

Designing Interactive Media for the Introduction of Visual Language on Kresnayana Relief in Prambanan

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ABSTRACT

Prambanan Temple in Yogyakarta is one of Indonesia's most meaningful and historic cultural heritages. One of the most impressive elements of the temple is the Kresnayana Relief, which depicts the epic story of Lord Vishnu transforming into Kresna. This relief has high artistic and historical value, but understanding and appreciation of the story is often limited. This research aims to design an interactive media that combines visual language with modern technology, focusing on the Kresnayana Relief. Through literature studies, surveys, interviews, and visual art analysis, we understand the story of the Kresnayana Relief and the interest of visitors to Prambanan Temple in interactive media. The result of this research is an interactive media prototype designed to provide an immersive experience in understanding the Kresnayana Relief story. The prototype includes a user-friendly interface, visual animation, narration, and audio elements that aim to enhance visitors' understanding and appreciation of this relief.

KEYWORDS

*Prambanan
Kresnayana Relief
Interactive Media
Visual Language*

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INTRODUCTION

Prambanan Temple in Yogyakarta is a magnificent testament to Indonesia's rich and varied cultural heritage. One of the most impressive parts of the temple is the Kresnayana Relief, which presents epic stories about the life of Lord Vishnu who transformed into Kresna (Hidajat, 2019). It presents a story of adventure and goodness in an art that combines Hindu elements with Indian art styles. The Kresnayana, as a part of the Mahabharata and various Hindu sacred texts, is a profound and meaningful story. It describes Kresna's pivotal role in preserving good and defeating evil. Kresna, born into difficult circumstances, grows into a brave young man who fights the giants and evil forces that threaten the world.

The Kresnayana Relief story includes the birth of Kresna in an attempt to fight Kamsa, a very powerful giant, and Kresna's struggle to free his parents, Dewaki and Vasudeva, and restore power to King Ugrasena (Santoso, 1985). In addition, the story also reflects the sacrifices and support of figures such as Priest Mucukunda in Kresna's life journey. In this context, the importance of designing an interactive media to understand the story of the Kresnayana Relief at Prambanan Temple becomes very relevant. Interactive media becomes a window into the world of this story, allowing visitors to more deeply explore the values, goodness and adventure contained in this relief. By combining traditional art with modern technology, interactive media design can help preserve and share cultural heritage for current

and future generations.

The reliefs hold a variety of interesting information related to the temple and the story behind it. The Kresnayana relief tells a story. To read the reliefs requires skills and knowledge of visual language. Presumably, an interactive media is needed to be able to help visitors to read the relief. Interactive media is a form of communication media that allows users to interact with its content. This can take many forms, including interactive text, images that can be enlarged or changed, animations that respond to user actions, interactive videos, computer games, and responsive websites. Interactive media allows users to do more than just consume information; they can participate, play or interact with the content. Characteristics of interactive media include responsiveness, participation, multiple formats, learning opportunities, and creativity.

The interactive media offered in this paper uses a QR code system. QR code, or Quick Response code, is a type of two-dimensional (2D) bar code used to store information in the form of images that can be easily scanned or read using electronic devices such as smartphones, tablets, or cameras. QR codes were invented by the Japanese company Denso Wave in 1994 and have become very popular around the world due to their ability to store various types of data in an easily accessible format. By using this, the use of interactive media can be accessed by visitors' devices easily. Looking at the environmental conditions of Prambanan Temple, QR codes can be placed more flexibly. This media will not damage the physical temple.

As a strong foothold in underpinning this interactive media, several previous references are needed to complement the design concept. One of the research references is Primadi Tabrani's research (2017) entitled Language of Form and the Possibility of Emerging New Contemporary Indonesian Art. This research discusses the theory of visual language and its benefits in the visual arts. The purpose of this research is to articulate the concept of visual language based on the NPM (Naturalist, Perspective, Moment-Opname) system and the RWD (Space Time Data) system (Tabrani, 2017). This research refers to the principles of visual language proposed by Tabrani (2018). Fine Language can be defined as a way of reading images, ranging from children's drawings, prehistoric cave drawings, wayang beber drawings, to symbolic, decorative drawings, shadow puppets, temple reliefs, modern drawings, animations, movies, and other digital images such as advertising images. The data of this research was obtained through content analysis of artworks (Gautama, 2017).

Furthermore, to enrich information related to the reading of candi prambanan reliefs, Asep Deni Iskandar's research (2020) is important to be referred to. The purpose of his research is to describe the visualization of the Ramayana story in the form of reliefs, find factors that make the relief depiction of the Ramayana story very specific by using the background layer pattern, and formulate the concept of the Ramayana story relief expression system and its application in photographic media. The method used is qualitative with symbolic interaction model. The research data were obtained through observation, interview, and literature study. The approaches used include visual language, communication, and archaeology (Iskandar, 2020).

In addition, according to Munir (Munir, 2012), Interactive multimedia is an alluring multimedia work with a display that is not only attractive, but also serves to convey information or messages to its users. However, what distinguishes this multimedia is the presence of alluring interactivity. When the user is given the freedom to control the course of the multimedia, that is what makes it worthy of being called interactive multimedia. By considering the definitions of several experts, we can conclude that interactive multimedia

is not just visual media, but also equipped with a controller device that gives users the freedom to customize and play the multimedia. In the process, interactive multimedia still maintains the main goal of conveying information or messages in a unique way and inviting participation from users through interactive elements that attract attention.

In addition, Joko Triyono (2017) explored the use of Augmented Reality (AR) technology as an interactive tool to introduce cultural heritage objects to the public. The purpose of his research is to review the use of AR technology in introducing cultural heritage objects. The methods used include observation and literature study, while media construction uses Marker Based Tracking and Markless AR methods (Sholeh et al., 2021). Similar research was also conducted by Fino, Guitierrez, Fernandes, and Davara (2013) who combined three technologies, namely Connecting Web 2.0, Augmented Reality, and QR Codes for design and implementation in the context of cultural heritage in Spain. In this research, the focus is on the utilization and development of media as an interactive medium (Fino et al., 2013).

Similar things were also found in Aditya Revianur's research (2020), which tried to digitize one of the cultural heritage in Semarang Regency. This research not only focuses on reliefs, but also seeks to transform physical cultural heritage into virtual objects. The digitization process was carried out through the stages of requirements, cultural heritage perspective, content requirements from the user's perspective, website design framework construction, review by cultural heritage experts, and evaluation. The community service method used involves information collection, website user perspective, website design framework construction, and evaluation. The approach used in this research is qualitative using observation and literature study methods (Revianur, 2020). Similar research was also conducted by Affan, Suryanto, and Arfriandi (2018), who used augmented reality in visualizing information about Dieng tourist attractions. Although in this research, the digitization of cultural heritage is implemented in augmented reality media. Visitors can access information by using markers. It can be concluded that media and cultural heritage are still relevant research topics. The relationship between cultural heritage communication and media is the focus of this research, although with different end goals. This research is not only about digitization, but also about the use of interactive media as a technology-based learning tool (Affan et al., 2018).

METHOD

This research uses a qualitative approach with a case study method. Data was collected through observation and literature study (Busetto et al., 2020). The observation technique is needed to observe the field conditions and engineer the right media to be applied there. Meanwhile, literature study is needed to lay out important information, especially scientific research related to interactive media applied in cultural heritage. Through this method, it is expected to gain a deeper understanding of the design of interactive media that is effective in improving visitor experience in cultural heritage. The qualitative approach will allow researchers to gain in-depth visitor insights and perspectives, so that the results of the study can make a valuable contribution to the development of interactive media designs that are more responsive and relevant to visitor needs. In addition, this research can also provide scientific contributions in the field of interaction design, especially in the context of cultural heritage. Previous studies may have focused on the visitor experience in a general context.

The results of this research will provide new insights and a richer understanding of interactive media design that considers the cultural values, history, and specific context of cultural heritage. As such, this research has the potential to make a valuable contribution to the development of better interactive media design in cultural heritage environments.

RESULTS AND DISCUSSION

The Kresnayana relief tells the story of Kresna's life and the information is found on the balustrade of the temple. The story is based on the form of narration in the form of text that is translated into visual form and sculpted by artists at the time of building the temple. The details of the form displayed on the wall become a form of story information that can help past pilgrims in interpreting the story of the holy book that is in Imani. Currently, the Prambanan temple functions as a cultural heritage that serves as a tourist attraction. Visitors often pass through without understanding the story contained on the ledge, so the function of learning through digital interactive media as a way to help visitors get story information (Hanifunisa et al., 2020).

The interactive media is designed by selecting several panels found on the temple ledge, as a form of prototype design. three forms of relief in the form of panels as fragments of the story. The panels found on the temple are considered as pieces of the sutra or holy book which is the basis of reference for making reliefs. The three parts contained in the reliefs made, among others: relief panels of Krishna's childhood, panels when he grew up, relief panels when he became a king. The following is the relief image panel according to Anandojatti, from the book Avatara (Anandojati, 2022). Below is the relief table and its explanation:

Table 1. Relief Section and Narration Explanation

No	Relief	Scenes	Description
1		<p>Krishna was raised by his adoptive parents, Nanda and Yashoda, and his mischievous behavior often troubled them. One day, they tied Krishna to a large stone monument to control him. However, with his immense strength, Krishna managed to drag the stone around, even toppling two trees that later turned back into gods. This chaos sent Nanda and Yashoda rushing to find the boy.</p>	<p>In one image, Krishna is seen tied to a stone pillar, possibly after the trees had fallen. The figures at his side are probably Nanda on the left and Yashoda on the right. The objects they are holding seem confusing and threatening.</p>

2



Many asuras wanted to test their strength against Krishna, including Vyoma who disguised himself as a cowherd to blend in with the other shepherds. However, Krishna was able to identify and defeat the asuras, freeing the abducted children.

In one depiction, on the left is Balarama watching Krishna's actions. As often noted, Balarama is carrying a plow, his favorite weapon. Meanwhile, Krishna is seen holding the asura, preparing to destroy it by slamming it to the ground.

3



Krishna who is sitting on a throne, next to him is an older man, who may be a king or former king.

On the floor in front of the two protagonists, there appears to be a young nobleman sitting, and behind them are young students. The presence of trees suggests that this scene is probably taking place outdoors.


The Language of Temple Relief

The visual language of temple reliefs is a visual language used to communicate stories, religious teachings, history, mythology, and daily life on the walls of temples. Temple reliefs are often canvases that showcase the artistic beauty, structural intelligence, and cultural richness of a bygone era. Through reliefs, complex stories are expressed in the form of sequentially arranged images. The style of temple reliefs varies from one temple complex to another, depending on the historical period, religious sect, and culture that influenced its creation. The visual language of temple reliefs not only covers visual aesthetic aspects, but also implies symbolic depth and rich historical context. Each element in the relief, such as body position, facial expression, and the scene depicted, has its own symbolic and artistic meaning. The use of space, proportion and hierarchy in the arrangement of the reliefs reflects a deep artistic understanding of the past. These reliefs are not just works of visual art, but also historical documents that hold important stories and values from the past, becoming silent witnesses of a civilization that has passed but whose legacy is still preserved today.

According to Asep Deni Iskandar, the use of visual language in Panel 10 of the Kresnayana relief represents an adult Kresna participating in a wrestling match. Sastra states that Kresna's participation in wrestling at Mathura is part of a series of challenges he faces.

Kresna, who is always accompanied by Balarama, manages to defeat each of his opponents. This relief is unique in that it shows two different locations simultaneously. Balarama, on the left side of the panel, watches Kresna on the right facing his opponent. Another interesting aspect is the prominent and oversized depiction of Kresna's opponent's genitals, a symbolism that may indicate gender or simply a whim of the sculptor. These two separate scenes in space are brought together in one panel to show the difference in space.

Table 2. Tabulation panel of 10 reliefs of the Kresnayana story of Vishnu Temple

	
<p>Wimba Content</p> <ul style="list-style-type: none"> In the first room, there is Balarama who is accompanying and watching Krishna participating in a wrestling match. In the second room, the focus is on Krishna struggling against his opponent in the wrestling match. <p>Wimba Way</p> <ul style="list-style-type: none"> figures such as Krishna, Balarama, and other participants in wrestling matches are depicted in full from head to toe. Kresna and Balarama are depicted from the front, while Kresna's opponent is shown from below with his face seen from the front. There is also an emphasis on the male genitals which, although small in reality, are depicted larger in this artwork. <p>The viewing direction in this artwork is from left to right, indicating how the scenes should be viewed by the viewer or observer.</p>	<p>Revealing system</p> <ul style="list-style-type: none"> Importance: Important characters in the artwork are emphasized to make them stand out. Enlarged: Representations of male genitalia are made larger than life size to ensure visual clarity. Identify the space: Identify the different locations for the two scenes depicted. Variety of space and time: Depicting two different locations in one artwork to show the difference in time and space.

Human Centered Design

Human-Centered Design (HCD) is an approach to designing products, services, or systems that focuses on the needs, wants, and involvement of users. It places the user at the center of the design process, with the goal of deeply understanding the user's experiences, challenges, and preferences. HCD involves a series of steps that start with gathering information about the user through observations, interviews, and other research to understand the context of use. The next step involves creating a solution centered on user needs, iterating the design based on user feedback, and iteratively testing prototypes to ensure the resulting solution truly meets user needs and expectations. In addition, HCD also prioritizes cross-disciplinary collaboration between designers, developers, and users to ensure that the resulting solution is not only functional but also takes into account aspects such as usability, comfort, and user satisfaction. By adopting this approach, designers can

create products or services that are more relevant, useful, and well-received by users, resulting in a more satisfying and sustainable experience for them.

The process of creating interactive media design uses a human-centered design approach as a form of initial interactive media design. This approach focuses on a deep understanding of users, their context and needs, which is key in creating effective and sustainable solutions (Potter, 2022). In the context of the Kresnayana reliefs in Prambanan, this process involves three main stages, namely imagination, idea, and implementation. The first stage is imagination. This stage focuses on exploring and understanding the needs and wants of visitors to Prambanan. Through imagination, designers envision how users will interact with the reliefs and interactive media, as well as consider the cultural and historical aspects of the reliefs. The exploration stage in Human-Centered Design for Prambanan involves not only direct observation of visitors, but also includes creative steps in imagining the ways they will interact with the reliefs and interactive media at the site.

Designers not only limited themselves to empirical observations, but also used imagination to understand how users might react and engage with the cultural and historical elements contained in the reliefs. By integrating these cultural and historical aspects in the design process, they sought to create an experience that is not only informative but also emotionally immersive for visitors to Prambanan. This process of understanding encouraged the designers to dig deeper into the cultural and historical aspects of Prambanan in terms of user experience. They considered how to present information through interactive media in a way that triggers interest and a deeper understanding of the cultural and historical context. This aims to create an experience that is not only visually or technically satisfying, but also inspires visitors to engage more emotionally with Prambanan's cultural heritage.

The second stage is ideas. After gaining a deep understanding of the needs of Prambanan visitors, the next stage in the Human-Centered Design process is idea development. This step allows the designers to implement the knowledge they have gained into more concrete concepts. In this stage, brainstorming is key, allowing the design team to explore various possible solutions for interactive media at the Prambanan site. This process involves creating initial concepts that can be sketches, diagrams, or even simple prototypes that visualize how visitors interact with the media. Designers encourage creative and innovative ideas that aim to not only meet the needs of users, but also deliver a unique and immersive experience related to this historical site. After brainstorming and developing initial concepts, the next step is to refine these ideas. Designers will evaluate the resulting concepts, considering factors such as usability, affordability, and suitability to Prambanan's cultural context. This iterative process allows them to take the best of the various ideas that have been generated and combine them into a more mature solution. With this approach, they can ensure that the chosen concept not only reflects the needs of the users, but also maintains appropriateness and authenticity within the rich cultural and historical context surrounding Prambanan.

Next comes the third stage, which is implementation. The final stage of the Human-Centered Design process is the implementation of the ideas that have been developed previously. This step involves a prototyping process, where designers create an early version of the planned interactive media. These prototypes allow them to test firsthand how visitors interact with the tools or technologies that have been designed. This testing is key in refining the design, as the feedback obtained from users allows for the necessary improvements and adjustments before final implementation. During the prototyping process, designers actively collect data and feedback from users regarding their functionality, usability, and satisfaction in interacting with the interactive media created. This feedback is then used to make further

improvements and iterations to the design. This iterative testing process ensures that the final implemented product not only meets user expectations, but can also provide a satisfying and substantially beneficial experience for visitors to Prambanan.

The human-centered design approach brings a broader focus in creating interactive media to ensure that the visitor experience not only fulfills the functional aspects, but also enriches their understanding of the cultural heritage displayed in the Kresnayana reliefs. By considering the cultural and historical values contained in the reliefs, the process became more than just the creation of a technical solution. Designers not only endeavored to meet users' needs directly, but also to explore more profound ways to connect the interactive experience with the rich and deep cultural context of Prambanan. The result of this approach is solutions that are not only innovative but also relevant to the cultural context and visitor needs. Designers actively created connections between modern technology and traditional values represented in the Kresnayana reliefs.

By ensuring that the interactive media does not sacrifice or oversimplify the cultural essence to be conveyed, the design process aims to harmonize the two worlds, so that the interactive experience is not just a use of technology but also a means of deepening and respecting cultural heritage. It is important to note that in this process, designers also act as custodians and carriers of cultural values in the solutions they create. They are committed to not only producing products that are technically appealing, but also have a depth of cultural meaning that can be conveyed to visitors. As such, the Human-Centered Design approach becomes not only about the creation of a tool or technology, but also about bringing about an experience that influences and respects existing cultural values.

Interactive Media Design

The first stage of imagination, then what is done is to look for various interface design references that are used in various places, one of which is a museum. The application functions as a visitor information provider, so that visitors experience the experience of exploring the exhibition venue (Supandi et al., 2023). In this ideation stage, the references that inspired the development of the app included experiences from app implementations at the Asian Art Museum and the National Museum of African-American History and Culture. By considering existing models, the ideation process aimed to combine effective elements from both apps to create a unique and relevant innovation. Through the exploration of successful experiences, the ideation stage laid the foundation for the development of an app that could provide an interactive and immersive experience for users, while enriching and expanding their understanding of the art and culture presented in the museum.

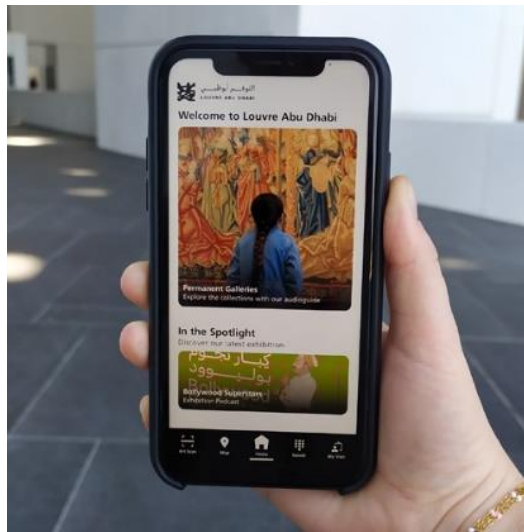


Figure 1. Inspiration for designing interactive media applications for Kresnayana reliefs

The second stage of Ideation, started to create ideas to become features of the application used to read reliefs. In the process of developing this application, the first step taken was to conduct a series of interactions at various sites that included features appropriate to the conditions of each temple. This approach allows for proper customization to the unique characteristics of each heritage site, ensuring that the app developed is not only content relevant but also appropriate to the historical and cultural context of each temple. Furthermore, the app is designed with structured steps or scenarios for visitors to understand the information related to the temple reliefs. Each of these steps or scenarios is structured in such a way that users can access the information gradually, enabling a deep and thorough understanding of the temple reliefs. By ensuring the creation of a structured and planned application, it is expected that visitors' experience in understanding this cultural heritage can be significantly improved.

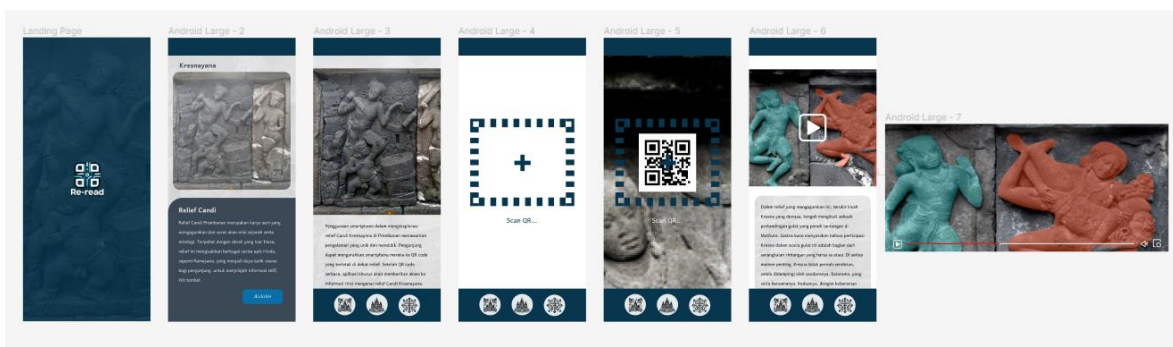


Figure 2. Overview of the interface structure in the interactive media application of Kresnayana reliefs

The last stage in the process is implementation, which involves creating an application with a user interface (UI) design for the temple relief experience. This design includes the steps that users will take when using the application. This UI design includes an overview from the landing page to the video playback process obtained through the application by reading the QR code. Each step in the user interaction is carefully planned to ensure intuitive navigation and a seamless experience for visitors. This user interface design reflects the

emphasis on ease of use and readability of information. Every element, from the landing page to the process of playing the video, is carefully organized to provide users with a comprehensive and purposeful experience. Through this design, users are intuitively guided to interact with the temple reliefs, ensuring that the use of the application not only fulfills its technical functions, but also provides a comprehensive and satisfying experience for visitors. The following illustrates the stages of using the application.

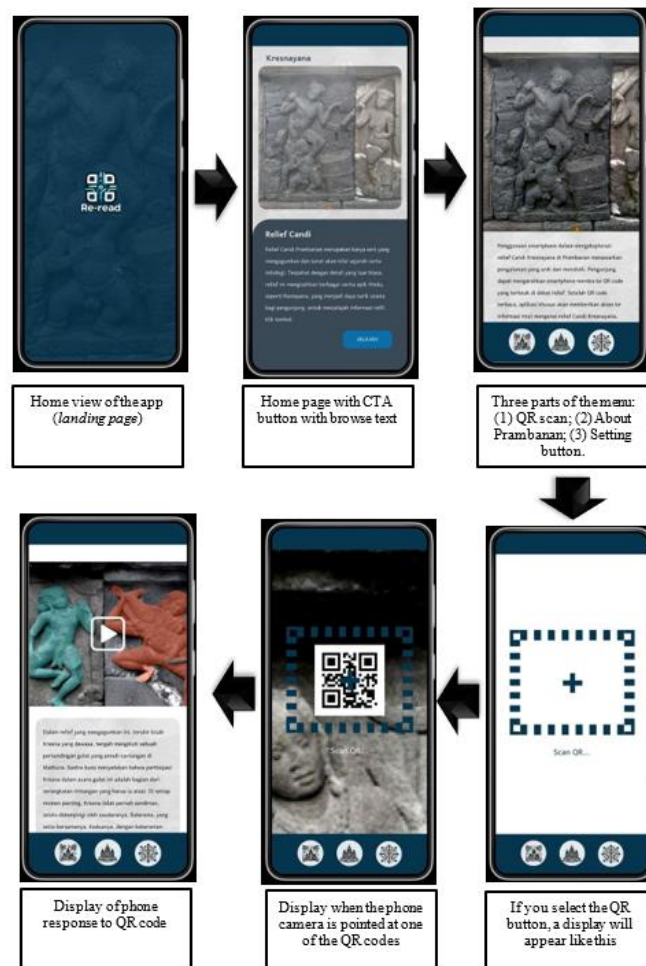


Figure 3. The flow structure of the display on the interactive media application of Kresnayana reliefs

The research that has been conducted has a significant impact on the process of preserving cultural heritage and delivering information to visitors, especially regarding the Kresnayana Relief at Prambanan Temple. First of all, the proposed interactive media, such as the use of QR codes, opens up wider accessibility of information for visitors. This not only increases visitors' usefulness in understanding the reliefs, but also allows seamless access to the stories and values contained in the artworks. Furthermore, the use of technology in introducing cultural heritage, such as AR (Augmented Reality) and QR codes, provides a new dimension to the visitor experience. With these technologies, visitors can interact directly with the reliefs and gain in-depth information, enriching their understanding of the stories and values contained within. This not only makes the experience more interesting but also increases visitors' interest and engagement in understanding the culture presented.

Furthermore, this research provides a strong foundation for technology-based approaches in cultural heritage preservation. Interactive media such as that proposed in the study can serve as a model for the development of other strategies to preserve and sustain cultural artifacts. This approach is not only modern but also allows for better adaptation to current and future technological changes, ensuring continuity in the delivery of cultural information. Not only that, this research also places a strong emphasis on education and interactive learning. The use of interactive media allows visitors to be actively involved in the learning process, rather than just being passive observers. This can stimulate interest in learning and open the door to more in-depth and thorough learning about cultural heritage, not only for current visitors but also generations to come.

This research also contributes greatly to the development of new models of cultural information delivery. By combining aspects such as visual language, art theory, interactive technology, and multimedia approaches, the results of this research can guide other institutions in their efforts to explain and preserve their cultural heritage. Finally, this research opens up the potential for collaboration between different fields such as art, technology, and archaeology in preserving cultural heritage. Such collaborations can enrich perspectives and approaches in understanding and preserving cultural artifacts, creating collaborative networks that encourage innovation and learning across disciplines.

This research has significant implications for future developments in the field of cultural heritage preservation and information delivery to the public. First, the results of this research provide a foundation for the development of more advanced interactive technologies to support visitors' experience of cultural heritage. By continuing to explore the potential of AR (Augmented Reality), QR codes, and other interactive media, there will be opportunities to create more immersive experiences for visitors at various historical sites. Secondly, this research demonstrates the importance of integration between art, technology and education in the context of cultural heritage preservation. This cross-disciplinary collaboration not only enriches our perspective on how to appreciate and understand cultural artifacts, but also creates room for greater innovation. By involving these various fields, future research could lead to more creative and effective solutions in preserving the authenticity and value of cultural heritage.

Third, the implications of this research could lead to the development of new standards in the use of technology to preserve cultural heritage. These standards will help to ensure that the use of interactive technologies in historical and cultural contexts is done appropriately and takes into account the ethical values and authenticity of the artifacts. Finally, this research also indicates a clear direction for a more adaptive and interactive approach to education in conveying cultural information to current and future generations. By integrating technology into the learning process, we can create a more engaging and effective method of introducing and understanding the values of cultural heritage to the wider public, especially the younger generation who are highly connected to technology.

CONCLUSION

Visitors' ownership and mastery of gadgets can be utilized for the process of introducing temple reliefs. The design of this interactive media is an alternative solution to introduce the language in a more interesting way. Visitors can easily read the relief with the help of features in this interactive media. This interactive media can also provide knowledge behind the Kresnayana relief. By following the flow of relief reading from this interactive media,

visitors can easily know the storyline systematically. The use of devices also makes it easier for visitors to access interactive media. Not only conveying information in written form, but audio-visual features are also utilized in this interactive media. That way, visitors can use this interactive media without having to look away from the temple relief. The design of this interactive media is still in the development stage.

REFERENCES

- Affan, B. N., Suryanto, A., & Arfriandi, A. (2018). Implementation of augmented reality as information and promotion media on Dieng tourism area. *Telkomnika (Telecommunication Computing Electronics and Control)*, 16(4), 1818–1825. doi: 10.12928/TELKOMNIKA.v16i4.7759
- Anandjati, B. (2022). *Avatara: Two Incarnation of the Lord* (Handaka Vijjananda (ed.); Issue September). Ehipassiko Foundation.
- Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and Practice*, 2(1). doi: 10.1186/s42466-020-00059-z
- Fino, E. R., Martín-Gutiérrez, J., Fernández, M. D. M., & Davara, E. A. (2013). Interactive Tourist Guide: Connecting Web 2.0, Augmented reality and QR codes. *Procedia Computer Science*, 25(October 2014), 338–344. doi: 10.1016/j.procs.2013.11.040
- Gautama, K. (2017). *MEMBEDAH KARYA ERICA HESTUWAHYUNI MELALUI STUDI BAHASA RUPA*. 2(2), 104–115. Retrieved from <http://upload.wikimedia.org/>,
- Hanifunisa, A., & Swasty, W. (2020). Signage Yang Informatif Dan Interaktif Pada the Heritage Palace Kota Surakarta Jawa Tengah. *Jurnal Bahasa Rupa*, 3(2), 95–103. doi: 10.31598/bahasarupa.v3i2.452
- Hidajat, H. (2019). Kajian Tokoh dan Alur Cerita Pada Relief Kresnayana Candi Prambanan Denagan Pendekatan Psikologi Carl G. Jung. *Titik Imaji*, 2, 87–100. Retrieved from <https://journal.ubm.ac.id/index.php/titik-imaji/article/view/1956>
- Iskandar, A. D. (2020). *Tata Ungkapan Relief Cerita Ramayana Candi Prambanan Penerapannya Pada Media Fotografi*. Institut Seni Surakarta.
- Munir. (2012). Multimedia konsep dan aplikasi dalam pendidikan. In Alfabeta (Vol. 58, Issue 12).
- Potter, D. (2022). *How human-centered design can transform digital product development*. Digitaljournal.Com. Retrieved from <https://www.digitaljournal.com/tech-science/how-human-centered-design-can-transform-digital-product-development/article>
- Revianur, A. (2020). Digitalisasi Cagar Budaya di Indonesia: Sudut Pandang Baru Pelestarian Cagar Budaya Masa Hindu-Buddha di Kabupaten Semarang. *Bakti Budaya*, 3(1), 90. doi: 10.22146/bb.55505
- Santoso, S. (1985). Kresnayana. In TA - TT -. [Surabaya] SE - 56 pages : illustrations ; 21 cm: [Published by PT. Citra Jaya Murti Surabaya in association with PT. Taman Wisata Candi Borobudur Prambanan] [Surabaya]. doi: LK - <https://worldcat.org/title/29598480>
- Sholeh, M., Triyono, J., Haryani, P., & Fatkhiyah, E. (2021). Penggunaan dan Pengembangan Aplikasi Berbasis Augmented Reality untuk Dunia Pendidikan. *Jurnal Masyarakat Mandiri*, 5(5), 2524–2536. doi: 10.31764/jmm.v5i5.5285
- Supandi, F. P., Masunah, J., & Milyartini, R. (2023). *Utilization of Qr Code for Digital Information Media Installation Artwork* (pp. 402–409). doi: 10.2991/978-2-38476-100-5_54
- Tabrani, P. (2017). BAHASA RUPA DAN KEMUNGKINAN MUNCULNYA SENIRUPA INDONESIA KONTEMPORER YANG BARU. *Wimba, Jurnal Komunikasi Visual & Multimedia*, 8(1). Retrieved from <http://www.artchive.com/artchive>