UNIVERSITI TEKNIKAL MALAYSIA MELAKA

MINISTRY OF HIGHER EDUCATION
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MAJLIS KETUA-KETUA PENYELARAS E-PEMBELAJARAN IPTA MALAYSIA

Proceeding of

International University Carnival on E-Learning

IUCEL2025

INTERNATIONAL UNIVERSITY CARNIVAL ON E-LEARNING

" Embracing AI for Innovative Learning and Inclusive Education "

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Loh Ser Lee

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Preface

We are pleased to present the e-Proceedings of the International University Carnival on E-Learning 2025 (IUCEL2025), organised by the Centre for Open and Distance Learning (CODL), Universiti Teknikal Malaysia Melaka (UTeM), in collaboration with the Ministry of Higher Education Malaysia (MoHE). The event was supported by the Department of Higher Education, MoHE, and the Public University e-Learning Council (MEIPTA).

Held on 13 November 2025, IUCEL2025 brought together 196 e-learning innovators from 26 institutions. All presenters were invited to submit extended abstracts in August 2025. After a thorough evaluation and peer-review process completed in September 2025, a total of 160 articles were accepted for inclusion in this publication. The papers compiled here represent diverse perspectives and practices aligned with the event's theme, *"Embracing AI for Innovative Learning and Inclusive Education."*

We extend our sincere appreciation to all authors for their valuable contributions, as well as to the panel of reviewers for their time and expertise. Special acknowledgement is also extended to the Patron of IUCEL2025, Professor Datuk Ts. Dr. Massila binti Kamalrudin, and Chairman, Professor Ir. Dr. Gan Chin Kim, for their leadership and guidance throughout the preparation of this event.

We also express our heartfelt gratitude to the CODL and UTeM team members whose dedication made this publication possible. We hope that the research and ideas presented in this e-proceedings will serve as a meaningful reference for educators, researchers, and practitioners committed to advancing e-learning innovation.

Editors
IUCEL2025 E-Proceedings

Foreword

As Patron of the International University Carnival on E-Learning 2025 (IUCEL2025), I am pleased to present this e-proceedings, which reflects Universiti Teknikal Malaysia Melaka's (UTeM) continued commitment to advancing innovation in digital learning. In collaboration with the Ministry of Higher Education Malaysia (MoHE), IUCEL2025 stands as a testament to our aspiration to nurture a progressive and inclusive educational ecosystem enriched by emerging technologies.

The theme, *"Embracing AI for Innovative Learning and Inclusive Education,"* captures the spirit of transformation shaping higher education today. Artificial intelligence, when applied thoughtfully, has the capacity to broaden access, personalise learning experiences, and strengthen teaching effectiveness across diverse disciplines. IUCEL2025 offered a valuable avenue for educators, researchers, and practitioners to reflect on these opportunities and share meaningful insights that will guide the future of e-learning in Malaysia and beyond.

I would like to express my appreciation to all contributors who have shared their work in this publication. My gratitude also goes to the organising committee members, especially those from Centre for Open and Distance Learning (CODL), for their dedication in ensuring the success of IUCEL2025.

I hope that this e-proceedings will serve as a useful resource and inspire continued exploration, collaboration, and innovation in the pursuit of excellence in teaching and learning.

PROFESSOR DATUK TS. DR. MASSILA BINTI KAMALRUDIN
Vice-Chancellor
Universiti Teknikal Malaysia Melaka (UTeM)
Patron, IUCEL2025

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EDTECH: AN AI EDUCATIONAL MODEL FOR EMPOWERING FASHION DESIGN IDEATION – A CASE STUDY ON BABA NYONYA HERITAGE

Marzie Hatef Jalil[1]
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Abstract

This paper introduces the AI Technology Integrated Education Model (EdTech) aimed at empowering fashion design ideation through the fusion of cultural heritage and advanced digital learning tools. Centred on the Peranakan Elegance Garment Design Challenge, which celebrates the rich heritage of the ethnic groups in Melaka, the research addresses the need for innovative, inclusive, and globally collaborative approaches in fashion education. The objective was to promote AI-enhanced e-learning, encourage collaboration among educators and students, and highlight impactful digital innovations in higher education. The methodology employed a case study approach, combining AI-assisted creative ideation tools, a curated cultural heritage repository, and a cloud-based collaborative learning platform. A group of fashion students engaged in a structured design process involving heritage research, AI-generated mood boards, storyboards, and real-time peer and mentor feedback. Data was collected through design output analysis and student feedback, measuring the effectiveness of AI integration in enhancing creativity. Findings indicate that AI-assisted ideation accelerated the creative process, improved the quality and originality of design outcomes, and enhanced students' confidence in blending heritage motifs with contemporary fashion trends. Additionally, the cultural heritage repository supported the preservation and reinterpretation of Baba Nyonya traditions, demonstrating the potential of AI in safeguarding intangible heritage while inspiring innovative design. The study concludes that the AI technology-integrated education model is a viable and scalable solution for future-oriented fashion ideation and education. It bridges traditional craftsmanship and modern technology, supports inclusive participation, and fosters global collaboration. Beyond academia, the model holds potential for commercial applications in heritage-based product development and creative industries. This research contributes to the discourse on AI in innovative education, offering a replicable framework adaptable to various cultural and design contexts.

Keywords: Artificial Intelligence, Fashion Education, Baba Nyonya Heritage, AI-assisted Ideation, Digital Learning Innovation, Heritage-inspired Fashion Design.

BACKGROUND OF THE RESEARCH / INNOVATION / INVENTION / DESIGN

In the rapidly evolving landscape of education, integrating Artificial Intelligence (AI) into creative disciplines such as fashion design offers unprecedented opportunities for innovation, inclusivity, and global collaboration. Previous studies (Chen et al., 2019) highlighted the potential of AI to enhance creativity and contribute to sustainability. However, there is limited empirical evidence measuring how effectively tools like text-to-image generators improve designers' creative

decision-making or lead to more sustainable outcomes in costume design. As noted by Jalil et al. (2024), ethnic costume design faces a creativity gap, especially when it comes to sustainability, with many traditional practices relying on repetitive techniques. Hazan (2023) emphasizes that this lack of innovation restricts the ability to create unique designs that balance cultural heritage with contemporary aesthetics. In the fashion design process, text-to-image systems can enhance creative workflows by allowing designers to experiment with concepts and refine designs quickly before production. Hazan (2023) argues that these technologies could particularly benefit ethnic costume designers by enabling the visualization of traditional motifs in contemporary designs, thereby preserving cultural heritage while promoting innovation. Hence, the current research aims to develop an AI Technology Integrated Education Model designed to empower fashion design ideation through the fusion of cultural heritage and modern design thinking. The case study focuses on the Peranakan Elegance Garment Design Challenge in December 2024, inspired by Baba Nyonya heritage, an artistic amalgamation of Chinese and Malay influences that is rich in colour and symbolism. While fashion design education traditionally relies heavily on in-person studio practices, this study reimagines the learning experience by embedding AI tools into an e-learning platform that supports ideation, research, and visualization. Driven by the need to make creative education more accessible and responsive to global trends, the model addresses gaps in digital pedagogy for fashion design. It emphasizes how AI-assisted learning can both preserve intangible heritage and inspire modern interpretations, equipping students to work within diverse cultural contexts.

DESCRIPTION OF THE RESEARCH / INNOVATION / INVENTION / DESIGN

The AI Technology Integrated Education Model for this study is structured with AI-driven creative ideation tools, which incorporate generative AI for visual concept exploration, heritage motif transformation, and rapid prototyping of garment silhouettes, and the interactive cultural knowledge repository, which is an AI-curated database on Baba Nyonya heritage, offering visual archives, design elements, symbolism, and historical narratives as shown in Figure 1. AI natural language processing allows students to query the system for tailored cultural insights. The design challenge provided an authentic context where students from diverse backgrounds applied the model to create modern Baba Nyonya-inspired garments. Through AI-assisted mood boards, digital patternmaking, and colour harmonisation tools, students developed unique design proposals that celebrated heritage while appealing to contemporary markets.

Figure 1: Creative processes from AI-generated ideation to real garment production

SIGNIFICANCE OF THE RESEARCH / INNOVATION / INVENTION / DESIGN

This research is significant for innovation in pedagogy, where it advances the field of fashion education by merging traditional design processes with AI-enhanced ideation, enabling faster and more informed creative decision-making, and also cultural preservation through technology,

which is by embedding heritage-specific data into the AI system, the model safeguards cultural knowledge while inspiring its adaptation for modern fashion. In addition, the study aligns with the United Nations SDG 4(Quality Education) and SDG 11 (Sustainable Cities and Communities) by promoting inclusive, quality education and preserving cultural heritage through creative technology. The Educational Technology (EdTech) Model is a framework that integrates students, teachers, content, and technology into a connected learning ecosystem. It works by setting clear learning objectives and delivering content through digital platforms and tools, where students actively engage with materials and interact with teachers in both traditional and virtual environments. Technology supports this process by providing interactive resources, real-time feedback, and analytics that inform teaching methods. The cycle continues as data-driven insights refine instructional strategies, making learning more personalized, engaging, and effective over time. In short, it works as a continuous learning cycle where technology connects teachers, students, and content, while feedback and data ensure ongoing improvement.

IMPACT OF THE INNOVATION/INVENTION/DESIGN TOWARDS EDUCATION OR COMMUNITY

The model has demonstrated a measurable impact in both educational and community contexts. From the academic implications, students develop higher confidence in using AI tools for creative ideation, achieve greater efficiency in design prototyping, and improve their ability to integrate cultural narratives into fashion outcomes. Additionally, from community engagement, the project sparked renewed interest in Baba Nyonya heritage, with community members contributing stories, artefacts, and feedback to the AI database. This engagement fostered a sense of pride and cultural continuity while making the heritage more accessible to younger generations.

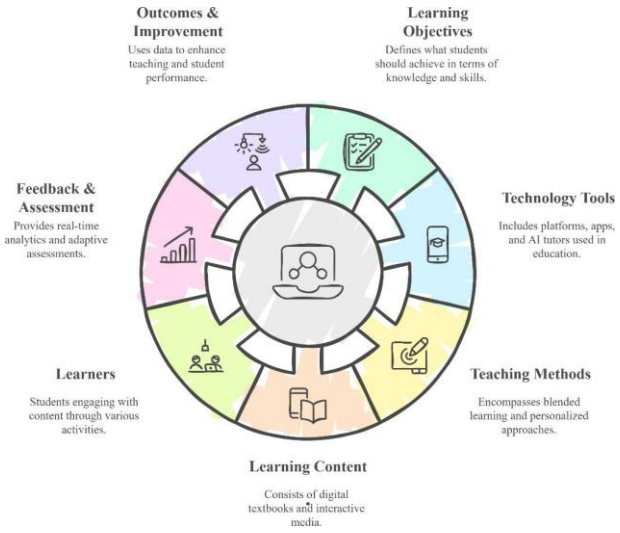

Figure 2: Educational Technology (EdTech) Model

COMMERCIALIZATION POTENTIAL

The Educational Technology (EdTech) model, as shown in Figure 2, can be adapted for other cultural design challenges, making it marketable to universities, design schools, and online learning platforms seeking to integrate AI into creative curricula. In the context of the AI Technology Integrated Education Model, EdTech serves as the backbone for delivering AI-driven creative ideation tools, an interactive cultural knowledge repository, and a collaborative e-learning framework. It enables real-time global collaboration, supports adaptive learning tailored

to students' needs, and facilitates the preservation and reinterpretation of cultural heritage within fashion design education. By combining AI capabilities with interactive digital learning environments, EdTech not only improves efficiency and creativity but also fosters inclusive participation and prepares learners for a technologically advanced future. Beyond education, the system can be licensed to fashion brands for heritage-inspired product development, cultural tourism merchandise design, and limited-edition collaborations that celebrate cultural fusion

CONCLUSION

The AI Technology Integrated Education Model represents a transformative approach to creative education, bridging tradition and technology in a way that is inclusive, collaborative, and future oriented. Through the Baba Nyonya Peranakan Elegance Garment Design Challenge, the research demonstrates how AI can act not as a replacement for human creativity but as a catalyst that expands the possibilities of cultural expression in fashion. By promoting innovative and inclusive e-learning, encouraging global educator-researcher collaboration, and recognizing impactful digital learning practices, this model offers a blueprint for the next generation of fashion design education, one where heritage and innovation coexist harmoniously. Furthermore, the research aims to illuminate the current state of sustainable costume design, emphasizing the significance of effective dissemination strategies in the context of Malaysia's rich cultural heritage. Introducing AI tools into fashion design education empowers designers to enhance their creativity while learning to adapt to cutting-edge industry practices. AI can simulate iterations of design ideas, enabling students to visualize outcomes more efficiently and experiment with various sustainable approaches. The project equips designers with practical knowledge of stable diffusion concepts in ethnic costume design, bridging the gap between theoretical sustainability and actionable creative processes. The research does not merely adopt AI as a functional tool but also explores its potential to push the boundaries of creativity. It empowers designers to imagine and implement designs that might otherwise be constrained by time, cost, or traditional limitations. By presenting state-of-the-art text-to-image technologies, this study will prioritize the needs of student designers, equipping them with the tools necessary to visualize and express stable diffusion principles. Ultimately, this project aspires to reinvent the future of costume design by establishing a dynamic connection between sustainability and creativity, fostering an inspiring business model that integrates innovative and responsible design practices. The study offers a replicable model for other regions aiming to integrate AI into culturally significant fashion design. It serves as a case study demonstrating how localized heritage can inspire global innovation while remaining sustainable and ethically sound.

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REFERENCES

1. Chen, L., Wang, P., Dong, H., Shi, F., Han, J., Guo, Y., Wu, C. (2019). An artificial intelligence-based data-driven approach for design ideation. *Journal of Visual Communication and Image Representation, 61*, 10-22.
2. Hazan, S. (2023). *The Dance of the Doppelgängers: AI and the cultural heritage community.* Paper presented at the Proceedings of EVA London 2023.
3. Jalil, M. H. (2022). Eco-fashion design-a review. *International Journal of Sustainable Design, 4*(3-4), 205-233.
4. Jalil, M. H., Abdullah, Q. D. L., Wong, N. R., Hoon, L. N., & Amaran, M. A. (2024). Art inheritance: Revitalizing traditional material culture motifs through innovative graphic design and artistic expression. *Journal of Graphic Engineering and Design, 15*(4), 5-17.

GAMIFIED EVENT RISK MANAGEMENT: THE RISK QUEST CHALLENGE – SOLO EDITION

Hasan Mohamed Zakaria[1]*, Azizah Ismail[1], Norwani Mohd Nazari[1] & Norhafiza Md Sharif[1]
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Abstract

This innovation introduces The Risk Quest Challenge: Solo Edition is an AI-supported, gamified e-learning platform developed using Canva Code. It aims to revolutionize the way event risk management is taught and learned, particularly in higher education event management courses. The app is designed as an interactive learning environment that mimics real-life risk scenarios in events through solo, self-paced gameplay. Each challenge round presents a detailed risk case, followed by three progressive and interdependent multiple-choice questions: risk identification, mitigation planning, and communication strategy. AI logic is embedded to assess the consistency and strategic alignment of learners' responses across all three stages, awarding Risk Mastery Points (RMPs) accordingly. This digital innovation integrates scenario-based learning, decision trees, and gamification principles to enhance engagement, critical thinking, and learning retention. Preliminary student feedback shows increased interest, understanding, and preparedness in managing event risks. This submission aligns with IUCEL 2025's mission by promoting inclusive, accessible, and intelligent educational solutions tailored for the digital age.

Keywords: Gamification, Event Management, Risk Learning, Canva Code, Digital Education, AI-enhanced Learning

BACKGROUND OF THE RESEARCH / INNOVATION / INVENTION / DESIGN

Risk management education in event courses is often passive and theory-heavy, leading to disengagement and poor real-world preparedness. Traditional lecture-based approaches fail to simulate the complexity, immediacy, and teamwork required in actual event crisis scenarios. The Risk Quest Challenge: Solo Edition responds to this gap by creating an intelligent, gamified module that students can access independently, combining decision-making, risk logic, and AI-guided feedback.

DESCRIPTION OF THE RESEARCH / INNOVATION / INVENTION / DESIGN

The Risk Quest Challenge: Solo Edition is developed using Canva Code to deliver a responsive, interactive web-based learning application. In this platform, learners engage with structured "Risk Quests," each beginning with a contextual scenario such as weather disruptions or vendor failures and progressing through three interlinked decision-making stages: risk identification, mitigation planning, and communication response.

These decisions are scored using a Risk Mastery Points (RMP) system that evaluates the logical alignment and effectiveness of responses across the three stages. The app incorporates visual gamification elements including dashboards, leaderboards, badges, and feedback mechanisms. To enhance personalization and learning outcomes, AI-driven logic powers the decision pathways

and provides adaptive feedback in real-time. The solution is versatile and can be used in classroom, hybrid, or fully online environments, supporting self-directed and inclusive learning.

SIGNIFICANCE OF THE RESEARCH / INNOVATION / INVENTION / DESIGN

The Risk Quest Challenge: Solo Edition transforms passive, memory-based risk education into a dynamic and immersive learning experience tailored for modern learners. Traditionally, event risk management lessons in the classroom have relied heavily on theoretical lectures and written assessments. While such approaches introduce foundational concepts, they often fail to engage students meaningfully or prepare them for the unpredictable, high-pressure realities of managing risks in live event environments. Many students have struggled to apply theoretical models to real-world scenarios, relying instead on rote memorization to complete assessments, an approach that frequently leads to shallow understanding and poor long-term retention.

This innovation addresses those shortcomings by immersing learners in realistic event-based simulations that require strategic thinking and decision-making. Through a solo e-learning game format, students navigate complex risk situations across three interdependent decision stages: identifying the risk, proposing mitigation strategies, and selecting appropriate communication responses. Rather than testing memory recall, the tool evaluates the logic and consistency of a learner's approach using the Risk Mastery Point (RMP) system, which rewards aligned and well-justified decisions.

Previous research confirms the value of this design. Well-implemented gamification yields significant gains in cognitive, motivational, and behavioral outcomes (Sailer & Homner, 2020), with newer studies reporting even larger effects when mechanics, dynamics, and aesthetics are carefully integrated (Li, Ma, & Shi, 2023). Similarly, scenario and simulation-based learning has been shown to cultivate complex skills such as diagnosis, mitigation, and communication beyond lectures alone, with strong outcomes in higher education and particularly high effectiveness when scenarios are salient and scaffolded (Chernikova et al., 2020; Chernikova et al., 2023).

The Solo Edition also leverages AI-driven adaptive feedback, similar to intelligent tutoring systems, which consistently outperform non-adaptive instruction by offering personalized and immediate guidance (Ma et al., 2014; Kulik & Fletcher, 2016). Research further highlights that repeated practice with timely feedback leads to predictable learning gains, averaging 2.5% improvement in accuracy per practice opportunity underscoring why staged, feedback-rich quests are effective for building mastery (Koedinger et al., 2023).

Incorporating gamified features such as badges, leaderboards, and scenario outcomes enhances student motivation, engagement, and inclusivity. The platform accommodates diverse learning styles through visual, experiential, and scenario-based content, supporting differentiated instruction. For domain-specific relevance, hospitality and tourism education research confirms that simulations enhance decision-making, problem-solving, engagement, and perceived readiness for industry practice (Deale, Bae, & Lee, 2021; Price-Howard & Lewis, 2023). By bridging the gap between theoretical knowledge and practical application, the Risk Quest Challenge: Solo Edition cultivates essential competencies in risk analysis, decision-making under pressure, and crisis communication skills that are critical for success in the event industry and beyond.

IMPACT OF THE INNOVATION/INVENTION/DESIGN TOWARDS EDUCATION OR COMMUNITY

The Risk Quest Challenge: Solo Edition significantly broadens the reach of experiential learning by extending it beyond the confines of traditional classrooms. By leveraging web-based architecture and AI-powered interactivity, the tool ensures that learners can engage with meaningful, scenario-based content regardless of their physical location, schedule, or access to institutional infrastructure. This flexibility is particularly impactful for students who are remote, self-paced, working adults, or learners with accessibility needs who may struggle with rigid, synchronous educational formats.

Designed with inclusivity at its core, the Solo Edition fosters equity in education by enabling diverse learner profiles to engage with the same rigorous, high-quality instructional content. Its gamified structure complete with dynamic dashboards, decision trees, and real-time feedback that supports differentiated learning styles, including visual, kinesthetic, and experiential learners.

At the institutional level, universities gain from improved learning outcomes, increased student engagement, and data-driven insights into learner performance and behavior. Educators are empowered to assess not just what students know, but how they think and respond under simulated pressure, an often-missing element in conventional assessments. On a broader scale, communities stand to benefit from graduates who are not only theoretically informed but also practically equipped to manage real-world risks. These future event professionals will be more agile, communicative, and prepared to mitigate and respond to crises in ways that enhance public safety and confidence in large-scale events.

COMMERCIALIZATION POTENTIAL

The Risk Quest Challenge: Solo Edition holds substantial potential for commercialization across diverse education and training sectors. As a self-paced, gamified learning platform focused on experiential risk education, it is well-positioned to be licensed by higher education institutions, particularly those offering programs in event management, tourism, hospitality, public safety, and business continuity. Universities and colleges can integrate it into their digital learning ecosystems, either as a standalone training module or a scaffolded component within larger risk management curricula.

For professional training centers, the platform offers a modern alternative to static workshops and conventional slide-based training. Its interactive and scenario-based format simulates real-world complexities, making it highly attractive for workforce development programs that require flexible delivery modes and measurable learning outcomes. It can be deployed in continuing education settings to upskill event professionals, safety officers, and volunteers involved in large-scale public events.

In corporate environments, the tool can serve as a risk awareness simulator for companies organizing internal or public events. Human resources or training divisions can integrate it into employee onboarding or leadership development programs that emphasize crisis response, communication strategy, and operational risk thinking. Moreover, the platform’s impact can be extended through AI-powered expansion, transforming it into a fully autonomous intelligent training system capable of personalized learning paths, predictive feedback, and performance analytics dashboards.

CONCLUSION

The Risk Quest Challenge: Solo Edition is a scalable, intelligent, and engaging innovation that bridges the gap between theory and real-world risk competency. By leveraging Canva Code and gamified AI elements, it transforms e-learning into an inclusive, strategic, and outcome-driven experience. Its application potential extends far beyond event education into broader crisis and operations management learning.

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REFERENCES

1. Chernikova, O., Heitzmann, N., Stadler, M., Holzberger, D., Seidel, T., & Fischer, F. (2020). Simulation-based learning in higher education: A meta-analysis. *Review of Educational Research, 90*(4), 499–541.
2. Chernikova, O., Holzberger, D., Heitzmann, N., Stadler, M., Seidel, T., & Fischer, F. (2023). Where salience goes beyond authenticity. *Zeitschrift für Pädagogische Psychologie*.
3. Deale, C. S., Bae, S., & Lee, S. H. (2021). Educators' Use and Views of Simulations as Teaching Tools within a Discipline: The Example of Hospitality and Tourism. *International Journal for the Scholarship of Teaching and Learning*, *15*(2), 10.
4. Koedinger, K. R., Carvalho, P. F., Liu, R., & McLaughlin, E. A. (2023). An astonishing regularity in student learning rate. *Proceedings of the National Academy of Sciences*, *120*(13), e2221311120.
5. Kulik, J. A., & Fletcher, J. D. (2016). Effectiveness of intelligent tutoring systems: a meta-analytic review. *Review of educational research*, *86*(1), 42-78.
6. Li, M., Ma, S., & Shi, Y. (2023). Examining the effectiveness of gamification as a tool promoting teaching and learning in educational settings: a meta-analysis. *Frontiers in Psychology*, *14*, 1253549.
7. Ma, W., Adesope, O. O., Nesbit, J. C., & Liu, Q. (2014). Intelligent tutoring systems and learning outcomes: A meta-analysis. *Journal of educational psychology*, *106*(4), 901.
8. Price-Howard, L. K., & Lewis, H. (2023). Perceived usefulness of simulation learning in hospitality education. *International Hospitality Review*, *37*(2), 384-393.
9. Sailer, M., & Homner, L. (2020). The gamification of learning: A meta-analysis. *Educational psychology review*, *32*(1), 77-112.

EMBRACING AI TO EMPOWER B40 WOMEN: A DIGITAL PLATFORM FOR LEARNING, AWARENESS, AND AFFORDABLE MENSTRUAL SUPPORT

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Abstract

Menstrual health remains a significantly under-discussed and stigmatized topic in Malaysia, particularly among women from the B40 income group. The lack of formal menstrual education in schools, combined with financial constraints, results in many women resorting to unsafe alternatives such as newspapers, tissues, and reusable cloths due to their inability to afford sanitary products. This phenomenon, known as period poverty, highlights a critical gap in public health, education, and social equity. This study introduces Pads4Less, a digital platform designed to empower marginalized B40 women by increasing awareness, providing education, and improving access to affordable menstrual products. The platform incorporates artificial intelligence (AI) to streamline the creation of educational content and integrates a cost-offsetting model that leverages advertisement revenue and public donations. By viewing advertisements, users contribute to the subsidization of menstrual products, making them more affordable and accessible. Collaboration with the Sarawak-based NGO, P.A.D Project My, enables the platform to stay community-focused, culturally sensitive, and tailored to the actual needs and pricing realities of the target population. Additionally, the project employs the Empathy Map Canvas to gain deeper insight into the emotional and practical needs of B40 women, ensuring the platform's design and communication remain user-centric. The platform not only aims to provide physical support but also works to dismantle the stigma surrounding menstruation through digital learning tools and open dialogue. Ultimately, Pads4Less offers a scalable and socially responsible solution that leverages AI and community collaboration to combat period poverty and promote menstrual dignity through inclusive digital education.

Keywords: Period Poverty, Artificial Intelligence (AI), Digital Platform, Menstrual Health Education, B40 Women

BACKGROUND OF THE RESEARCH / INNOVATION / INVENTION / DESIGN

Menstrual health is often overlooked in Malaysia, especially among the B40 community, where women face financial constraints and social stigma. Many resort to unsafe alternatives such as newspapers and towels, leading to hygiene and health concerns (House et al., 2012). Limited formal education on menstruation worsens the problem, resulting in both practical and social disadvantages (UNESCO, 2014).

DESCRIPTION OF THE RESEARCH / INNOVATION / INVENTION / DESIGN

Pads4Less is a digital platform designed to subsidize sanitary products by integrating advertisements and donation features. Users contribute indirectly by engaging with ads, reducing the price of menstrual products. The platform also applies AI to create awareness materials, lesson content, and culturally sensitive campaigns. A partnership with P.A.D Project My provides valuable data to ensure accurate targeting and pricing.

SIGNIFICANCE OF THE RESEARCH / INNOVATION / INVENTION / DESIGN

This innovation simultaneously tackles three critical issues: (1) affordability of sanitary products, (2) lack of menstrual health education, and (3) societal stigma surrounding menstruation. By combining AI and NGO collaboration, the project creates a sustainable and socially responsible approach to menstrual equity (Sommer et al., 2015).

IMPACT OF THE INNOVATION/INVENTION/DESIGN TOWARDS EDUCATION OR COMMUNITY

For education, the project produces AI-generated, easily accessible learning resources on menstrual health for students and communities (Holmes, 2023). For society, it empowers marginalized women with affordable sanitary products, promotes dignity, and encourages open dialogue about menstruation. The initiative also fosters greater community awareness and participation through donation and ad-supported models.

COMMERCIALIZATION POTENTIAL

The platform presents a scalable model with potential for commercialization through corporate partnerships, digital ad placements, and donor networks. Expansion to other underserved groups or regions is feasible, ensuring long-term sustainability beyond charitable funding (Mukherjee & Sharma, 2022).

CONCLUSION

Pads4Less demonstrates how AI-driven platforms can provide inclusive, affordable, and socially impactful solutions to real-world problems. By addressing period poverty through technology, awareness, and collaboration, the project offers a replicable model that bridges digital innovation and community empowerment.

Acknowledgement: I would like to sincerely thank P.A.D Project My for their collaboration and valuable input in shaping this project. I am also grateful to my institution, Taylor's University, for the continuous support and encouragement that made this work possible.

REFERENCES

1. Holmes, W. (2023). Artificial intelligence in education: Promises and implications for equitable learning. Routledge Anderson, T. (Ed.). (2008). *The theory and practice of online learning* (2nd ed.). Athabasca University Press
2. House, S., Mahon, T., & Cavill, S. (2012). Menstrual hygiene matters: A resource for improving menstrual hygiene around the world. WaterAid. https://washmatters.wateraid.org/

3. Mukherjee, S., & Sharma, P. (2022). Digital platforms for social good: Opportunities and challenges in developing economies. Journal of Social Entrepreneurship, 13(3), 265–284. https://doi.org/10.1080/19420676.2020.1805672
4. Sommer, M., Hirsch, J. S., Nathanson, C., & Parker, R. G. (2015). Comfortably, safely, and without shame: Defining menstrual hygiene management as a public health issue. American Journal of Public Health, 105(7), 1302–1311. https://doi.org/10.2105/AJPH.2014.302525
5. UNESCO. (2014). Puberty education & menstrual hygiene management. UNESCO. https://unesdoc.unesco.org

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