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Development of a Mobile Learning Application on Ancient Relics Temples to Enhance Social Studies Interest and Learning Outcomes in Primary School

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Abstract

This study aimed to (1) develop an interactive mobile learning-based educational media about ancient temple relics in Malang, and (2) analyse the impact of this application to increase the interest and learning outcomes on social studies towards fourth-grade elementary school students. This research employed the Research and Development (R&D) method using the Dick & Carey model, which included the stages such as needs analysis, design, development, implementation, and evaluation. The data collection instruments used included learning interest questionnaires, learning outcome tests, and expert validation for media and content. The research findings indicated that the validation from media and content experts resulting average score of 85.6%, suggesting that the application is feasible as a learning medium. Trials conducted on students showed a significant improvement, where the pretest score before using the application was 44.3%, while the post test score increased to 88%, demonstrating the application is effective in enhancing students' learning outcomes. Thus, it can be concluded that this mobile learning application is a feasible, practical, engaging, and effective learning medium to increase students' interest and learning outcomes. The use of this application also encourages students' creativity in understanding historical relics in a more interactive and engaging way.

Keywords: *Mobile learning, temple relics, social studies learning, learning interest, learning outcomes*

INTRODUCTION

Social science, as a discipline, has been taught to elementary school students since the 1970s. The dissemination and implementation of this field can be observed in various formal institutions at the national level, including within the school education system (Maryati, 2020). Social science is a fundamental subject in elementary education designed to shape students into democratic citizens with a high level of social sensitivity (Abas et al., 2023). This subject focuses on a structured learning process to enhance students' awareness of various social phenomena, encompassing aspects such as

comprehension, insight, social behavior, social values, and essential skills. Studying historical events and related relics plays a crucial role in helping students understand history in a more engaging and meaningful way (Permatasari et al., 2019).

In recent years, technology has become an inseparable part of education, including the integration of mobile learning in social science education. Mobile learning offers an interactive, flexible and student-cantered approach allowing students to explore historical topics beyond traditional textbooks (Huang, 2023). Several studies have discussed the use of mobile learning in history and social science education demonstrated the effectiveness of mobile applications in improving students understanding and engagement in history learning (Cruz et al., 2017). The role of gamified mobile learning in increasing students' interest and retention of historical materials (Parsons et al., 2024).

However, despite advancements in technology-based learning, there remains a lack of research specifically focusing on mobile learning applications that integrate interactive elements for learning about historical relics particularly temples among elementary school students. Existing studies predominantly focused on general history education or the use of digital storytelling without addressing how mobile applications systematically enhanced students' understanding the history through more in-depth and engaging content (Fatih et al., 2018). Therefore, this study aimed to bridge this gap by developing an interactive mobile learning application designed to enhance students' interest and learning outcomes in understanding ancient temple relics in Malang. By integrating mobile learning into social science education, this study aimed to provide a structured and interactive approach that not only improved students' historical knowledge but also fostered their appreciation of cultural heritage in a more engaging and accessible manner.

Based on the preliminary observation at Public Primary School Mojolangu 3 on April 18, 2022, with a fourth-grade teacher, the researchers found related results about social lesson learning: Firstly, the learning process did not maximize learners' participation to engage in ask-answer questions and discussions within groups. The learners were only writing, noting, working on tasks, and listening to the teacher. Secondly, the applied media were less attractive and monotonous by only using figures from the Internet and textbooks. Thirdly, the learning materials seemed boring and less interesting for the learners. Fourth, the learning materials were rarely found in the learners' environment, such as the historical relics. These objects were difficult to remember.

The observed findings at the preliminary research and the preliminary interview on April 19 with the teacher of the fourth grade found that the lesson had a material of historical relics. This material contained many materials. The teachers applied the available facilities, such as using the laptop, computer and LCD projector to display the related historical figures in Indonesia from various sources such as the Internet and YouTube. However, the teachers did not find any improvement in terms of the learners' activities and participation with the given media. The learners' interest in learning the materials was low and so was the learning outcome. The researchers also found some learners reached the minimum accomplishment of 70. This finding indicated that learning about the historical relic side was not interesting for the learners.

This material serves as a foundational introduction to Indonesia's historical heritage for primary school students (Arta & Putri, 2020). However, many students struggle to comprehend historical relics due to the perception that the material is extensive and unengaging (Widyanti, 2016). Studies indicate that social studies are often perceived as uninteresting, particularly by younger learners (Merinta & Untari, 2017). This lack of engagement has significant implications for students' understanding of national identity and character development, as social studies play a crucial role in fostering patriotic values. Through exposure to historical events and heritage sites, students can develop a deeper sense of national pride (Nurjanah et al., 2017).

Despite the potential benefits of learning history through interactive approaches, traditional teaching methods often fail to capture students' interest. Recent research highlights the effectiveness of mobile learning in improving student engagement and comprehension in various educational contexts (Bonsu et al., 2024). However, there is a lack of studies specifically focusing on mobile learning applications that integrate interactive elements to enhance the understanding of historical relics, particularly temples, among primary school students. Existing research largely explores general history education or digital storytelling without addressing how mobile learning can systematically improve historical comprehension through engaging content (Kumar, 2024) .

This study aimed to address this research gap by developing an interactive mobile learning application tailored to enhance students' interest and learning outcomes in understanding ancient temple relics in Malang. By incorporating interactive features and multimedia elements, this approach was done to provide a more engaging and effective way for students to explore history, ultimately fostering both academic achievement and cultural appreciation.

The interview results on April 19 about the necessity of the learning media, based on 28 learners from the fourth grade revealed the same results as the descriptions. The researchers found that 52.7% of learners found the materials were only showing figures and videos on screen, lecturing, and working on the enrichment module. The obtained results from the interview showed that the learning process was not optimum. This matter influenced the learning interests and outcomes. The social lesson of learning about the historical relic was not optimum and required relevant learning media to support it. The teachers must understand the materials and the characteristics of the learners, the learning methodology, and the relevant learning model based on the learning media criteria to realize joyful and impressive learning (Chotib, 2018).

Learning with media implementation could facilitate learners without feeling bored and provide clear materials and ideas. The implementation of potential learning media to involve learners could encourage the learners' curiosity about the material and facilitate the material mastery in the learning. Technology also plays important roles as the learning source and interactive media for learning (Juliane et al., 2017). The implementation of learning media at primary school with technology may include using a laptop, computer, projector, and LCD (Ahmadi, 2018). Teachers must use the technology to create creativity and imagination during the learning process. Teachers also must prepare impressive learning for the learners and accept any new things related to learning both offline and online (Gadziński, 2018)

In the educational world, teachers must use technology to support learning and learners must learn various digital matters to collaborate and exchange their ideas and experience (Shatri, 2020). Technology vastly develops with the advancement of the era. Therefore, technology is useful to support classroom learning. Many primary school learners have smartphones for classroom learning purposes based on their necessity (Putra et al., 2020). Smartphones facilitate various feature access and Internet connections (Widadi & Pramudita, 2018). For educational purposes, smartphones are useful for developing various mobile learning applications.

Mobile learning provides various interesting features in the form of accessible mobile learning with mobile devices (Hanifah Salsabila et al., 2020). Mobile learning refers to a learning media type, consisting of games, animations, sounds, figures, and other multimedia components (Alsaadat, 2017). Mobile learning is an interactive media to provide active participation for the learners in the learning process. Thus, they are not only listening to the lectures (Wijayanti et al., 2019). Interesting and meaningful

learning media must be based on learners' characteristics. Mobile learning implementation has the superiority to realize a learning atmosphere based on necessity and provides a meaningful learning experience (Hanifah et al., 2020). As the part of learning process, mobile learning has the potential to improve the learning activity, learning interest, learning quality, and learning outcome.

Based on the identified issues, the researchers recognized the need for an innovative solution to enhance the learning process by developing an interactive mobile learning application. This application proposed in this study is specifically designed to help students recall and understand information about temple relics in Malang through engaging and interactive features. The mobile learning application developed in this study incorporates various multimedia elements and interactive features to enrich students' learning experiences. One of its key elements is an interactive 3D model that allows students to explore the structure and intricate details of the temple relics in greater depth. Additionally, the application integrates Augmented Reality (AR) visualization, enabling users to project temple models into real-world environments using their device cameras, enhancing the learning experience to be more engaging and interactive.

To enhance student engagement, the application is also equipped with gamified quizzes, where students can test their understanding through interactive challenges such as historical puzzles, exploration missions, and point-based achievements. Moreover, audiovisual content, including historical narrations combined with images, videos, and animations, makes the learning material more engaging and easier to comprehend. The application also features a digital notes section and a discussion forum, allowing students to record important information and interact with peers and teachers to share insights and deepen their understanding of the subject matter. By integrating these multimedia elements and innovative features, the mobile learning application aims to increase students' interest in learning, deepen their understanding of history, and foster a greater appreciation for the nation's cultural heritage.

Based on this notion, the researchers attempted to develop a mobile learning application about the ancient relics of temples in Malang. Mobile learning could alter the implementation of smartphones from communication and Internet purposes to learning purposes with the provisions of learning objectives, learning materials, game quizzes, and learning videos. Mobile learning is useful for fourth graders to improve the learning interest and learning outcomes of social lessons.

METHODS

The researchers applied a Research & Development design. This design was useful to create and develop a certain product; and examined the product validity based on the evaluation results. This research design also examined the product's effectiveness before widely disseminating the product (Sugiyono, 2015). The applied procedural model was based on Dicky & Carey with some general steps to create the product, material, or design (Dicky & Carey, 2009). The researchers adjusted the steps of the model with the necessity of the research. Thus, the modified steps were simpler than the original steps of the model. This simplification was useful because the time allotment and the research cost were limited. Moreover, in this case, the researchers needed comprehensive reviews for the development. Therefore, the researchers only applied nine steps by assuming the designing step was completed (Setyosari, 2015).

This simplification was made due to time constraints in implementing the model in its entirety. The research focused more on the development and evaluation of the effectiveness of the mobile learning application, so the needs analysis and design stages were combined to make the process more efficient. This approach allowed researchers to focus more on testing how effective the application to enhance student engagement and understanding.

The research subjects of the media development included the experts of media and materials; and the users (the teachers and learners). The fourth graders of Public Primary School Mojolangu 3, Malang, were 28 learners. The researchers selected the learners based on necessity. The selection of research subjects in the trials was carried out by considering the academic background of students with low, medium, and high learning abilities to ensure that the results accurately represent real conditions. The research focused on the development of mobile learning media about the ancient relics of temples in Malang. The researchers applied the small group test with six learners based on their skills. The field test involved 22 learners.

The researcher validated the product by having the experts of material and media and the users (teachers and learners) assess the validity, practicability, and attractiveness. Media validation was conducted by a lecturer specializing in technology to ensure that the mobile learning application meets usability and media design standards. Material validation was carried out by a lecturer specializing in history education particularly temple-related material to assess the accuracy and relevance of the learning content. Teacher validation was performed by an elementary school teacher with a minimum of three years of teaching experience to evaluate the application's

suitability for students. This validation process followed predetermined assessment criteria, including content accuracy, ease of use, engagement level, and pedagogical effectiveness. On the other hand, the researchers used an N-gain test based on pretest and posttest scores.

The data analysis techniques were qualitative and quantitative to collect the data from the questionnaire. The applied score range by the researchers was the 5-Likert scale. The researchers obtained the qualitative data from the comments and the suggestions of the media, material, and user validations. The quantitative data were taken from the assessment scores and the validations of the experts and the users. The formula to process the data was.

$$\text{V-ah} = \frac{TSe}{TSh} \times 100\%$$

Remarks:

V-ah = Expert validation

TSe = Total empiric score of the validator

TSh = Total of the expected maximum score

Table 1. The table of mobile learning assessment criteria

No	The achievement level	Classification	Remarks
1.	85,01% - 100,00%	Extremely excellent	Reliable/extremely valid/revision needed
2.	70,01% - 85,00%	Excellent	Reliable/valid/no revision required
3.	50,01% - 70,00%	Average	Less reliable/less valid/revision needed
4.	01,00% - 50,00%	Poor	Not reliable/not valid/revision needed

Source: Adapted from (Akbar, 2013)

RESULTS AND DISCUSSION

The Development Progress

Mobile learning was a developed product with guidelines for learners and teachers. The applied prototype was useful to facilitate and support the development of a mobile learning design. The presented materials in the mobile learning were the social lessons specifically about the ancient relics of temples in Malang for the fourth graders. The learning indicator of developments was based on the analyses of the curriculum guidelines to improve learning within the scope of the Merdeka curriculum. The learning achievement about the presented materials formulated the learning objectives and the development of the teaching module. The characteristics of the learners supported the

learning by selecting the learning strategies, such as the applicable media and materials.

In its implementation, mobile learning on temple heritage material for fourth-grade elementary school students did not encounter any issues related to internet access. However, the main challenge faced was the varying levels of digital literacy among students. Some students could easily understand and operate the application, while others struggled to navigate its features. These differences affected the effectiveness of learning, as students with lower digital literacy required more guidance in using the application optimally. Therefore, additional assistance and more adaptive learning strategies were needed to ensure that all students could fully utilize mobile learning to understand temple heritage material ….

The Data Display

This research and development created and developed mobile learning media to support teaching-learning activities. Then, the media implementation would be in the social lesson with the material of ancient relics of temples in Malang. The researchers validated the obtained data with the experts of media and material; and the users. Then, the researchers conducted a field test for 22 fourth graders at the primary school. Then, the researchers validated the media to determine the reliability of the mobile learning display. The researchers validated the product by having the media expert, the EPA lecturer with the capability and understanding of the educational technology. The indicators of the mobile learning validation by the media expert consisted of 25 points from 7 indicators. The validation of the media expert found a score of 121 out of 125. The percentage of the media expert validation was 96.8% while the criterion of reliability was extremely reliable to use. The result also showed the product was easy to use and did not need any revision.

The validation test of the material expert was useful to determine the material validity of the developed product with the material of ancient relics of temples in Malang. The material expert was DYW, a lecturer with the capability of social lessons, especially historical material. The obtained results from the material validation were such as assessments, suggestions, and recommendations as revision references to improve the product. The indicators of mobile learning validation about the ancient relics of temples in Malang consisted of 25 points from 5 indicators. The validation results of the material expert received a score of 123 out of 125. The validation percentage of the material expert reached a percentage of 98.4%, categorized as extremely valid and easy to use without any revisions.

The implementation of the small group test was done after the validation of the developed product by the experts and the revision by the researchers. The trial run of the small group involved six learners from the fourth grade with diverse capabilities. This activity was useful to obtain the practicability and attractiveness data of the developed product. This procedure was useful to understand the interests of the learners toward the display, design, and practicability of the developed learning product. The assessment of the small group trial run proved that the product was practical and attractive with diverse scores. The aspect of practicability brought 10 question indicators while the attractiveness brought 5 question indicators. The obtained result found a percentage of 89% for the practicability. Thus, the practicability aspect of the product was extremely practical for learning. The obtained result showed a percentage of 92% for the attractiveness of the product with the category of extremely interesting. The result indicated the product was attractive or interesting to use.

The subsequent step was - a trial run after revising the developed mobile learning for the teachers and the learners. The questionnaire for the teachers as the users was useful to determine the practicability and the attractiveness of the product. This questionnaire could also find out how the product facilitated the teachers to deliver the material of ancient relics of temples in Malang. The questionnaire or teacher responses were found based on the practicability and attractiveness aspects, with different scores. The practicability aspect consisted of three question indicators with 10 item indicators. The obtained results found a percentage of 90%, categorized as extremely practical. The aspect of attractiveness, on the teacher questionnaire with three question indicators and 10 item indicators, obtained a percentage of 94%, categorized as extremely interesting. Thus, the assessment of the field test, based on the aspects of practicability and attractiveness, found the developed product was extremely practical and attractive to use for the material of ancient relics of temples in Malang.

The questionnaire data based on the field test and the given data for the learners to measure the practicability and the attractiveness of the product showed that the practicability aspects had 10 question indicators with a total score of 991 out of 1100. The percentage of practicability reached 90% with the criteria of extremely practical and valid for learning implementation. The attractiveness aspect had 5 question indicators with a total score of 513 out of 550. The percentage of the attractiveness core reached 93% with the criteria of extremely attractive and extremely reliable or valid to use. Thus, the developed mobile learning was practical and attractive for the learners to use anytime and anywhere. The learners could learn the materials

about the ancient relics of temples in Malang because the learning was based on the Internet and did not make the learners bored. After assessing, the learners had the opportunity to comment and share their suggestions. However, many learners shared comments or responses on the questionnaires, such as (1) the module could encourage my learning habit, (2) the developed model learning was interesting to learn, and (3) the learning could be easily understood.

The required data for the next analyses were useful to measure the effectiveness of the developed product. In this measurement, the researchers used the pretest-posttest from the learning evaluation. The obtained data from the learning evaluation consisted of two data: the pretest and posttest data. The researchers conducted the pretest to determine the initial cognition of the learners about the material of ancient relics of temples in Malang before using mobile learning. The researchers shared the posttest to determine the learners' understanding after using the developed mobile learning. The pretest data reached a score of 975 with a percentage mean of 44.3%. Then, the posttest reached the total score of 1935 with a percentage of 87.9%. The obtained percentage increased from 44.3% to 87.9%. The researchers analyzed the mean of the pretest-posttest by subtracting the posttest mean score and the pretest mean score to check the increment. The result was an increment of 43.7%. This percentage increment showed that the developed mobile learning was effective as the learning media support.

The observation was useful to determine the learning interests of the learners at the first and second learning sessions. The observation was useful in finding out the learning interests of the learners while using mobile learning. The results showed the tendency of the learners' learning interest with a percentage of 87%. This result indicated that the learning interest of the learners, based on the indicators, became the focus of observation with the criterion of "extremely excellent." Thus, the implementation of the developed mobile learning could improve the learners' learning interest, boost creativity, and encourage the imagination of the learners.

Data Analysis

The researchers analyzed the database and the obtained data to determine the criteria for the applied achievements. The researchers had competent experts to analyze the validity of mobile learning. The experts were material and media experts. The media validation was useful in evaluating the design, display, and features of mobile learning. The material validation was useful to evaluate the material relevance with the developed mobile learning. In this study, an in-depth analysis was conducted

to identify the factors contributing to the increased effectiveness of the mobile learning application. Several key factors influencing the success of this application included the user-friendly interface and layout, ease of navigation, and the alignment of the content with the Merdeka curriculum. Additionally, interactive features such as quizzes and visual simulations had been proven to enhance student engagement and motivation, enriching their learning experience.

This study also compared the obtained results with previous studies on the effectiveness of mobile-based learning media. The comparative analysis aimed to place this research within a broader context and identify the specific advantages of the developed application. The findings indicated that this application not only increased students' interest but also provided flexibility in learning, ultimately improving student learning outcomes compared to conventional learning media. Thus, these findings contributed significantly to the advancement of educational technology and open opportunities for further research to enhance the effectiveness of digital-based learning. The media validation obtained a percentage of 96.8% while the material validation was 98.4%. Here are the recapitulations of mobile learning validity data.

Table 2. The Recapitulation of the Expert Validation Results

Experts	The percentage	The maximum percentage	Remarks
The media expert	96,8%	100%	Very reliable
The material expert	98,4%	100%	Very reliable
The percentage of the obtained total			195,2%
The percentage of the mean			97.6%
The reliability criteria of the developed mobile learning			Very reliable

The table showed the recapitulation of the media and material experts. The accumulated percentage reached 195.2% with a mean of 97.6% with the criteria of extremely reliable to use by the fourth graders with the material of ancient relics of temples in Malang.

The data analyses of the practicability were from the user responses: the teachers and the learners while having the small group and trial ran the field tests after the implementation of the developed mobile learning. The validation of the small group test obtained a percentage of 89.3%. The data of the trial with the teacher obtained a score of 90% while the learners with a percentage of 90%. This table shows the recapitulated data of the practicability test.

Table 3. The Recapitulated Results of the Practicability Test

No	Data Source	The percentage	The maximum percentage	Remarks
	The small group test			
1.	Learners	89,33%	100%	Very practical
	Trial run field test			
1	Teachers	90%	100%	Very practical
2.	Learners	90%	100%	Very practical
	Total	269,33%	300	
	Mean	89,77%		Very practical

The table showed the analysis results of the mobile learning practicability with a percentage of 269.33% and a mean of 89.77%, categorized as very practical and reliable. The developed mobile learning about ancient relics of temples in Malang was very attractive to use for the teaching-learning activity.

The analysis of the mobile learning attractiveness was from the responses of the users and the learners during the small group test and trial run field test. This analysis was useful to determine the attractiveness level. The small group test obtained a percentage of 92%. The trial run test of the teachers obtained a score of 94% while the learners with 93%. Here are the recapitulated results of the attractiveness questionnaire.

Table 4. The Recapitulated Results of the Attractiveness Test

No	Data Source	The percentage	The maximum percentage	Remarks
The small group test				
1.	Learners	92%	100%	Very attractive
Trial run field test				
1.	Teachers	94%	100%	Very attractive
2.	Learners	93%	100%	Very attractive
	Total	279%	300%	
	Mean	93%		Very attractive

The table showed the attractiveness of the developed mobile learning obtained a percentage of 279% with a mean of 93%, categorized as very attractive and very reliable to use in learning about the ancient relics of temples in Malang.

The effectiveness analysis was based on the pretest-posttest results to determine the learning achievement of implementing the developed mobile learning. The effectiveness level of the media was based on the trial run test of the learners. The mobile learning was effective if the assessment of the implementation, based on the posttest, was higher than the assessment result in the pretest. The mean of the pretest was 44.3%, less than the minimum criterion of the expected effectiveness. Then, the mean increased after using the developed mobile learning to 88%, categorized as

extremely effective in supporting the learning outcome improvement.

The analyses of the learning interest were useful to observe the learners during the classroom learning activities with the developed mobile learning. The learners filled out the questionnaire that consisted of 4 indicators with 20 question items. This analysis was useful to obtain the portray of the learning interests while implementing the developed mobile learning for social lessons with the material of ancient relics of temples in Malang. The obtained percentage during the implementation showed a percentage of 87% with the criterion of extremely excellent. Thus, the developed mobile learning could encourage the learning interest and curiosity of the learners during the learning.

The Review of the Revised Product

The developed product was mobile learning about the ancient relics of temples in Malang for the fourth graders of Pubic Primary School 3 Mojolangu. The research result found the product was applicable for online and offline learning activities. The developed product was a digital media with some device assistances, such as a smartphone to display the multimedia components starting from the texts, figures, videos, animated sounds, amusements, and games for the learning to access based on the necessity (Ningsih, 2019). Mobile learning media could encourage the creativity and imagination of learners by constructing cognition and insight based on the necessity; and improve learning participation (Demir & Akpınar, 2018). The selection of the media was based on the material and the learners' characteristics.

Several factors contributed to the effectiveness of this application. The use of a friendly interface application and a well-structured content layout enhanced ease of use ensuring that students could use the material features efficiently (Vasel & Ragonis, 2024). The integration of multimedia elements supported various learning styles, made complex historical concepts more interesting and easily to understand. In addition, interactive features such as quizzes and visual simulations encouraged active learning and increased students' interest in learning (Ramli et al., 2024). Previous studies have shown that mobile-based learning media could stimulate students' creativity and imagination by facilitating cognitive construction and deeper understanding and increasing learning participation.

Despite its various advantages, this study had several limitations. One of the challenges in implementing mobile learning applications was the difference in students' digital literacy levels which affected their ability to utilize the content optimally. In addition, although this application was designed for offline use, students who did not

have access to devices such as smartphones or tablets might experience obstacles in utilizing it. Therefore, further development needed to consider additional features to improve accessibility and provide training sessions for maximum application use (Nikolopoulou et al., 2023).

In the long term, this mobile learning application is expected to have potential to improve digital-based history learning by encouraging independent learning and more interesting interactions (Kamasi & Saruan, 2020). For teachers, this application can be an innovative and interactive teaching tool, allowing them to present materials in a more interesting way and increase the effectiveness of learning both inside and outside the classroom. With features that support learning evaluation, teachers can also monitor student progress more systematically. For students, this application provides a more flexible and enjoyable learning experience, so that it can increase their interest in learning and understanding of History material and have a significant impact on student learning outcomes. Features available in the application such as quizzes and visual simulations help students build a deeper understanding through independent exploration.

Moreover, this mobile learning application opens up opportunities for expanding the scope of the material by adding more topics from other historical relics in Indonesia and global historical events. The application's ability to be continuously updated also allows integration with the latest learning methods and feature enhancements according to evolving educational needs. Thus, this application is believed not only beneficial in the short term but also has great potential to contribute to strengthening history learning in the future.

The Review of the Product based on Media Expert

The developed product was mobile learning. The validation step was useful to determine the reliability based on the media expert's validation. This mobile learning could encourage the learners' understanding of the ancient relics of temples in Malang as the learning source with direct access to find. The developed media was mobile learning with a score of 96.8% based on the media expert's validation. The implementation of the media positively influenced the material stored during the learning activities. The learners could also joyfully learn (Harsiwi & Arini, 2020). The developed mobile learning had the potential to support teachers in sharing knowledge and innovation for the learners. The applied media had to be adjusted to the learners' backgrounds and characteristics. Thus, mobile learning could be attractive for the learners; encourage the directedness of the learners to learn; and train learners to learn

based on their talents and interests.

The Review of the Product based on Material Expert

The researchers analyzed the necessity to support social lesson learning at the primary school. The given material was the ancient relics of temples in Malang. This material was useful for the learners to be aware of the ancient relics of the temples in Malang as the learning source, enrich the learners' insight, and improve the knowledge about new matters and the national characteristics, such as patriotic attitude toward the ancient relics (Nurjanah et al., 2017). This matter was important for the learners to realize that ancient relics could be excellent learning sources with proper learning media to facilitate the learning process (Winarsih et al., 2017). The presented materials were based on the psychological development of primary school learners. such as having an interest in figures, objects with less text, audio provisions, and quizzes to encourage the learners' curiosity about the studied materials. The quizzes and games not only made the learners feel joyful but also trained the learners with educative games with different features to improve their learning interests. The material validation obtained a score of 98.4% with the criteria of extremely reliable to use under the material of ancient relics of temples in Malang. The technology-based learning could facilitate learners to joyfully learn, encourage spirit, and motivate the learning interest of the learners (Daryanto, 2016).

The Product Review based on the Users

The product trial run applied the small group test and field test by distributing questionnaires to teachers and learners. The small group test consisted of six learners with diverse capabilities to determine the practicability and the attractiveness of mobile learning before broad dissemination. The obtained validation from the small group showed the practicability level with a percentage of 89.33%, categorized as extremely practical for learning. The attractiveness aspect reached a percentage of 92%, categorized as extremely attractive for the learning implementation.

The researchers conducted the field test and found the practicability and attractiveness levels based on the users - the teachers and the learners. The results of the field test based on the teachers found the practicability with a percentage of 90%, extremely practical; and attractiveness with 94%, extremely interesting to use in the learning. The field test results with 22 learners showed practicability with a percentage of 90%, extremely practical; and the attractiveness aspect with a percentage of 93%, extremely interesting and reliable for the Mobile learning implementation which could enrich the new and meaningful knowledge for the learners by using the technological-

based media. These matters influenced the learning interests and outcomes of the learners (Ahdan et al., 2020). Mobile learning provided a unique experience to the other conventional learning models. Mobile learning allowed users to access anywhere and anytime.

The Review about the Strength of the Research and Development

From this study, the strength of mobile learning included a joyful atmosphere for the learners, understandable material, and learning interest encouragement. Mobile learning had some roles, such as (1) supporting the learners' understanding the ancient relics of temples in Malang by providing figures, texts, videos, and understandable compositions for the learners to satisfy their curiosity and encourage the learning interest; (2) training the learners' directedness to use the mobile learning for learning purposes such as getting the materials to learn without the teacher assistance and time-limitation; and (3) developing the characteristics of the learners such as nationalism, patriotism, and discipline to use the smartphones and to be selective to consume the contents outside of the learning context.

The Review of the Shortcomings of the Research and Development

The shortcomings of mobile learning occurred due to unstable Internet connections. Some learners found different figure sizes and texts due to the phone specification differences. Consequently, some learners had no idea how to remember the signatures of Malang temples.

CONCLUSION

Based on the research findings, the mobile learning application for the material of temple heritage in Malang has been proven to be a practical, interesting, and effective learning media. This application has been able to create an innovative learning experience, increase student creativity, attract students' interest in learning, and provide a deeper understanding of the material, and also improve student learning outcomes. The main advantage of this mobile learning approach is its ability to support independent learning, allowing students to review the material outside the classroom according to their own learning pace.

However, despite its various advantages, this application also has several limitations. One of the main challenges is the scope of the material which is still limited to temple heritage in Malang, thus reducing its application ussage for other historical topics. In addition, differences in digital literacy levels among students are also a

challenge in ensuring that all students can access and utilize this application optimally.

The results of this study have shown the broader potential of mobile learning applications in history education. The success of this approach suggests that similar digital learning platforms can be developed for other historicals materials to create a more interactive and immersive learning experience. In addition, mobile learning can be integrated into a blended learning approach, so that it can accommodate various student learning styles.

Further development and research, it is suggested that the scope of historical material be expanded to include various other cultural heritages so that this application has a wider in use. In addition, the development of adaptive learning features that are adjusted to the level of student understanding can increase the accessibility and effectiveness of this application. By addressing these aspects, mobile learning can continue to develop into a more innovative and beneficial learning medium for the world of education.

REFERENCES

Abas, M., Uge, S., & Alwy, A. R. (2023). The Relationship between Parental Tutoring and Social Science Learning Outcomes for Fourth-Grade Students of Elementary School. Mimbar Sekolah Dasar, 10(1), 281–293. https://doi.org/10.53400-/mimbar-sd.v10i1.50333

Ahdan, S., Putri, A. R., & Sucipto, A. (2020). Aplikasi M-Learning Sebagai Media Pembelajaran Conversation Pada Homey English. Sistemasi, 9(3), 493. https://doi.org/10.32520/stmsi.v9i3.884

Ahmadi, D. M. R. (2018). The Use of Technology in English Language Learning: A Literature Review. International Journal of Research in English Education, 3(2), 115–125. https://doi.org/10.29252/ijree.3.2.115

Akbar, S. (2013). Instrumen Perangkat Pembelajaran. Bandung: PT. Remaja Rosdakarya.

Alsaadat, K. (2017). Mobile Learning-an Alternative Approach in Higher Eudcation. European Journal of Alternative Eudcation Studies, 2(1), 101–113. https://doi.org/10.5281/zenodo.815474

Arta, A., & Putri, D. A. P. (2020). Game Edukasi Pembelajaran Sejarah Berdirinya Indonesia untuk Sekolah Dasar. Emitor: Jurnal Teknik Elektro, 20(2), 77–81. https://doi.org/10.23917/emitor.v20i02.9085

Bonsu, N. O., Boadu, G., Bervell, B., & Zagami, J. (2024). Investigating the impact of mobile blended learning on history students' academic achievement. Education and Information Technologies, 1–19.

Chotib, S. H. (2018). Prinsip Dasar Pertimbangan Pemilihan Media Pembelajaran. Awwaliyah: Jurnal PGMI, 1(2), 109–115.

Cruz, S., Carvalho, A. A. A., & Araújo, I. (2017). A game for learning history on mobile devices. Education and Information Technologies, 22, 515–531.

Daryanto. (2016). Media Pembelajaran. Yogyakarta: Gava Media.
Demir, K., & Akpınar, E. (2018). The effect of mobile learning applications on students' academic achievement and attitudes toward mobile learning. Malaysian Online Journal of Educational Technology, 6(2), 48–59. https://doi.org/10.17220/-mojet.2018.02.004
Dicky & Carey. (2009). The Systematical Design of Instruction. USA: Pearson.
Fatih, Y., Kumalija, E. J., & Sun, Y. (2018). Mobile learning based gamification in a history learning context. Proceedings of the 14th International Conference on Mobile Learning 2018, ML 2018, 143–147.
Gadziński, J. (2018). Perspectives of the use of smartphones in travel behaviour studies: Findings from a literature review and a pilot study. Transportation Research Part C: Emerging Technologies, 88(July 2017), 74–86. https://doi.org/10.1016/j.trc.-2018.01.011
Hanifah, N. H., Rofiki, I., Sedayu, A., & Hariyadi, M. A. (2020). Mobile Learning Pada Mata Kuliah Strategi Pembelajaran Mi/Sd: Penelitian Pengembangan. Ta'dib, 23(1), 119. https://doi.org/10.31958/jt.v23i1.1704
Hanifah Salsabila, U., Irna Sari, L., Haibati Lathif, K., Puji Lestari, A., & Ayuning, A. (2020). Peran Teknologi Dalam Pembelajaran Di Masa Pandemi Covid-19. Al-Mutharahah: Jurnal Penelitian Dan Kajian Sosial Keagamaan, 17(2), 188–198. https://doi.org/10.46781/al-mutharahah.v17i2.138
Harsiwi, U. B., & Arini, L. D. D. (2020). Pengaruh Pembelajaran Menggunakan Media Pembelajaran Interaktif terhadap Hasil Belajar siswa di Sekolah Dasar. Jurnal Basicedu, 4(4), 1104–1113. https://doi.org/10.31004/basicedu.v4i4.505
Huang, R.-T. (2023). Explore the moderating impact of learners' anticipated emotions on mobile learning outcome: A moderated mediation model. Innovations in Education and Teaching International, 60(6), 872–882.
Juliane, C., Arman, A. A., Sastramihardja, H. S., & Supriana, I. (2017). Digital Teaching Learning for Digital Natives; Challenges and Opportunities [Digital Teaching Learning for Digital Native; Tantangan dan Peluang]. Jurnal Ilmiah Rekayasa Dan Manajemen Sistem Informasi, 3(2), 29–35.
Kamasi, N. V. V., & Saruan, T. J. (2020). Mobile Learning (M-Learning) Based Learning Application Design for Elementary School Students. Jurnal Ilmiah Sains, 20(2), 70. https://doi.org/10.35799/jis.20.2.2020.27877
Kumar, B. A. (2024). Towards design science methodology for developing mobile learning applications. Interactive Learning Environments, 32(7), 3840–3854.
Maryati, T. (2020). Pengembangan Media Film Dokumenter Memanfaatkan. 4(2), 116–126. https://doi.org/10.23887/pips.v4i2.3423
Merinta, D. P., & Untari, S. (2017). Penerapan Model Pembelajaran Kooperatif Tipe Quiz-Quiz Trade Pada Pembelajaran Ips Sd. Rosiding TEP & PDs Transformasi Pendidikan Abad 21, 7. https://core.ac.uk/download/pdf/267023727.pdf
Nikolopoulou, K., Gialamas, V., & Lavidas, K. (2023). Mobile learning-technology barriers in school education: Teachers' views. Technology, Pedagogy and Education, 32(1), 29–44.
Ningsih, S. (2019). Persepsi Mahasiswa Terhadap Mobile Learning Berbasis Android. Pedagogia, 17(1), 45. https://doi.org/10.17509/pdgia.v17i1.15858
Nurjanah, S., Atmaja, H. T., & Saraswati, U. (2017). Indonesian Journal of History

Education. Indonesian Journal of History Education, 5(2), 67–75. http://journal.unnes.ac.id/sju/index.php/ijhe

Parsons, D., Palalas, A., Nikou, S., & Rodulfo, S. (2024). Mobile learning frameworks and pedagogy: A systematic review. European Journal of Education, 59(2), e12601.

Permatasari, B. D., Gunarhadi, & Riyadi. (2019). The influence of problem based learning towards social science learning outcomes viewed from learning interest. International Journal of Evaluation and Research in Education, 8(1), 39–46. https://doi.org/10.11591/ijere.v8i1.15594

Putra, E. A., Sudiana, R., & Pamungkas, A. S. (2020). Pengembangan Smartphone Learning Management System (S-LMS) Sebagai Media Pembelajaran Matematika di SMA. Kreano, Jurnal Matematika Kreatif-Inovatif, 11(1), 36–45. https://doi.org/10.15294/kreano.v11i1.21014

Ramli, R. Z., Sahari Ashaari, N., Mat Noor, S. F., Noor, M. M., Yadegaridehkordi, E., Abd Majid, N. A., Dahlan, H. A., & Abdul Wahab, A. N. (2024). Designing a mobile learning application model by integrating augmented reality and game elements to improve student learning experience. Education and Information Technologies, 29(2), 1981–2008.

Setyosari, P. (2015). Metode Penelitian Pendidikan dan Pengembangan. Jakarta: PT Kharisma Putra Utama.

Shatri, Z. G. (2020). Advantages and disadvantages of using information technology in learning process of students. Journal of Turkish Science Education, 17(3), 420–428. https://doi.org/10.36681/tused.2020.36

Sugiyono. (2015). Metode Penelitian Kuantitatif, Kualitatif dan R&D. Jakarta: PT. Remaja Rosdakarya.

Vasel, H., & Ragonis, N. (2024). Empowering hearing-impaired students: A mobile learning intervention in Israeli Arab elementary education. Journal of Research in Special Educational Needs.

Widadi, S. Y., & Pramudita, I. A. (2018). Gambaran Motivasi Belajar pada Siswa Pengguna Smartphone di SMP Negeri 4 Garut. Jurnal Keperawatan Silampari, 2(1), 203–216. https://doi.org/10.31539/jks.v2i1.304

Widyanti, T. (2016). Penerapan Nilai-Nilai Kearifan Lokal Dalam Budaya Masyarakat Kampung Adat Cireundeu Sebagai Sumber Pembelajaran Ips. Jurnal Pendidikan Ilmu Sosial, 24(2), 157. https://doi.org/10.17509/jpis.v24i2.1452

Wijayanti, D. M., Ahmadi, F., & Sarwi, S. (2019). Keefektifan Mobile Learning Media Bermuatan Ethnoscience terhadap Hasil Belajar Siswa Sekolah Dasar. MODELING: Jurnal Program Studi PGMI, 6(2), 129–136. https://doi.org/-10.36835/modeling.v6i2.463

Winarsih, I., Utomo, C. B., & Ahmad, T. A. (2017). Peranan Pembelajaran Sejarah dalam Penanaman Nilai Karakter Religius dan Nasionalisme di MAN Temanggung Tahun Ajaran 2016/2017. Indonesian Journal of History Education, 5(2), 22–29.