

RELICS: Digital Preservation of the Malacca Sultanate's Historical Events Through Animated Narratives

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ABSTRACT

Preservation of cultural heritage is crucial amidst globalization and modernization as part of the efforts to protect national identity and historical understanding for future generations. This study addresses the declining awareness of the Malacca Sultanate's historical currency, particularly among youth, by creating a 2D edutainment animation about the Malacca Sultanate's Golden Dinar. The data were gathered through a semi-structured interview with a numismatic expert and a questionnaire survey involving high school students, with the aim of creating an animation that aligns well with teenagers' preferences. The results indicated a strong interest in anime and action genres, validating the animations' effectiveness in making historical content engaging. The animation also successfully captured the youth's interest, proving to be a powerful tool for digital preservation and education. The blending of education with entertainment is thus proven as a promising approach to enhance the understanding and appreciation of history and cultural heritage, particularly among youth.

Keywords: Cultural Heritage, Digital Preservation, Animation, Artifact, Numismatic, History



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1 INTRODUCTION

Cultural heritage refers to tangible and intangible aspects, such as history, traditions, beliefs, values, and artifacts, that are passed down through generations and symbolize the collective memories and values of a society (Petronela, 2016). As the world moves toward rapid globalization and modernization, the preservation of cultural heritage is crucial to protect historical and traditional elements for future generations (Wong, 2022). Such preservation effort also extends to historical events as these significant occurrences in the past have had a lasting impact on societies, cultures, or nations, adding to the development of national identity.

One of the important aspects of Malaysia's cultural heritage is the Malacca Empire's old currency, known as the Golden Dinar (*Dinar Emas*). However, knowledge about this currency is fading, especially among youths. This primarily owes to the fact that despite rapid evolution within the local educational system, the teaching methods for history remain relatively unchanged. Since students of the current era, often referred to as Digital Natives, are highly receptive to technological integration in

education (Prensky, 2010), there is a potential to incorporate animation as an alternative learning medium to make historical content more stimulating and memorable. Subsequently, engaging students in historical topics through technology, particularly animation, can enhance their understanding and interest in cultural heritage.

Therefore, this study explores the use of 2D edutainment animation as a digital preservation method to educate high school students about the Malacca Sultanate's historical currency. It aims to achieve three primary objectives: (1) to investigate the authenticity and unique attributes of Malacca's historical currency, (2) to design a 2D edutainment animation that educates the target audience about Malacca's currency history, and (3) to evaluate the effectiveness of the animated content in enhancing the target audience's understanding about the importance of preserving Malacca's currency history. Developing the 2D edutainment animation content by blending education with entertainment and focusing on the Malacca Sultanate's historical currency has significant educational and economic implications. By presenting historical information in an engaging manner, the project aims to spark the youth's interest in cultural heritage, thus promoting historical awareness and appreciation. It also contributes to economic growth by integrating educational content with cultural tourism, potentially attracting tourists and boosting the tourism sector. Finally, the animated content showcases the historical significance of the Golden Dinar and the rich cultural heritage of the Malacca Sultanate, creating a compelling narrative that can draw local and international interests and foster a deeper connection with Malaysia's cultural legacy.

2 LITERATURE REVIEW

2.1 Culture & Heritage

Culture represents the enduring attitudes, behaviors, ideas, and traditions shared by a large group of people, which are transcended from one generation to the next. As a collective treasure of humanity, cultural heritage serves as an essential source of knowledge that must be preserved. It includes physical artifacts and living traditions, such as history, practices, values, architecture, and folklore. These heritages are inherited from past generations and maintained in the present, ultimately benefiting future generations by connecting members of society (Wong, 2022). Thus, preservation strategies and global awareness are vital to protect this vulnerable legacy from threats like environmental changes and rapid globalization.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) defines cultural heritage as encompassing tangible and intangible categories, both playing a crucial role in identifying races and shaping national images (Petronela, 2016). Tangible cultural heritage refers to physical objects that can be seen and touched on land and underwater, such as coins, paintings, sites, and monuments (Suaib et al., 2020). This heritage is valuable and must be preserved to serve as a testament to past achievements, lifestyles, and values. Examples of tangible heritage in Malaysia include the Historic Cities of the Straits of Malacca, the National Monument, and the Golden Dinar of the Malacca Sultanate.

The discussion on culture and heritage can never steer away from the term 'artifacts', which was derived from the Latin word "*arte factus*" meaning "made by human skill or craft" to describe objects from the past that were modified by people, thus holding cultural and historical significance. These include numismatic items, tools, pottery, weapons, jewelry, and clothing that offer unique perspectives on human history, traditions, and beliefs (Tribe, 2023). Numismatic (originating from the French word "*numismatiques*") refers to the study or collection of currency, including coins, tokens, paper money, and medals. These items provide insights into economic, social, and cultural history through their production and use. Numismatists, or coin graders, collect, analyze, and assess the quality of these items to determine their historical significance, rarity, and value. Their expertise helps maintain the integrity and appreciation of numismatic collections worldwide, ensuring that these cultural artifacts are preserved for future generations (Investopedia, 2024).

2.2 Digital Preservation in Malaysia

Digital preservation is the act of keeping digital files safe and usable so that they do not fade with time. While digitalization has aided the preservation of valuable records and cultural materials, necessary actions must be taken to ensure these digital files remain accessible. Therefore, scholars have highlighted that preservation is not just technical but also social, since what is stored shapes how people remember the past (Mohd Herrow & Azraai, 2023).

In Malaysia, the effort to preserve culture through digital means has slowly grown. Museums and research centers are beginning to scan and store objects so that they can be shared with wider groups. An important step is the involvement with the Asia-Europe Museum Network (ASEMUS), where the Virtual Collection of Asian Masterpieces was introduced. Through this platform, Malaysian collections sit next to works from across Asia and Europe, giving access to material that would normally remain in storage. The collaboration highlights how computer graphics and media science have been used to make heritage visible in ways that physical visits cannot provide (Isa et al., 2018).

The main goal of such collaboration is not only to save the past in a digital vault, but to let people interact with it. Aside from allowing ordinary users to browse collections online, the Virtual Collection of Asian Masterpieces enables schools and universities to gain materials for teaching and for researchers to compare items across countries. This opens up culture, which was once locked inside a building, to anyone with a connection. By joining such global projects, Malaysia also establishes cultural diplomacy with other Asian countries since sharing heritage becomes a means to build ties and to show identity beyond borders. In practice, digital preservation is both a safeguard and a bridge: it keeps memory alive and at the same time creates new paths for people to connect with it.

2.3 Animation as a Teaching Aid

Animation is the method of creating moving pictures from still images. The technique is not new; it has been around for centuries in different forms. Initially, animation was thought mainly as entertainment, but over time, people began to see how it could also explain ideas or tell stories that are difficult to show in real life (Singh Kanda et al., 2018). The strength of animation lies in its ability to move between playfulness and depth. It can make abstract ideas visible, stir emotion, and turn something complex into something that feels simple. This quality is useful particularly in education and heritage work. Instead of reading about history, students can watch animated scenes and gain a sense of place or atmosphere. Rizalman et al. (2024) pointed out that when the design of animated characters reflects local ethnic traits such as physical forms, facial details, or clothing styles, the result is more than visual appeal it grounds the story in a culture, thus giving both excitement and recognition to the viewer.

To date, the use of animation as a practical teaching tool has begun to take place across many fields. Teachers use it because it attracts attention, and learners respond to it because it is easier to follow. Complex material can be simplified into steps, shown with moving images, and supported by voice or sound. This combination of sight and hearing holds the learners' focus, making study less heavy and more approachable (Singh Kanda et al., 2018). The value lies not only in simplifying lessons but also in giving learners a sense of engagement. Ultimately, education becomes more than a transfer of facts; it is an experience that mixes knowledge with curiosity.

2.4 Golden Dinar of the Malacca Sultanate

In the early days of the Malacca Sultanate, merchants utilized gold dust, silver bars, and tin blocks for transactions. The arrival of Arab and Indian Muslim traders introduced gold dinars and tin pitis from *Pasai*. It later influenced the first official coins of Malacca, believed to have been issued during Sultan Muzaffar Shah's reign (1445-1449) (Shaw et al., 1970). These coins were made from tin and possibly gold and featured Arabic scripts engraving the sultan's name and title. However, no evidence of gold

coins from the Malacca Sultanate has been found, despite references to gold usage in their legal texts, "*Hukum Kanun Melaka*" and "*Undang-Undang Laut Melaka*", raising questions about their fate (Bank Negara Malaysia, 2005).

It is speculated that the gold coins were confiscated and destroyed during the Portuguese invasion of Malacca in 1511 to assert dominance. The Portuguese likely melted the coins and minted them into their own currency before distributing them around Malacca City. The golden dinar is considered a valuable but lost artifact of Malaysia, representing a significant part of local cultural heritage. Therefore, preserving their history is crucial for the collective memory of future generations.

2.5 Past Related Research on Digital Cultural Storytelling

Table 1 Previous research on interactive digital cultural storytelling

Product	Description	Advantages	Disadvantages
Interactive Motion Comic: The Fang King (<i>Raja Bersiong</i>) (Nor Farizah et al., 2018)	A new way of folklore storytelling using Interactive Motion Comic	The motion comic includes special effects, sound, dubbing, and multiple story endings, utilizing Microsoft's Kinect Motion Control to enhance interactivity.	Limited plotlines that reduce engagement and replay value.
VR-Heritage: Chinese Cultural Heritage in the Digital Age (Jianwei Zhang & Lala Zuo, 2024)	A database developed by Peking University's Experimental Teaching Center for Virtual Reality and Simulation in Archaeology in 2017 to document all valuable cultural heritage sites in China.	The product offers virtual trips for students to explore sites with immersive VR experiences and high-quality 3D images.	Unable to fully capture the materiality of cultural sites.
Animated film: Upin & Ipin: Keris Siamang Tunggal (Les' Copaque Production, 2019)	The film was developed by Les' Copaque Production and tells the adventure of a pair of twins and their friends in the fantastical kingdom of Inderaloka, where they must save the kingdom from an evil king named Raja Bersiong.	The film portrays several classic characters from Malaysia and the Malay folklore.	The film only portrays a small portion of the entire Malaysia and Malay folklore.

Table 1 lists a number of three past studies related to digital storytelling, focusing on interactive narrative design, virtual reality heritage preservation and animated folklore adaptations. The Interactive Motion Comic project of "*The Fang King (Raja Bersiong)*" introduces a new way of storytelling for folklore through the use of special effects, sound, dubbing, and multiple story endings, all enhanced by Microsoft's Kinect Motion Control for greater interactivity. However, the project faces challenges, including limited plotlines that reduce engagement and replay value, which must be addressed to fully realize its potential in preserving and promoting traditional folklore.

Meanwhile, the VR-Heritage: Chinese Cultural Heritage in the Digital Age database was developed by Peking University's Experimental Teaching Center for Virtual Reality and Simulation in Archaeology in 2017. The aim is to preserve their cultural heritage by documenting all valuable cultural heritage sites throughout China. It offers virtual trips for students, enabling them to explore these sites with immersive VR experiences and high-quality 3D images. However, it is unable to fully capture the materiality of the cultural sites.

Finally, the animated film "Upin & Ipin: Keris Siamang Tunggal" was produced by Les' Copaque Production to preserve elements of Malaysia's cultural heritage through its engaging and entertaining storyline. It tells the adventure of a pair of twins and their friends in the fantastical kingdom of Inderaloka, where they must save the kingdom from an evil king named Raja Bersiong. The film portrays several classic characters from Malaysia and Malay folklore, though it only covers a small portion of the entire folklore throughout its duration.

3 METHODOLOGY

This research employed both qualitative and quantitative approaches to design an educational 2D animation focusing on the Golden Dinar of the Malacca Sultanate. Data regarding the history of the dinars were gathered by conducting interviews with numismatic experts and administering questionnaires with the target audience to understand their preferences of the final product.

3.1 Interview

A semi-structured interview uses a guide of open-ended questions and allows follow-up prompts when new ideas appear. The format suits expert knowledge because it keeps a clear direction while leaving room for clarification and detail. In this project, a semi-structured interview was conducted with Mr. Dickson Niew Cheng Kok, the 2nd Vice President of the Malaysia Numismatic Society. The conversation focused on the Golden Dinar of the Malacca Sultanate. Among the topics discussed were the historical background, authenticity, identifying features, and the context explaining why the coin is regarded as long lost. The aim was to gather reliable information that could support the script and visual choices for an educational 2D animation.

Content analysis was then applied to analyze the interview data. All statements were grouped into recurring themes to determine important points. Common themes included chronology of the dinar, traits used to verify authenticity, distinctive visual attributes, circulation and function, and factors linked to disappearance. Key quotations were noted to anchor each theme and claims that were uncertain or anecdotal were marked for cautious treatment in the final narrative. Taken together, the interview and the coding process produced a verified outline of the story and a set of concrete details that could guide terminology, scene structure, and on-screen labels while staying close to the historical record.

3.2 Questionnaire

A questionnaire often contains open- or close-ended questions to gather information from targeted respondents. In this project, two (2) questionnaires were prepared. The first questionnaire focused on the respondents' demographics and preferences for 2D edutainment animation content, such as genre, art style, character design, and backgrounds, while the second questionnaire aimed to evaluate the effectiveness of educating the audience about the history of Malacca's currency. Both questionnaires used a close-ended survey method and were conducted online via Google Forms. The data were analyzed using descriptive analysis, or descriptive statistics, which involved summarizing and organizing the data for easy understanding and interpretation using statistical tools.

4 FINDINGS

4.1 Interview Findings

The semi-structured interview with Mr. Dickson Niew Cheng Kok provides valuable knowledge and insights into the history of the long-lost Golden Dinar of the Malacca Sultanate. According to the expert, limited sources have documented or confirmed the existence of the golden dinar to date, but several articles and books suggest that it existed during the Malacca Sultanate's reign. Before addressing the specific questions, Mr. Dickson offered a brief yet detailed explanation of the Malacca Sultanate's

history and its downfall, allowing the authors to grasp the core aspects of this historical period. The authors proceeded to ask questions related to the objectives of understanding the currency's authenticity and unique attributes.

Table 2 Question and Answer with Mr. Dickson Niew Cheng Kok

Questions	Answers
Who is the founder of the Malacca currency?	<ul style="list-style-type: none"> Sultan Muzaffar Shah (1445 – 1459), who was heavily inspired by the Pasai Kingdom coinage.
What uniqueness distinguishes the Malacca currency from others?	<ul style="list-style-type: none"> The engraved Khat Arabic script on both sides of the currency. It had the name of the Sultan in charge and his title.
What happened to the Malacca Sultanate's currency?	<ul style="list-style-type: none"> They were confiscated and melted down by the Portuguese during the 1511 invasion to demonstrate their domination over Malacca City.
How many types of currency originated from the Malacca Sultanate?	<ul style="list-style-type: none"> Gold dinars and pitis

The results in Table 1 indicate that the Malacca Sultanate produced two forms of currency, namely the gold dinar and the pitis. The earliest development of this currency system is closely linked to the reign of Sultan Muzaffar Shah (1445–1459), who drew significant inspiration from the established coinage of the Pasai Kingdom. This influence can be traced back to 1414, when Parameswara, the first ruler of Malacca, strengthened political and cultural ties with Pasai through marriage and his subsequent conversion to Islam. The alliance encouraged an influx of Muslim merchants and scholars who crossed the Straits to Malacca, bringing with them economic practices and the tradition of Pasai-style coinage. It was within this context of growing Islamic influence and regional trade expansion that Sultan Muzaffar Shah issued the earliest local coins, marking a pivotal step in Malacca's economic and administrative development (Shaw et al., 1970).

A distinctive feature of the Malaccan currency was the use of engraved Khat Arabic script, which conveyed both spiritual identity and political authority. The inscriptions typically included the Sultan's name and title, reflecting the integration of Islamic aesthetics into statecraft and material culture. However, the lifespan of these coins was abruptly disrupted following the Portuguese conquest of Malacca in 1511 under Afonso de Albuquerque. During this invasion, the Portuguese confiscated and melted down large quantities of the Sultanate's currency in an effort to symbolically erase Malacca's sovereignty and assert their own control over the city. The melted metals were subsequently repurposed into a new Portuguese-issued currency, marking a significant shift in the economic landscape and contributing to the rarity of surviving Malaccan coins today.

4.2 Results of Animation Design Theme

A total of 195 respondents aged 13 to 17 years old participated in the survey through Google Forms. The data were used to develop animations based on teenagers' preferences, including 2D animation art style, character design, and background design.

Figures 1 (a) and 1 (b) explore whether the fusion of action and futuristic themes makes the animation more interesting. Figure 1 (a) shows that 90.3% of the respondents were interested in action genres. Meanwhile, Figure 1 (b) illustrates that 91.8% of them agreed that the combination of action genre and futuristic theme was interesting.



Figure 1 (a) Respondents' interest in action genre for the animation theme.



Figure 1 (b) Respondents' opinion on combining action and futuristic themes in animation.

Figure 2 investigates the art style that the audience finds most appealing for the animation. The results show that most respondents preferred anime (61%) and adult cartoons (50.8%), while others preferred children's cartoons (21%) and anthropomorphic (9.7%). Such insights are useful for developing an animation that meets the eye and preferences of the audience.

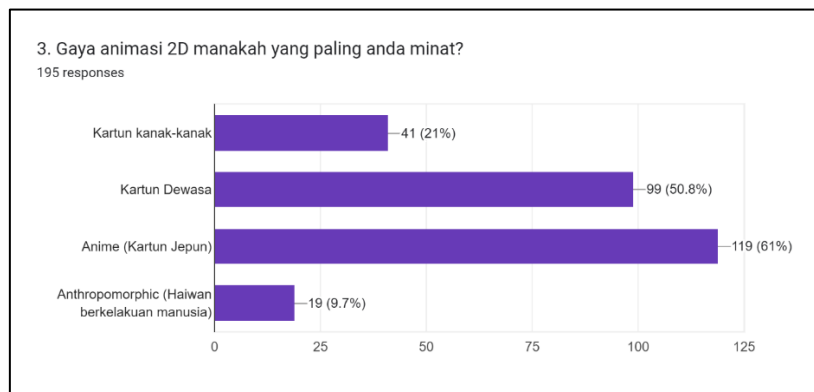


Figure 2 Respondents' preferred art style for animation design.

4.3 Results of Evaluating the Animation's Effectiveness

The second questionnaire was distributed to gather feedback from the audience about the animation's effectiveness in educating them regarding the importance of preserving the Malacca Sultanate's Golden Dinar. A total of 53 respondents aged 13 to 17 years old took part in the survey through Google Forms. The data were analyzed to evaluate the animation's suitability as a preservation medium and its effectiveness in imparting knowledge about the history of the Malacca Sultanate's Golden Dinar.

Figures 3 (a) and 3 (b) evaluate the animation's suitability as a preservation medium of history. The results in Figure 3 (a) show that 84.9% of the respondents believed that 2D animation is a suitable medium for conservation and protection. Meanwhile, Figure 3 (b) denotes that 86.8% of them agreed that the use of 2D animation makes history preservation more interesting.



Figure 3 (a) Respondents' perception of 2D animation as a suitable medium for cultural heritage preservation.



Figure 3 (b) Respondents' agreement that 2D animation makes historical preservation more interesting.

Figures 4 (a) and 4 (b) entail the effectiveness of using animation to impart knowledge about the history of the Malacca Sultanate's Golden Dinar. The results in Figure 4 (a) reveal that 92.5% of the respondents acknowledged and appreciated the Golden Dinar of the Malacca Sultanate after watching the animation. While in Figure 4 (b), 83% of the respondents reported that the animation made them interested in learning more about Malacca's Golden Dinar.



Figure 4 (a) Respondents' awareness and appreciation of the Golden Dinar after viewing the animation.



Figure 4 (b) Respondents' interest in learning more about Malacca's Golden Dinar following the animation.

5 DISCUSSION

The analysis of the animated narrative on the Golden Dinar of the Malacca Sultanate highlights both strengths and challenges in using digital storytelling for preservation. One of the main outcomes is that animation, when carefully grounded in cultural sources, does more than entertain—it allows audiences to experience history in a way that is both engaging and educational. This echoes what scholars (e.g., Singh Kanda et al., 2018) noted about animation's ability to simplify complex material. In this project, the use of visual storytelling not only simplified history; it gave form to something that could otherwise remain abstract or distant.

The interview with Mr. Dickson Niew Cheng Kok added another layer of depth. His perspective helped ensure that the project did not drift too far into imagination without factual grounding. This balance is consistent with Rizalman et al. (2024), who argued that character and story design should carry cultural weight. The findings suggest that such grounding is not optional but essential if the animation is to be taken seriously as a preservation tool. Without it, there is always the danger that heritage risks becoming a kind of “fictional memory” rather than an accurate representation.

At the same time, several challenges became clear. Animation can only capture fragments of history and cannot carry the full weight of archival evidence or museum records. This limitation matches earlier concerns raised by Isa et al. (2018), who emphasized the role of digital tools in preservation but warned against over-relying on them. In practice, the project showed that animation works best when paired with other strategies, such as digital archives or curated collections.

The discussion also points to wider implications. Mohd Herrow and Azraai (2023) emphasized how technology improves accessibility, and this project showed that animated storytelling does exactly that. Students and younger audiences may not read lengthy documents on Malacca's history, but they will sit through a short, well-designed animation. This is a powerful reminder that preservation today is not only about keeping records but also about keeping heritage alive in formats that people will actually engage with.

6 CONCLUSION

This study demonstrates that animated narratives can play a meaningful role in preserving and sharing the history of the Malacca Sultanate, specifically through the story of the Golden Dinar. By combining historical validation from experts with creative visual storytelling, the project created a resource that is both informative and accessible. This supports the broader arguments in the literature, where technology alone is insufficient, but when paired with cultural grounding and authenticity, it becomes a strong tool for preservation (Isa et al., 2018; Rizalman et al., 2024).

The project also underlines the value of expert voices in shaping digital heritage work. Without input from figures such as Mr. Dickson Niew Cheng Kok, the narrative might have slipped into myth

rather than history. His validation gave the animation a stronger base, echoing the call by earlier researchers for projects that merge creativity with accuracy.

The conclusion is therefore straightforward: animation is not just entertainment. It can act as a cultural archive, opening history to new generations who may never step into a museum or library. This study showed that animated storytelling is not a replacement for traditional preservation methods, but rather a complement that widens access and renews interest. The hope is that future work will continue blending technology with cultural expertise so that heritage like the Malacca Sultanate's Golden Dinar is not only preserved but also experienced in ways that matter to modern audiences.

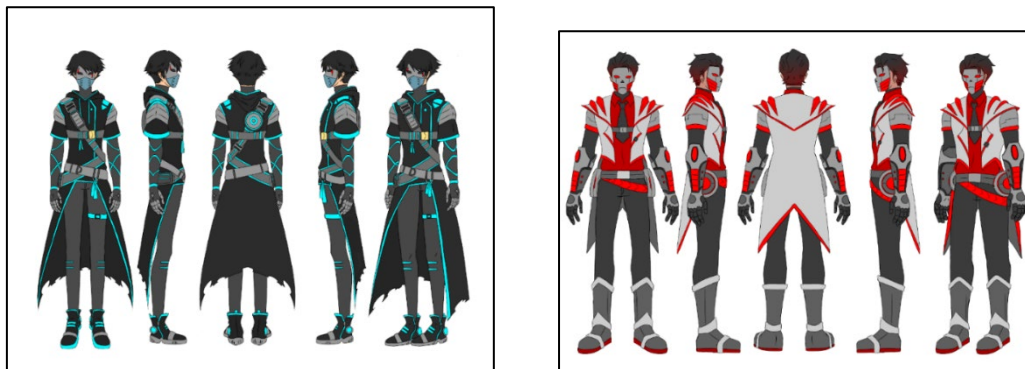


Figure 5 (a) Character concept design of the animated narrative *RELICS*.



Figure 5 (b) Key animation scenes and final rendered stills from the *RELICS* animation prototype.

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