Journal of Tourism and Heritage Research* 3, No. 1 (2020): 94–106.

- Chung, N., Lee, H., Kim, J. Y., & Koo, C. 2018. The role of augmented reality for experience-influenced environments: The case of cultural heritage tourism in Korea, *Journal of Travel Research* 57, No. 5 (2018): 627–643.
- Eden, C. A., Chisom, O. N., & Adeniyi, I. S. 2024. Cultural competence in education: Strategies for fostering inclusivity and diversity awareness, *International Journal of Applied Research in Social Sciences* 6, No. 3 (2024): 383–392.
- Fadli, H., Ibrahim, R., Arshad, H., & Yaacob, S. 2022. Augmented reality in cultural heritage tourism: A review of past study, *Open International Journal of Informatics* 10, No. 1 (2022): 109–121.
- Lamonge, L. G., Najoran, X. B., & Sugiarto, B. A. 2017. Rancang bangun aplikasi game augmented reality permainan tradisional Sulawesi Utara Dodorobe, *Jurnal Teknik Informatika* 12, No. 1 (2017): 1–7.
- Mahadzir, S. Y., Muda, Z., Hanawi, S. A., & Ramli, Z. 2024. Content validation through expert judgement of web-based megalithic culture visualisation, *Geografia* 20, No. 2 (2024): 128–144.
- Malaysian Ministry of Higher Education. 2017. Retrieved from <https://www.mohe.gov.my/en/download/statistics/stat-2017/215-statistik-pt-2017-03-bab-1/file>
- Nugraha, A. 2019. Perkembangan pengetahuan dan metodologi seni dan desain berbasis kenusantaraan: Aplikasi metoda ATUMICS dalam pengembangan kekayaan seni dan desain Nusantara, *Seminar Nasional Seni dan Desain 2019* (2019): 26–33. Surabaya.
- Rahman, Y., Hidayat, E. W., & Shofa, R. N. 2020. Aplikasi augmented reality mobile game Ucing Sumpat berbasis GPS based tracking, *Simetris: Jurnal Teknik Mesin, Elektro dan Ilmu Komputer* 11, No. 1 (2020): 263–270.
- Singh, J. K. N. 2021. Academic resilience among international students: Lived experiences of postgraduate international students in Malaysia, *Asia Pacific Education Review* 22 (2021): 129–138.