

# DEFINING EDUCATIONAL NEEDS FOR 'BALI NATIONAL MUSEUMPEDIA': LAYING THE FOUNDATION FOR AN ANDROID-BASED DIGITAL ENCYCLOPEDIA IN CIVIC EDUCATION

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## Abstract

In the digital era, students' interest in visiting physical museums has significantly declined, reducing their opportunities to learn directly from cultural and historical sources. This challenge is further exacerbated by the shift in educational paradigms towards the use of mobile technology and digital applications. This study aims to develop an Android-based digital encyclopedia, named "Bali National Museumpedia," as an innovative learning tool for Civic Education targeting junior high school students in Bali. Adopting the 4D (Define, Design, Develop, Disseminate) development methodology introduced by Thiagarajan, the study begins with the initial "Define" stage to identify the learning needs of students and understand their profiles within the context of Civic Education. The research method involves needs analysis and literature review to identify gaps between existing learning resources and students' actual needs. The needs analysis involved 104 students who filled out questionnaires distributed randomly, revealing that while 98% of students expressed strong interest in visiting museums, only 11% had ever done so. Moreover, just 2% of the students had visited a museum in Bali, despite there being over 30 museums on the island. The results from the "Define" stage indicate that 90% students show high enthusiasm for using mobile applications as a learning medium. In conclusion, the "Define" stage in the development of "Bali National Museumpedia" successfully identifies specific needs that will serve as the foundation for designing the digital encyclopedia, with the expectation of enhancing students' interest and understanding of cultural and civic values in Bali through a more interactive and engaging learning experience.

Keywords: m-Learning, Android-based digital book, civic education, Bali, museum

## 1 INTRODUCTION

In the current digital era, students' interest in visiting physical museums has significantly declined (Kadoyama, 2018; Talboys, 2011). Museums, which should serve as direct sources of learning about cultural and historical wealth, are losing their appeal among the younger generation. This decline is driven by various factors, one of which is the lifestyle change influenced by technological development. Digital technology, particularly smartphones and applications, has changed the way students access information and learn. As the use of these

technologies continues to grow, interest in learning through traditional media, such as physical museums, is diminishing.

The presence of digital technology, especially mobile devices, brings numerous benefits to the world of education. However, on the other hand, excessive use of such technology can also lead to issues, such as a decreasing appreciation for direct learning sources, including museums. Museums play an important role in providing direct access to cultural and historical artifacts, which not only enrich knowledge but also build a deeper understanding of cultural heritage (Edson & Dean, 1994; Lu, 2013; Popescu & Albă, 2022; Talboys, 2005). With students' declining interest in visiting museums, their opportunities to learn directly from cultural and historical sources are becoming increasingly limited.

Moreover, the shift in educational paradigms poses another challenge in reestablishing museums as relevant learning spaces. Modern education tends to move away from conventional approaches toward integrating digital technology. Educational applications and software are now more commonly used in classrooms. While this approach facilitates access to information and increases student engagement, there is a risk that direct learning sources, such as museums, may be overlooked. In this context, Civic Education, which plays a key role in shaping national identity and understanding cultural heritage, is also impacted.

Civic Education in junior high schools in Bali, for example, aims to instill a deep understanding of national identity, cultural diversity, and the historical heritage of Indonesia, particularly Bali. However, with the growing disinterest in museum visits, this learning process becomes less effective. Students miss the opportunity to learn directly about the artifacts and historical remnants related to their coursework. This, of course, affects their understanding of both local and national cultural heritage.

To address this challenge, innovations are needed in the delivery of educational materials, especially Civic Education. One potential approach is to integrate digital technology with museum content (Pierroux, 2015), allowing students to continue accessing cultural and historical learning resources through devices that are more familiar to them. The development of an Android-based mobile application that can be easily accessed by students is one potential solution. This application can provide interactive and engaging content, not only replacing the role of physical museums but also enriching students' learning experiences.

This study aims to develop an Android-based digital encyclopedia named "Bali National Museumpedia." This application is designed as an innovative learning tool for Civic Education,

targeting junior high school students in Bali. "Bali National Museumpedia" is expected to serve as a bridge between digital technology and physical museums by presenting educational content related to the history and culture of Bali.

The development of this application is based on several key considerations. First, the application is expected to meet students' need for quick and easy access to historical and cultural information without the need to visit museums directly. Second, the application is designed to enrich students' learning experiences through interactive features that combine text, images, and videos. Thus, students will not only read information but also view visualizations of historical artifacts from the museum.

Third, the application is expected to support the Civic Education curriculum in Bali. As a region rich in history and culture, Bali has many historical sites and museums that can be valuable learning resources. However, access to these museums is often limited by time, cost, and location. With this application, students can access information about artifacts and historical sites anytime and anywhere, using just their smartphones.

Fourth, the application is also expected to increase students' interest in history and culture. With an attractive interface and interactive features, students can experience more enjoyable and immersive learning. Additionally, the application can serve as a teaching aid for teachers in the classroom. Teachers can use the app to provide more visual and engaging explanations of historical and cultural materials.

In a broader context, the "Bali National Museumpedia" application can also serve as an example of how digital technology can be integrated into education to support more innovative and effective learning. The development of this application demonstrates that technology does not have to replace traditional learning sources but can be used to enrich and complement the learning experience. By combining the strengths of technology and traditional learning sources, such as museums, it is hoped that students' learning processes will become more dynamic and relevant to current needs.

Through this study, it is hoped that a digital learning model will be produced that can be applied not only in Bali but also in other regions with rich cultural and historical heritage. This model can provide a solution to improve students' access to learning resources that may have been difficult to reach. Additionally, this application can serve as an inspiration for developing similar applications in other fields, such as natural sciences, geography, and cultural arts.

In the long term, the development of the "Bali National Museumpedia" application is expected to contribute to the preservation of Bali's culture and history. By providing easily accessible information about artifacts and historical sites, this application is expected to foster students' love and pride for their local cultural heritage. Ultimately, this application will not only function as a learning tool but also as a means of preserving Bali's culture in the digital age.

Thus, this study has strong relevance in the context of modern education, which is increasingly technology-oriented. The development of the "Bali National Museumpedia" application is a strategic step to bridge the gap between digital technology and traditional learning sources. Furthermore, this application offers practical solutions for students who find it difficult to access museums directly, allowing them to continue learning about history and culture in a more modern and effective way.

## **2 METHODOLOGY**

This study adopts the 4D (Define, Design, Develop, Disseminate) development model introduced by Thiagarajan (Thiagarajan et al., 1974). This model was chosen to ensure the development process of the "Bali National Museumpedia" application proceeds in a systematic and structured manner. However, in this article, the development process only reaches the first stage, which is Define.

The Define stage aims to identify students' learning needs and understand their profiles in the context of Civic Education. This process involves a needs analysis through questionnaires distributed randomly to 104 middle school students from several cities such as Malang, Agam, Cirebon, and Karawang. The questionnaires were designed to collect data regarding students' learning experiences, their interest in museums, and their need for digital-based learning resources.

In addition to the questionnaires, a literature review was conducted to identify gaps between existing learning resources and students' needs. The needs analysis results revealed that many students had limited access to historical and cultural artifacts, while they showed a high interest in using technology as a learning medium.

The data obtained from the questionnaires were analyzed using quantitative descriptive analysis techniques. This technique allows researchers to identify patterns in students' responses related to their learning needs, interest in technology use, and the challenges they face in accessing traditional learning resources such as museums. Descriptive analysis was carried out by

calculating the frequency and percentage of each response to provide a clear picture of students' preferences and needs.

The results of the Define stage serve as the basis for designing a relevant and interactive application in the subsequent development stage. This stage identifies the students' primary need for easy access to Balinese historical and cultural materials through devices that are more familiar to them, such as Android-based smartphones.

### **3 FINDINGS AND DISCUSSION**

This section presents the findings from the conducted research along with an in-depth analysis of the obtained results. Based on the data collected through questionnaires distributed to 104 students, the analysis aims to understand students' needs for digital learning resources, particularly in the context of museum-based learning, and the extent to which technology integration can improve their access to and understanding of Civic Education materials. The discussion will also explore the potential of the "Bali National Museumpedia" application as an innovative solution to bridge the gap between students' high interest in museums and the access barriers they face.

#### **3.1 Student Needs for Digital Learning Resources and Access to Museums**

Based on the needs analysis conducted on 104 students, the results reveal a significant gap between students' interest in visiting museums and their actual access to them. While 98% of students expressed strong interest in visiting museums, only 11% had ever done so. More strikingly, only 2% of students had visited a museum in Bali, despite the island having over 30 museums. This highlights serious challenges in students' access to museums as a direct learning resource, particularly in the context of Civic Education.

Several barriers can be identified regarding the low museum visitation rates among students, despite their high interest:

##### **a. Distance and Location**

Many students live far from museum locations, requiring significant time and expense to visit. For those residing in rural or remote areas, access to museums, which are mostly located in major cities, is severely limited (Cabral & Guimarães, 2020; Crispin & Beck, 2023).

b. Cost of Visits

Although many museums offer discounted rates for students, for some, the entrance fees and transportation costs are still considered an additional burden. This is especially felt by students from economically disadvantaged backgrounds (Cabral & Guimarães, 2020; Crispin & Beck, 2023).

c. Lack of Information

Even though Bali has numerous museums, information about these institutions, exhibitions, or educational activities often does not reach students effectively. The lack of promotion or outreach from schools or the museums themselves means students are not aware of the museum's importance as a learning resource.

d. Time Constraints

Students are often bound by a tight school schedule, making it difficult to find time to visit museums. Furthermore, schools may not always incorporate museum visits into their curriculum, reducing opportunities for students to engage with these cultural resources.

These barriers suggest that, despite students' high interest in learning through museums, their access remains limited due to practical challenges. Therefore, alternative solutions are needed to bridge this gap, one of which is the integration of digital technology in learning.

In the digital era, the use of technology in education has become an urgent necessity. The questionnaire results show that most students are highly enthusiastic about using technology, especially mobile devices, as learning tools. Technology allows students to access educational materials in a more interactive, flexible, and engaging way. They are no longer restricted to physical resources but can utilize various digital platforms to expand their knowledge.

Students' interest in technology presents a significant opportunity to enhance learning effectiveness, particularly in terms of understanding history and culture, which are typically conveyed through museums. As students increasingly rely on digital devices like smartphones, developing app-based learning resources becomes one of the most relevant solutions. In this regard, an app like "Bali National Museumpedia" could be the perfect alternative to meet students' need for more flexible and accessible learning.

The findings of this research reveal a significant gap between traditional learning resources, such as museums, and students' need for more flexible and interactive access. Museums, as educational institutions, offer valuable information about history and culture, but physical, economic, and informational challenges make them less accessible to students.

This gap can also be seen as evidence that conventional educational approaches, which still rely on physical visits to museums, may no longer be adequate in meeting the needs of students in the digital age. Today's students are more drawn to learning resources that offer greater flexibility and engagement, making well-designed mobile applications an ideal solution to enhance students' access to and understanding of historical and cultural content.

### **3.2 Integrating Technology in Civic Education and the Potential of the Bali National Museum App**

The results from the "Define" stage of this research show that 90% of students express high enthusiasm for using mobile applications as a learning medium. This strongly suggests that integrating technology into education, particularly through Android-based applications, can be an effective strategy for improving students' access to Civic Education materials. In the digital age, the use of technology in education is no longer optional but a necessity to address the challenges and dynamics of modern learning.

One of the main challenges faced by students is limited access to historical and cultural resources, such as museums. Previous findings show that while 98% of students are interested in visiting museums, only a small percentage have done so due to constraints like cost, time, and distance. Digital technology, especially Android-based apps like "Bali National Museum App," offers a practical solution to these issues.

Through this app, students can virtually access information on Bali's history and culture. The app can provide content that includes virtual museum tours, high-quality images of artifacts, as well as interactive descriptions and explanations of various historical relics. Thus, students are no longer limited to physical visits to learn about history and culture. They can access this material anytime and anywhere, simply through their mobile devices.

The app also allows students to explore content in a more interactive way. For instance, through features such as quizzes or educational games, students can engage more actively in learning. This kind of learning experience not only enhances students' interest but also helps to reinforce their understanding of the material being studied.

The integration of technology in Civic Education can significantly impact students' understanding. With an app like "Bali National Museumpedia," students have the opportunity to learn in a more contextual and visual manner. In Civic Education, students' understanding of national identity and cultural values is crucial, and the visualization of artifacts or virtual museum tours can reinforce these concepts.

Traditional text-based learning often makes it difficult for students to imagine or grasp abstract ideas, such as historical events or the meaning of cultural artifacts. With technology, students can directly view visual representations of historical and cultural objects found in Bali, providing them with a deeper and more concrete understanding. This aligns with multimedia learning theory, which suggests that students tend to learn better when exposed to a combination of text and visuals.

Additionally, technology allows for personalization in the learning process. Each student has the ability to access and understand material at their own pace and learning style. Mobile apps provide flexibility for students to learn independently, explore topics of interest, and review material if necessary. This supports the concept of self-directed learning, where students take greater responsibility for their own learning process.

The "Bali National Museumpedia" app holds great potential for supporting the Civic Education curriculum, particularly in facilitating project-based and experiential learning. With this app, students can independently explore relevant materials aligned with topics being studied in class. Teachers can also use the app as an effective teaching aid, offering visual explanations or as an additional reference source.

Based on its development, the app can be integrated into the Civic Education curriculum in various ways, including:

a. As a Visual Reference Source

Teachers can use the app to showcase historical or cultural artifacts discussed in lessons. This helps students more easily understand the historical and cultural context.



b. As an Evaluation Tool

Interactive quizzes within the app can be used as a fun and engaging evaluation tool for students. This allows students to participate in the learning process in a more dynamic way, beyond conventional assessments.

c. As a Project-Based Learning Tool

Teachers can design technology-based learning projects, where students are asked to explore virtual museums or gather information from the app for presentations or reports.

Through this integration, the app not only functions as a learning tool but also becomes an integral part of education that fosters students' development of digital literacy skills, which are increasingly important in the modern era.

Furthermore, the learning experience provided by this app allows students to explore Bali's history and culture more deeply and comprehensively. Instead of just receiving explanations from teachers, students can independently explore various artifacts or historical sites in Bali through the app, deepening their understanding of the material being taught and making learning more meaningful.

#### **4 CONCLUSION**

The "Define" stage in the development of the "Bali National Museumpedia" application successfully identified students' specific needs, which will serve as the foundation for designing a digital encyclopedia aimed at enhancing their interest and understanding of Bali's cultural and civic values. The findings indicate that although students have a high interest in visiting museums, barriers such as distance, cost, and time constraints limit their access. On the other hand, the integration of digital technology in the form of an Android-based application offers an innovative solution, providing a more flexible, interactive, and visual learning experience. As a result, this application is expected to become an effective tool in supporting civic education and promoting local cultural understanding in the digital era.

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