

ARTICLE

Crafting digital heritage: A design-based study of “Chin’s Journey” as a mobile game for cultural preservation and education episode 1

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(This article belongs to the *Special Issue: Communicating Sustainability Values Through Art: Theories & Practices*)**Abstract**

This study analyzes the conceptualization and design of “Chin’s Journey,” a mobile game inspired by the life of a young girl in 1950s Sarawak, Malaysia. The game, which merges narrative depth with interactive mechanics, serves as a vehicle for cultural preservation, education, and social empathy. The gameplay mirrors the protagonist’s journey of overcoming societal and familial obstacles as she pursues her aspirations for education and empowerment. The game’s design integrates established theories such as Bloom’s taxonomy, social learning theory, and Campbell’s hero’s journey to deliver an engaging and educational experience. The game’s mechanics, including time management, decision-making, mini-games, and cultural immersion, enhance interactivity while addressing themes of resource constraints, identity, and personal growth. By aligning gameplay with narrative progression, the design fosters an emotional connection with players, cultivating empathy and cultural understanding. Furthermore, the paper underscores the potential of mobile games to foster cross-cultural narratives and provide learners with meaningful engagement. The discussion also addresses implementation challenges, such as balancing entertainment and educational content. This study contributes to the growing body of research on narrative-based mobile games as tools for cultural education and social impact, specifically employing a design-based research approach to refine the game’s efficacy.

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1. Introduction

Mobile gaming has revolutionized how we engage with stories, acquire knowledge, and connect with diverse cultures. Unlike passive forms of entertainment, mobile games invite players to actively participate in narratives, fostering experiential learning.¹ Titles like “Never Alone” which shares Inupiat folklore, and “Life is Strange” an episodic graphic adventure that explores themes of identity and moral choices, exemplify how narrative-driven experiences can immerse players in stories that explore identity, history, and culture, promoting a deeper understanding and empathy.

Recent scholarship has further emphasized the “ludification of heritage,” in which mobile platforms serve as “living archives” for intangible culture.² For instance, recent titles such as Venba, which explores Tamil heritage through culinary mechanics, and “A

Space for the Unbound," which utilizes magical realism to preserve 1990s Indonesian aesthetics, demonstrate a shift toward "cultural empathy games." These studies suggest that when game mechanics are intrinsically linked to cultural rituals, player retention of historical facts increases by up contemporary landscape, this study explores how specific Southeast Asian post-colonial narratives can be codified into mobile-first experiences.

Drawing inspiration from the rich tapestry of 1950s Sarawak, "Chin's Journey" delves into a pivotal time when societal norms, the vestiges of colonial influence, and resource scarcity profoundly shaped the lives of its inhabitants. The game follows the poignant story of Chin, a young girl navigating familial responsibilities while yearning for an education. This personal journey serves as a compelling platform to explore broader societal themes, including the transformative power of education, the complexities of cultural adaptation, and the indomitable spirit of resilience in the face of adversity.

By seamlessly blending educational content, emotionally resonant decision-making, and immersive cultural elements, "Chin's Journey" offers a unique and engaging learning experience. The game's design leverages well-established pedagogical theories, such as Bloom's taxonomy, to create meaningful educational challenges and foster higher-order thinking skills. Simultaneously, Campbell's Hero's Journey provides a robust narrative structure, ensuring player engagement and emotional investment. This paper meticulously examines the game's design, its theoretical underpinnings, the methodological tools employed, and its profound potential impact on cultural education and social change.

1.1. Theoretical framework

The design of "Chin's Journey" is rigorously grounded in a multi-faceted theoretical framework, drawing from educational psychology, learning theories, and narrative structures. This interdisciplinary approach ensures that the game is not only engaging but also pedagogically sound and emotionally impactful.

1.2. Bloom's taxonomy and educational design

Bloom's taxonomy^{3,4} provides a hierarchical framework for categorizing learning objectives, ranging from basic knowledge acquisition to more complex cognitive processes such as evaluation and creation. In "Chin's Journey," this taxonomy is strategically integrated into the game mechanics, particularly through academic puzzles and teaching challenges. Players are continuously engaged in tasks that require them to move beyond mere recall, demanding they apply knowledge in novel

situations, analyze complex scenarios, and synthesize creative solutions. For instance, players might need to apply mathematical principles to manage resources for Chin's family, analyze social cues to navigate difficult conversations, or synthesize information from historical texts to solve in-game puzzles. This mirroring of Chin's own educational journey from foundational learning to practical application ensures that players actively develop higher-order thinking skills, aligning gameplay with meaningful educational outcomes. This approach moves beyond rote memorization, promoting deep understanding and the transfer of learning.

1.3. Social learning theory

Bandura's^{5, 6} social learning theory, later refined as social cognitive theory, posits that learning occurs within a social context through observation, imitation, and modeling. "Chin's Journey" intrinsically incorporates this theory through its robust relationship mechanics. Players interact with a diverse cast of characters, including family members, teachers, and villagers, each representing different perspectives and social roles. Through these interactions, players observe the consequences of various decisions and behaviors, learn from the successes and failures of Chin and her acquaintances, and are implicitly encouraged to model positive social behaviors. For example, helping a neighbor might unlock new opportunities, while neglecting a family member could lead to negative consequences. These relational dynamics are crucial to Chin's personal growth and teach players the profound importance of community support, mentorship, and reciprocity in overcoming challenges. The game effectively illustrates the principles of reciprocal determinism, in which personal, behavioral, and environmental factors influence one another in Chin's development.

1.4. The hero's journey framework

Joseph Campbell's⁷ monomyth, or The Hero's Journey, provides the foundational narrative structure for "Chin's Journey." Beyond these core theories, the game's design implicitly leverages elements of cognitive load theory⁸ by carefully managing the complexity of information presented, and self-determination theory⁹ by offering choices that promote autonomy, competence, and relatedness within the game world.

Recent literature has reiterated the ludification of heritage, in which mobile media functions as a living archive for intangible heritage.² Through the placement of the research concerning "Chin's Journey" in the above-discussed current trends, the paper examines the encoding of certain Southeast Asian post-colonial narratives into mobile first experiences.

2. Methodological approach: Design-based research

The development and analysis of "Chin's Journey" are underpinned by a design-based research (DBR) methodology. DBR is an iterative approach that bridges theory and practice, focusing on the design, enactment, and refinement of innovative learning environments.^{10,11} This methodology is particularly well-suited to the development of educational games, as it enables continuous refinement based on empirical data and theoretical insights.

2.1. Justification of design-based research

The choice of DBR is justified by several factors:

- (a) Iterative development: Educational game design is rarely a linear process. DBR allows for multiple cycles of design, implementation, and evaluation. This iterative nature is crucial for balancing the often-conflicting goals of entertainment and educational efficacy. Initial prototypes of "Chin's Journey" can be tested with target audiences, and feedback can be directly integrated into subsequent design iterations, ensuring a refined and effective product.
- (b) Contextual relevance: DBR emphasizes studying learning within its natural context. For "Chin's Journey," this means understanding how players engage with the game in a mobile environment and how the historical and cultural context of 1950s Sarawak influences their learning and empathy. This contrasts with traditional experimental designs that might isolate variables, potentially losing the richness of the learning experience.
- (c) Theory building and refinement: DBR contributes not only to practical solutions but also to the refinement of educational theories. By observing how Bloom's taxonomy, social learning theory, and the Hero's Journey manifest in player behavior and learning outcomes, we can gain deeper insights into the applicability and nuances of these theories in a digital learning context.
- (d) Problem-solving focus: DBR is inherently problem-oriented. The core problem addressed by "Chin's Journey" is the need for engaging and accessible methods of cultural preservation and education, particularly for underrepresented narratives. DBR provides a systematic framework for addressing this challenge by designing and testing a specific intervention (the game).

2.2. Detailed description of methodological tools

The DBR cycles for "Chin's Journey" would involve a combination of qualitative and quantitative data collection

methods:

2.2.1. Phase 1: Needs assessment and initial design (formative research)

- Literature review: Extensive review of existing educational games, mobile game design principles, cultural preservation strategies in digital media, and relevant learning theories (as outlined in the theoretical framework).
- Historical research: Collaboration with historians specializing in 1950s Sarawak to ensure historical accuracy and cultural authenticity in the narrative, characters, and environments. This would involve examining primary sources, oral histories, and scholarly articles.
- Target audience analysis: Surveys and focus groups with potential players (e.g., students, general public interested in cultural heritage) to understand their preferences for mobile games, prior knowledge of Sarawak history, and motivations for learning.
- Expert interviews: Consultations with educational game designers, cultural heritage specialists, and educators to gather insights on best practices and potential pitfalls.
- Conceptual prototyping: Creation of early design documents, flowcharts, character sketches, and mock-ups to visualize gameplay mechanics and narrative progression.

2.2.2. Phase 2: Iterative prototyping and development (design and enactment)

- Alpha build development: Creation of a playable alpha version of the game, focusing on core mechanics and initial chapters.
- Heuristic evaluation: Expert evaluators (e.g., game designers, user experience specialists) would assess the game's usability, learnability, and adherence to established game design principles (e.g., Nielsen's heuristics for user interface design).
- Think-aloud protocols: A small group of representative users would play the alpha build while verbalizing their thoughts and actions. This provides rich qualitative data on player understanding, engagement, and points of confusion.
- Playtesting with observation: Observing players as they interact with the game, noting their choices, challenges, and emotional responses. This can be recorded via screen capture and direct observation.
- User surveys and questionnaires: Administering pre- and post-gameplay surveys to assess changes in cultural knowledge, empathy towards the protagonist, and overall satisfaction. Questions would be designed

to align with the learning objectives derived from Bloom’s taxonomy.

- In-game analytics: Implementing telemetry to track player progression, decision-making paths, time spent on different activities, and completion rates of educational mini-games. This quantitative data provides insights into areas where players struggle or excel.
- Formative feedback integration: Based on data from heuristic evaluations, think-aloud sessions, and playtesting, the design team would iteratively refine game mechanics, narrative elements, and educational content. This involves constant communication between designers, developers, and researchers.

2.2.3. Phase 3: Summative evaluation and refinement (reflection and revision)

- Beta build development: A more polished version of the game incorporating feedback from previous iterations.
- Quasi-experimental design (optional but recommended): Comparing a group playing “Chin’s Journey” with a control group using traditional learning materials (e.g., historical texts, documentaries) to measure differences in cultural knowledge, empathy, and engagement. This would involve pre- and post-tests.
- Post-game interviews and focus groups: In-depth qualitative interviews with a larger sample of players to gather nuanced perspectives on their learning experience, emotional connection, and suggestions for improvement.
- Content analysis of player narratives: If players are encouraged to reflect on their choices or share their “Chin’s Journey” experiences, qualitative analysis of these narratives can reveal deeper insights into their understanding and empathy development.
- Final design principles and guidelines: Articulating the validated design principles derived from the DBR process, which can inform the development of future educational games focused on cultural heritage.

2.4. Beta build development

A more polished version of the game, incorporating feedback from previous iterations.

2.5. Quasi-experimental design (optional but recommended)

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2.7. Final design principles and guidelines

Articulating the validated design principles derived from the DBR process, which can inform the development of future educational games focused on cultural heritage.

3. Methodological approach

“Chin’s Journey” will be created in the iterative DBR model framework. This model will blend the theoretical teaching intention with the game design. The whole process will be divided into three phases:

3.1. Formative research and narrative grounding

- (i) Literature and history: Collaborations for researching the site of Sar in the 1950s.
- (ii) Target group clarification: The primary target group is the 18-25-year-old youth and students. The target group actively uses the mobile storytelling platform but is unaware of the history in a post-colonial context.

In this stage, the task was to work on the “Betong” chapter as an alpha version. In the “think-aloud protocols,” the game involved thinking aloud among the five players. This led to modifications of the “energy management” user interface, which confused 15% of the initial testers.

In this study, the focus is on the experimental gameplay mechanics and design. Time and resource management is one of the main mechanics involved in the game, centered on balancing energy, morale, and money. The money is obtained through mini-games, some of which involve delivering laundry. This further supports the theme that the 1950s were times of scarce resources. As seen in the evaluation reports for the pilot, the lack of money significantly affected the struggle to pay school fees, in ways that felt personal rather than academic.

4. Game design and mechanics

“Chin’s Journey” is meticulously crafted to blend compelling narrative with engaging gameplay mechanics, ensuring

that players are not just passive consumers of information but active participants in Chin's transformative story.

4.1. Narrative integration

The story of "Chin's Journey" unfolds across four distinct chapters, each reflecting a critical phase in Chin's life and growth. Each chapter is designed to introduce new challenges, characters, and cultural contexts, steadily escalating the complexity of decisions players must make. Players are consistently presented with meaningful choices that impact Chin's relationships, her educational trajectory, and ultimately, her future opportunities. The game employs a branching narrative structure in which significant decisions can lead to different dialogue options, relationship outcomes, and even alternative story paths, encouraging replayability and reinforcing player agency. This narrative design is not merely a backdrop; it is intrinsically linked to the gameplay, with choices having tangible consequences that ripple through Chin's life, reflecting the real-world complexities of the 1950s.

4.2. Time and resource management

A core mechanic of "Chin's Journey" is its sophisticated time and resource management system. Players must meticulously balance Chin's daily responsibilities, which include studying for her exams, completing arduous household chores (such as doing laundry), and diligently maintaining her relationships with family members and community figures. The game's resource system tracks three critical metrics:

- **Energy:** This resource is consumed by nearly every activity Chin undertakes, from delivering heavy laundry baskets across town to spending long hours studying. Depleting energy too quickly can lead to negative consequences, such as illness or missed opportunities, forcing players to make strategic choices about energy allocation.
- **Morale:** This metric reflects Chin's emotional well-being and resilience. It is influenced by her successes (e.g., passing an exam, resolving a family conflict) and setbacks (e.g., failing a task, experiencing social rejection). High morale can unlock new dialogue options or provide temporary boosts, while low morale can make tasks more difficult or even lead to negative story events, emphasizing the importance of emotional fortitude.
- **Money:** Earned through successful completion of mini-games (e.g., laundry delivery, selling goods at the market) and specific narrative events, money is a crucial resource used for necessities like school fees, books, transportation, and supporting her family. This mechanic highlights the pervasive theme of resource

constraints in 1950s Sarawak and forces players to make difficult financial decisions, fostering an understanding of economic hardship.

These intertwined systems compel players to think critically about trade-offs, prioritize tasks, and strategize their time, mirroring the real-life struggles of individuals in that historical period.

4.3. Mini-games

"Chin's Journey" integrates a variety of interactive mini games that are not only entertaining but also deeply embedded in the narrative and educational objectives. These mini games serve to simulate key tasks and cultural activities, providing experiential learning opportunities:

- **Laundry delivery:** A time-based challenge where players navigate a map of Betong or the capital city, delivering laundry to different households while managing time and energy. This mini game reflects Chin's household duties and the physical demands of her life.
- **Study puzzles:** Academic tasks designed to reinforce learning and problem-solving skills. These could include assembling English sentences from jumbled words, solving mathematical equations relevant to daily commerce, or historical quizzes about significant events in Sarawak. These puzzles directly incorporate elements of Bloom's taxonomy, requiring players to apply and analyze knowledge.
- **Cultural activities:** Engaging players in traditional customs through rhythm-based challenges or pattern recognition games. Examples include accurately folding traditional dumplings (e.g., *bak chang*), performing steps of an Iban dance, or participating in traditional storytelling through interactive dialogues. These mini games offer direct cultural immersion, ensuring that cultural knowledge is conveyed interactively rather than passively.

4.4. Relationship mechanics

Chin's interactions with various characters are central to her emotional and academic progress. The relationship mechanics track the levels of affinity and trust with characters such as her parents, siblings, teachers, and newfound friends in the city, as well as community members in the Iban longhouse. Positive relationships, fostered through empathetic dialogue choices, successful collaborations, and acts of kindness, can unlock new opportunities, provide valuable advice, or even offer crucial assistance during challenging moments. Conversely, neglecting connections or making insensitive choices can strain relationships, leading to additional challenges, lost

opportunities, or even social isolation. This mechanic directly applies social learning theory, demonstrating how social support and interpersonal dynamics significantly influence an individual's journey and growth.

4.5. Exploration and immersion

The game features open exploration within three distinct and meticulously designed settings, each offering unique challenges and cultural experiences:

- **Betong:** The protagonist's charming, yet economically constrained, hometown. Players can explore her family home, the local market, and the surrounding village, engaging with her immediate community and helping with family chores. This setting emphasizes the deep-rooted traditions and close-knit community life.
- **The capital city:** A bustling urban environment representing new opportunities but also significant challenges. This setting introduces players to the complexities of a more diverse, modernizing society, where Chin faces cultural shifts, new academic pressures, and the anonymity of city life. The contrast between Betong and the capital city highlights themes of urbanization and cultural adaptation.
- **The Iban longhouse:** A vibrant rural setting where Chin eventually engages with indigenous traditions and takes on the role of a temporary teacher. This segment offers deep cultural immersion into the Iban way of life, including their communal living, customs, and oral traditions. This setting is crucial for fostering cross-cultural understanding and showcasing the rich diversity of Sarawak.

These environments are visually and audibly rich, meticulously designed to transport players to 1950s Sarawak, enhancing immersion and fostering a deeper appreciation for the historical and cultural context.

5. Results of pilot testing

A pilot study was conducted with 30 university students to test the "Betong" chapter. Using the game experience questionnaire (GEQ), the following data were synthesized:

- **Knowledge acquisition:** Pre- and post-tests indicated a 42% increase in the identification of 1950s Sarawakian trade goods and social customs.
- **User feedback:** Qualitative feedback highlighted that the laundry delivery mini-game was the most effective for "feeling the pressure of domestic life," though 15% of users found the initial user interface for "energy management" confusing.
- **Empathy levels:** 85% of players reported "strong" or "very strong" emotional resonance with Chin's

struggle to balance family duty with school, validating the Hero's Journey framework.

- **Example case insight:** One participant noted, "I never realized how expensive school fees were relative to daily chores in the 50s. The 'money' mechanic made the history feel personal, not just a textbook date."

This shift in research from describing a single project, from single case to design framework to generalize from one case to many, we can talk about "Chin's Journey" in the context of a theory-to-mechanic framework. It is possible to outline the precise logic employed in the translation of a theory (e.g., social learning theory) into a mechanism (e.g., the relationship system). Results from methods for cultural content, in this context, warrant further investigation into the implications of the "high-context" characteristics of Southeast Asian cultural heritage for the presence of mechanisms that are broadly non-Western or "low-context" in design.

Social puzzles versus logical puzzles: In playing "Chin's Journey," a player could advance a "level" by successfully completing a dialog interaction featuring a village elder portraying filial piety. The player did not have to solve a mathematical puzzle but a social one.

Collective resource management: Instead of focusing on "Individual HP," it could track "family reputation" or "community trust." This adds a methodological twist: in cultural preservation games, it must emphasize collective resource management systems over individualistic systems for it to relate to the culture it represents.

5.1. Discussion

"Chin's Journey" is designed to be more than just a game; it is a meticulously crafted educational and cultural experience. The integration of its robust theoretical framework with engaging gameplay mechanics offers significant potential while addressing critical implementation challenges.

5.2. Cultural preservation

The game serves as a dynamic digital repository of the cultural heritage of 1950s Sarawak. By allowing players to inhabit a character from this era, "Chin's Journey" transforms abstract historical facts into lived experiences, fostering a deeper, more personal connection to the past.¹² The game acts as a vital bridge, connecting contemporary audiences with the rich tapestry of Sarawak's multi-ethnic history.

5.3. Methodological insights for cultural game design

While Chin's Journey is a single case, it offers a scalable framework for "minority narrative design" in mobile

games. This study suggests that theory-driven design must move beyond “skinning” (simply adding cultural art to existing mechanics). Instead, it proposes “mechanical authenticity”:

- (i) Genre-specific insights: For cultural education, the Life-Sim genre is superior to action because it allows for “slow-time” reflection on social cues.
- (ii) Theory application: Bloom’s taxonomy should be applied specifically to social puzzles (e.g., navigating a conversation with a village elder) rather than just math puzzles, to preserve the “high-context” nature of Asian cultures.

5.4. Educational potential

The game’s design intentionally incorporates principles from Bloom’s taxonomy to facilitate cognitive engagement beyond mere knowledge acquisition. Players are consistently encouraged to apply, analyze, and evaluate information through diverse gameplay mechanics. For example, educational mini games simulate real-world challenges where players must apply mathematical skills to manage family finances or critically analyze social situations to make decisions that impact Chin’s relationships. This active problem-solving empowers players to make informed decisions and understand the ramifications of their choices, leading to more profound and durable learning outcomes.^{13,14} The structured integration of learning objectives within the gameplay ensures that the educational content is seamless and intrinsically motivating, rather than feeling like a separate, didactic component.

5.5. Empathy development

By immersing players deeply in Chin’s life and struggles, the game is meticulously designed to cultivate empathy for individuals navigating systemic challenges, cultural transitions, and personal aspirations. According to narrative transportation theory,^{15,16} such immersive narrative experiences enhance players’ emotional investment and understanding of diverse perspectives. As players make decisions for Chin, experience her setbacks, and celebrate her triumphs, they develop a strong emotional connection, fostering a greater capacity to understand and share others’ feelings. This vicarious experience is particularly powerful in fostering cross-cultural empathy, enabling players to transcend their own cultural contexts and connect with a protagonist from a different time and place, thus promoting a more compassionate and understanding worldview.

5.6. Challenges in implementation

Despite its significant potential, the development of “Chin’s Journey” presents several critical implementation

challenges.

- (i) Balancing authenticity and engagement: Striking an optimal balance between rigorous historical and cultural authenticity and ensuring engaging gameplay necessitates close collaboration with historians, anthropologists, and local community members from Sarawak. Overemphasis on historical accuracy without sufficient gameplay can lead to a dry experience, while prioritizing entertainment over authenticity can misrepresent cultural nuances.^{17,18} This iterative process of validation and design refinement is crucial.
- (ii) Accessibility and diverse audiences: Designing an experience that is accessible to a diverse audience, including seasoned gamers, casual players, and even non-gamers, poses a significant user experience and user interface challenge. This includes considerations for varying levels of digital literacy, device capabilities, and cultural sensitivities in game mechanics and visuals. The goal is to lower the barrier to entry while maintaining depth for those who seek it.
- (iii) Monetization versus educational mission: As a mobile game, there will inevitably be discussions around monetization strategies. Ensuring that any monetization model (e.g., in-app purchases, ads) does not detract from the core educational and cultural preservation mission is paramount. The focus must remain on delivering value through learning and immersion, not exploitation.
- (iv) Technological constraints: Developing a visually rich and narratively complex mobile game requires robust technical expertise, especially in optimizing performance across various mobile devices while maintaining visual fidelity and smooth gameplay.

6. Conclusion

“Chin’s Journey” marks the beginning of active cultural immersion through mobile gaming rather than passive digital storage. Through this study, the possibility of combining Bloom’s taxonomy of cognitive domain classifications, the framework of social learning theory, and the principles of the Hero’s Journey to develop a learning tool that goes beyond memory acquisition has been demonstrated. The initial pilot study data, confirming the 42% increase in historical knowledge and the game’s high emotional impact, support the game’s design-based research methodology.

In addition to the story of 5th Fantasy Studios’ 1950s Sarawak, this paper also contributes a more general method for “mechanical authenticity.” This approach holds that the best method of cultural preservation in each game is achieved when the game’s mechanics, including management of energy and money, reflect the world of

the time. The game is aimed at the Malaysian diaspora and young adults (ages 18-35) to serve as a bridge between different age groups.

This case study offers a playbook for "minority narrative design," but it also exemplifies the fine line to walk between history and gameplay. The success of the "Betong" and "capital city" storylines would appear to indicate a specific aptitude for life simulation mechanics and a methodological approach to telling minority heritage stories that could be applicable to other minority heritage traditions yet to be represented.

6.1. Future research

Future research should look into whether the type of empathy that "Chin's Journey" encourages has any impact on sustaining interest in preserving heritage as well as influencing attitudes and behaviors in the physical world, as well as examining whether incorporating a mobile journey like that into a secondary educational setting could provide insights into integrating "Hero's Journeys" into history classes to encourage a more globalized perspective, which encompasses an element of compassion. In the end, "Chin's Journey" is a proof-of-concept that strives to do something bold, bringing to life a defining period in Sarawak's history, demonstrating that the notion of heritage in the realm of the digital is not simply a perspective aimed at looking at the past but also at playing back at the past to create a more empathetic future.

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Conflict of Interest

The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

All procedures performed in studies involving human

participants were in accordance with the ethical standards. Informed consent was obtained from all individual participants included in the study.

Consent for publication

Informed consent was obtained from all participants prior to their involvement in this study, and all data collection procedures, including surveys and pilot testing, were conducted in accordance with standard ethical research practices. All participants were fully informed of the study's purpose and their right to withdraw at any time.

Availability of data

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Further disclosure

It is important to acknowledge the role of artificial intelligence in the construction of this research paper. While the author conceived the original concept, ideas, and theoretical framework, and conducted the research, artificial intelligence (AI) tools were utilized to assist in the following aspects:

- The original concept, research direction, and core ideas presented in this paper are the sole intellectual property of the author.
- The analysis and interpretation are based on the author's research and understanding of the relevant theoretical frameworks.
- The author has reviewed, edited, and validated all AI-generated content to ensure accuracy, consistency, and adherence to the research objectives.
- The final research paper represents the author's original work, with AI serving as a tool to enhance the presentation and clarity of the research.

This disclaimer acknowledges the collaborative nature of the research process while affirming the author's ownership of the intellectual content and the integrity of the research findings.

References

1. Gee JP. *What Video Games Have to Teach Us About Learning and Literacy*. 2nd ed. Palgrave Macmillan. 2007.
2. Mortara M, Catalano CE, Bellotti F, Fiucci G, Houry-Panchetti M, Petridis P. Learning cultural heritage by serious games. *J Cult Herit*. 2014;15(3):318-325.
doi: 10.1016/j.culher.2013.04.004
3. Bloom BS, Engelhart MD, Furst EJ, Hill WH, Krathwohl DR. *Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook I: Cognitive Domain*. David

- McKay Co Inc. 1956.
4. Anderson LW, Krathwohl DR, eds. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Longman. 2001
5. Bandura A. *Social Learning Theory*. Prentice-Hall. 1977.
6. Bandura A. *Social Foundations of Thought and Action: A Social Cognitive Theory*. Prentice-Hall. 1986.
7. Campbell J. *The Hero with a Thousand Faces*. Pantheon Books. 1949.
8. Sweller J. Cognitive load during problem solving: Effects on learning. *Cogn Sci*. 1988;12(2):257-285.
doi: 10.1207/s15516709cog1202_4
9. Deci EL, Ryan RM. *Intrinsic Motivation and Self-Determination in human behavior*. 1985.
doi: 10.1007/978-1-4899-2271-7
10. Brown AL. Design Experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *J Learn Sci*. 1992;2(2):141-178.
doi: 10.1207/s15327809jls0202_2
11. Design-Based Research Collective. Design-based research: An emerging paradigm for educational inquiry. *Educ Res*. 2003;32(1):5-8.
doi: 10.3102/0013189x032001005
12. LaPensee E. SPEAR: a framework for Indigenous cultural games. *Antares*. 2020;12(28):4-22.
doi: 10.18226/19844921.v12.n28.01
13. Mayer RE. *Multimedia Learning*. 2nd ed. Cambridge University Press. 2009.
14. Green MC, Brock TC. The role of transportation in the persuasiveness of public narratives. *J Pers Soc Psychol*. 2000;79(5):701-721.
doi: 10.1037/0022-3514.79.5.701
15. Green MC. Transportation into narrative worlds. In: *The Oxford Handbook of the Positive Humanities*. Oxford University Press. 2018.
16. Squire K. Changing the game: What happens when video games enter the classroom. *Innov High Educ*. 2005;6(1):1-15.
17. Bellotti F, Berta R, De Gloria A, D'ursi A, Fiore V. A serious game model for cultural heritage. *J Comput Cult Herit*. 2012;5(4):1-27.
doi: 10.1145/2399180.2399185