



The Development Of Mobile Learning Media In Physical Education, Sports, And Health (PJOK) Learning For The Second Semester Of Seventh Grade In Junior High School

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Abstract

This study aims to develop mobile learning media for the Physical Education, Sports, and Health (PJOK) subject in the second semester, consisting of five learning topics for seventh-grade junior high school students. The method used is the ADDIE development research method, which consists of five steps: Analysis, Design, Development, Implementation, and Evaluation. The data collection techniques used are interviews and questionnaires. Interviews were used to identify existing problems, while questionnaires were used to validate the feasibility of the developed mobile learning media. The result of this study is a mobile learning media product that can be downloaded from the Google Play Store and installed on Android devices. The developed mobile learning media was considered feasible based on validation and revisions by subject matter experts (91.42%), instructional media experts (97.14%), language experts (97.14%), and PJOK educators (94.28%). In addition, a small-scale trial conducted with students resulted in a score of 92.28%, while in the large-scale trial, teachers gave a score of 96.19% and students 96.08%. Therefore, it can be concluded that the developed mobile learning media is feasible for use as a PJOK learning tool at SMP Negeri 5 Bandar Lampung.

Keywords: *android, application, development, learning media, mobile learning, physical education, sports, and health (PJOK)*

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INTRODUCTION

Education plays a crucial role in the lives of individuals and society, serving as a tool to improve a person's quality of life and enabling them to contribute to community development. According to the Law on the National Education System No. 20 of 2003, Education is a conscious and planned effort to create a learning environment and learning process in which students actively develop their potential to possess spiritual strength, self-control, personality, intelligence, noble character, and the skills needed for themselves and society (Pristiwanti et al., 2022). Education is also defined as a human endeavor to nurture and develop inherent physical and spiritual potentials in accordance with the values present in society and culture (Rahman et al., 2022). Quality education enables a nation to produce individuals who can quickly adapt to global changes and make a significant contribution to

development. (Iswanto, 2024). Physical Education includes a very broad study that focuses on increasing human movement as a result of the development of the body, mind and spirit (Baihaqi et al., 2023). Physical education is crucial in the education process at school because it directly contributes to shaping and developing the potential of students that will be useful for their future lives.

In achieving educational goals, a curriculum is needed as a guide for organizing learning. According to Indy (2019), the curriculum is a set of plans and arrangements regarding goals, content, and learning methods to achieve certain educational goals. The curriculum not only aims to educate, but also to shape the character and competence of students. as affirmed by Dr. Candra Kurniawan, S.Pd., M.Or. (2017) that the curriculum must be able to develop knowledge, skills, and attitudes contextually. Over time, the government continues to improve the curriculum to make it relevant to the needs of students (Arafu et al., 2023). After the 2006 Curriculum and the 2013 Curriculum, Indonesia is currently implementing the Merdeka Curriculum which emphasizes learner-centered learning. This curriculum encourages students to be more independent, active, and creative in the learning process.

In the context of globalization and technological advancement, the development of Information and Communication Technology (ICT) has brought significant impacts in various fields, including in education. The rapid advancement of technology provides a variety of new tools and methods that facilitate the learning process to be more flexible. The world of education is required to constantly adapt to the development of technology, information and communication. Education in the digital era must be able to integrate information and communication technology into every subject so that the use of technology-based learning media has become a major requirement in the educational process. This is in accordance with the direction of government regulations that encourage the use of technology in learning, namely Government Regulation No. 19 of 2005 which regulates the National Education Standards covering educational facilities and infrastructure, including information and communication technology (ICT). This regulation emphasizes the importance of using technology in Education to improve the quality of learning and teaching to make it more flexible and efficient. The use of various digital platforms in the teaching and learning process to increase student engagement and make learning more interesting, as well as the importance of technological literacy in the digital era.(Habsy et al., 2024). The use of technology in education not only facilitates the teaching and learning process, but also promotes innovation in teaching methods and education management (Setiawati et al., 2024). Technology makes a wide variety of educational resources accessible. This allows students of different races and

geographical origins to receive the best education possible without being restricted by such limitations (Iskandar et al., 2023). In the digital era, wider availability of materials refers to the ability to access, utilize and share information and learning materials through digital technology flexibly, without being bound by time and place. Therefore, schools that still apply conventional methods need to adapt to technological advances to create a more varied, engaging and interactive learning experience.

Learning media is a tool used in the delivery process. (Syalsabillah, 2024). Learning media are tools used to assist educators in explaining all or part of the learning material that is difficult to convey verbally (Suryani, 2018). Learning media includes tools that are physically used to convey the content of teaching materials, which consist of books, tapes, videos, films, slides (frame pictures), photos, pictures, graphics, television, and computers. Learning media are classified into five groups, namely human-based media, print-based media, visual-based media, audio-visual-based media, and computer-based media (Kristanto, 2016). Computer-based media is media that utilizes computer technology to support the technology-based learning process. Computers have a role in learning activities called Computer-Assisted Instruction (CAI). In CAI, the computer is used as a tool to deliver the lesson material. Along with the development of Technology, Information, and Communication in the world of education, learning media also continues to develop. Computer-based media is not only limited to the use of desktop or laptop computers, but also extends to mobile phones, which are more flexible mobile devices such as smartphones and tablets. This concept is known as Mobile Learning (M-learning). Mobile learning refers to the use of mobile devices to support learning activities anywhere and anytime which provides more convenience and flexibility to learners. Mobile learning can also be a very effective tool in improving the quality of education. Mobile Learning is the intersection of mobile computing and e-learning, accessible resources wherever you are, strong search capabilities, rich interaction, powerful support for effective learning, and performance-based assessment. E-learning independent of location in time or space (Junita, 2023).

According to Warsita (2018), Mobile learning is a learning model that involves mobile devices so that students can access learning materials, study guides and learning applications without being limited by space and time, wherever and whenever they are. Accessibility of learning media contributes positively to students' independence in learning (Santoso, 2022). With accessible media, students can learn physical education materials anytime and anywhere, increasing their learning flexibility. One of the main advantages of mobile learning is its ease

of access and flexibility. Students can access learning materials anytime and anywhere. This allows learning to take place without time or space constraints, making it easier for students to learn outside of class hours, even at home or while traveling. In addition, the use of mobile learning can increase student involvement in learning. This is because mobile learning media provides learning materials such as text, images, videos, and infographics that make it easier for students to learn certain topics and is equipped with interactive features such as quizzes that encourage students to actively participate. This allows students to get immediate feedback and adjust their learning pace as needed.

Mobile learning media can create a fun learning atmosphere compared to using conventional learning media such as physical textbooks or whiteboards. In addition, conventional methods often do not take into account the different needs and learning styles of students. All students are taught in the same way without any adjustment to individual learning pace or style. This can lead to students who pick up the material quickly feeling bored because they have to wait for their slower peers, while struggling students can feel pressured and left behind. With the advantages of mobile learning (m-learning), such as flexibility of time and place, access to diverse materials, high interactivity, and ease of learning personalization, mobile learning can create a more effective learning experience that suits individual needs. Therefore, the use of mobile learning as an independent learning resource media in the era of advanced technology is needed in the learning process.

The results of Widad's research (2023) showed that the use of Google Sites media in the Project Based Learning model was able to improve students' pencak silat learning outcomes with an average increase in scores of 31.138 and N-Gain of 47%, which included a fairly effective category. Meanwhile, research by Renatalia Marselinda (2022) shows that mobile learning media for learning anecdotal text is considered very feasible to use, based on the validation of learning experts (90%), media experts (94%), educators (100%), and student responses (97%). This finding reinforces that technology-based learning media, both web and mobile, are proven to be able to improve learning effectiveness. The use of technology-based or digital learning media helps to liven up the atmosphere in the classroom so that active communication and discussion occur, makes it easier for teachers to convey material and is also easily understood by students, and provides a more interesting learning dimension so that learning is more effective and efficient (Permana, 2024)

Pre-research studies conducted at SMP Negeri 5 Bandar Lampung show that the PJOK learning process is still dominated by conventional and less varied approaches. Learning activities tend to be monotonous because they only rely on textbooks as the main media,

without the support of other interactive, visual, or digital learning media that can increase student interest in learning. In addition, the limited facilities and infrastructure at school also become a significant obstacle in the implementation of learning, especially in practical activities. Lack of supporting equipment such as mats reduces the effectiveness of learning based on movement skills. The lack of variety in learning media, limited facilities, and lack of innovation in teaching methods make the learning process less interesting, boring, and have an impact on the low active participation of students in the learning process, which ultimately affects the quality of achievement of overall learning outcomes. Based on the background supported by theory and previous research, the purpose of this research is to develop mobile learning media for the Physical Education, Sports, and Health (PJOK) subject for seventh-grade junior high school students.

METHOD

The research method used in this study is research and development (R&D). According to Borg and Gall (Sugiyono, 2019), research and development (R&D) is a research method used to produce a product and to test the effectiveness of that product. The development model used in this study is the ADDIE model, which was developed by Dick and Carey in 1996 through five stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE development model is an approach that emphasizes the analysis of how various components interact and coordinate with each other according to the existing phases. This is in line with the opinion of Sezer (2013), who stated that “ADDIE is the systems approach implies an analysis of how its components interact with each other and requires coordination.”

This study was conducted from January to April 2025. The subjects of the study consisted of teachers and students. A small-scale trial was carried out with 10 seventh-grade students to assess the initial feasibility of the developed learning media. Then, the large-scale trial involved 3 teachers from three different schools : SMP Negeri 5 Bandar Lampung, SMP Qur'an Darul Fattah, and SMP Al-Fajar Pringsewu as well as 35 seventh-grade students. The instrument used in this study consisted of interviews and questionnaires employing a 1–5 Likert scale to evaluate the feasibility of the mobile learning media. The Likert scale is used to measure the attitudes, opinions, and perceptions of individuals or groups regarding an event or social phenomenon (Riduwan, 2015). After obtaining the total score, it was then analyzed using the following formula.

$$\text{Feasibility percentage} = \frac{\text{obtained score}}{\text{maximum score}} \times 100\%$$

The calculation results were then interpreted in the following table.

Table 1. Feasibility Level Criteria

No	Score Range	Criteria
1	81-100%	Very Feasible
2	61-80%	Feasible
3	41-60%	Fairly Feasible
4	21-40%	Not Feasible
5	0-20%	Very Not Feasible

RESULTS AND DISCUSSION

Result

The result of this research is a mobile learning media called Belajar Olahraga (BORA). Belajar Olahraga (BORA) is an Android based learning application specifically designed to support the Physical Education, Sports, and Health (PJOK) subject in the second semester. This digital learning media is intended for seventh-grade junior high school students and includes five core learning topics, namely: floor gymnastics, rhythmic movement activities, health-related physical fitness, healthy and balanced nutrition, and freestyle swimming. The content within the application is developed in alignment with the Merdeka Curriculum, which is currently implemented in Indonesian schools. The mobile learning application is accessible via the Google Play Store and can be installed on Android devices, offering students flexible access to learning materials anytime and anywhere. The interfaces of the mobile learning media can be seen in the figures below :

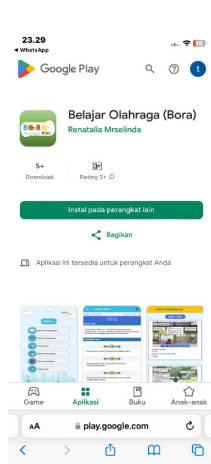


Figure 1. Display on the Play Store page



Figure 2. Main menu page

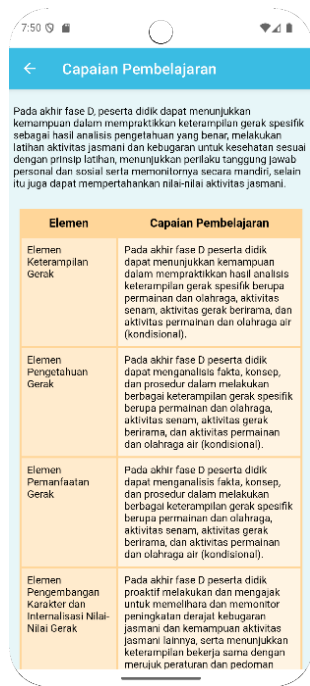


Figure 3. Learning outcomes page

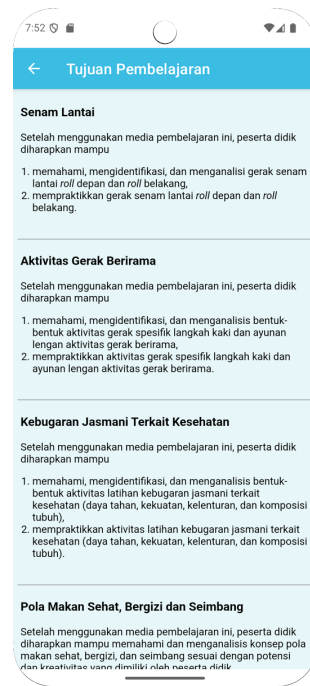


Figure 4. Learning objectives page



Figure 5. Concept map page

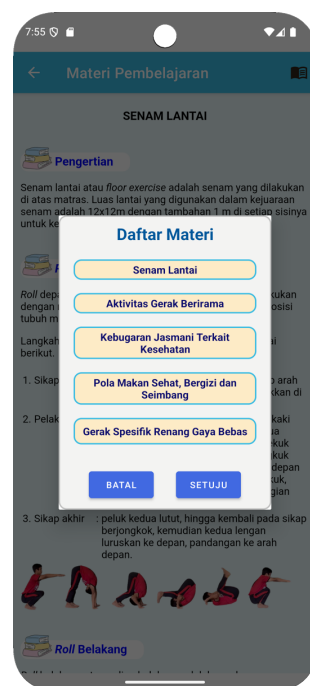


Figure 6. Learning materials page



Figure 7. Sample content page of the learning material



Figure 8. Learning video page

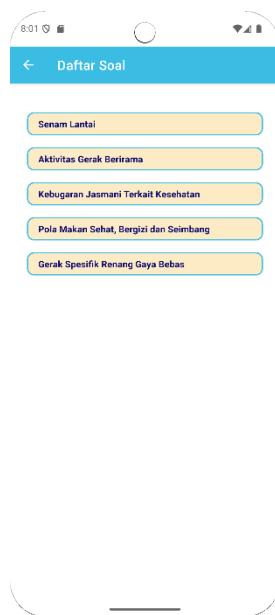


Figure 9. Exercise page 1st

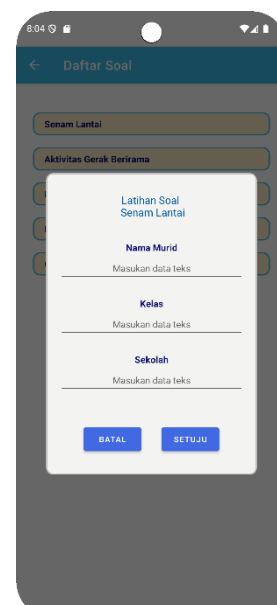


Figure 10. Exercise page 2nd

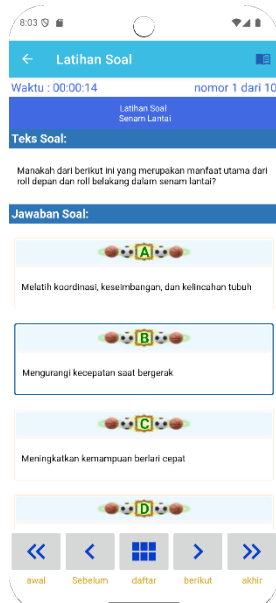


Figure 11. Exercise page 3rd



Figure 12. Exercise page 4th



Figure 13. Information page

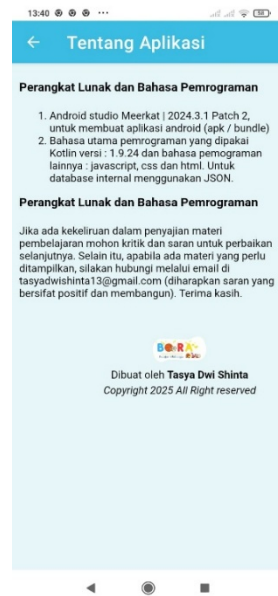


Figure 14. About page

Discussion

In making mobile learning media, namely the Belajar Olahraga (BORA) learning application, researchers use hardware and software. The selection of hardware in the development process greatly affects the efficiency of time and smoothness. The hardware configuration of the computer used in making the Belajar Olahraga (BORA) application includes the Windows 11 Pro operating system, 32 GB of RAM, and storage using an NVMe SSD with a capacity of 1 TB to optimally support the application development process. While in the development process, researchers used Android Studio software as the main Integrated Development Environment (IDE) to create applications through code programming. This mobile learning media development uses the ADDIE development model which consists of five stages, namely: Analysis, Design, Development, Implementation, and Evaluation (Branch, 2009).

The analysis stage aims to identify existing problems. Based on the results of interviews conducted, several problem factors experienced by teachers and students in the learning process of Physical Education, Sports and Health (PJOK) were found. One of the main factors identified is the limited supporting facilities and infrastructure, such as incomplete sports fields and equipment. In addition, the lack of variety in learning media causes the learning process to be monotonous, so students are less interested in participating in learning. As a result, students have difficulty in understanding the material, especially if it is delivered without visual support or direct practice. On the other hand, not all PJOK teachers utilize digital technology in learning. As a solution to these problems, learning media that can attract students' attention is needed. So the researcher developed mobile learning-based learning media because mobile learning media has flexibility, interactivity, and ease of access, so that it can help students understand PJOK material more interestingly. In addition, this mobile learning media can help independent learning through Android devices owned by students.

The design stage is a structured process that contains the initial plan for the design and content of the learning media. The design stage is carried out in three steps: material preparation, creating a storyboard, and creating a flowchart. The material preparation involves using references from sources and other books related to the materials. Next, a storyboard is created to design the visual appearance. Then, a flowchart is made to provide guidance on the flow of the program or application being developed.

The Development stage in the ADDIE model involves the process of producing mobile learning media based on the design created in the previous stage. In developing the Belajar Olahraga (BORA) learning application, the hardware used included a computer with the Windows 11 Pro operating system, 32 GB of RAM, and 1 TB of NVMe SSD storage. For the development process, the software used was Android Studio. Android Studio is an Integrated Development Environment (IDE) used to develop Android-based applications using Java or Kotlin programming languages. It facilitates the application development process by providing various supporting features, such as a Gradle-based build system and an Android Emulator.

The Belajar Olahraga (BORA) application was developed using "Android Studio Marekat 2024.3.1 Patch 2" with Kotlin version 1.9.24 as the main programming language. Based on Figure 1, Display on the Play Store Page, the mobile learning media is available on the Google Play Store. The mobile learning media is named Belajar Olahraga, or "BORA". Belajar Olahraga (BORA) is an educational media application for the Android platform developed to support the learning materials in Physical Education, Sports, and Health (PJOK) subjects at the junior high school level. The Belajar Olahraga (BORA) application was developed to facilitate both teachers and students in managing classes and supporting independent learning, as it can be accessed anytime and anywhere. This application provides features such as learning outcomes, learning objectives, concept maps, learning materials, videos, and practice questions, and can be downloaded from the Google Play Store. The results of the expert validation can be seen in the following table

Table 2. Expert Validation Results

No	Subjects	Average Score	Average Percentage	Criteria
1	Learning Material Expert	4.57	91.42%	Very Feasible
2	Learning Media Expert	4.85	97.14%	Very Feasible
3	Language Expert	4.85	97.14%	Very Feasible
4	Physical Education Teacher	4.71	94.28%	Very Feasible

In the Implementation stage, the developed mobile learning media was applied in classroom learning. The mobile learning media was tested by distributing questionnaires to teachers and students. The purpose of the questionnaires was to determine the responses and interest in the mobile learning media developed by the researcher. A small-scale trial was

conducted involving 10 students, while the large-scale trial involved 3 teachers and 35 students. Respondents were provided with a link to the application on the Google Play Store to install the app on their smartphones. After installing the application, respondents were given time to use it, and then they were asked to complete an evaluation questionnaire at the end of the session to assess the application. The results of the small-scale and large-scale trials are as follows:

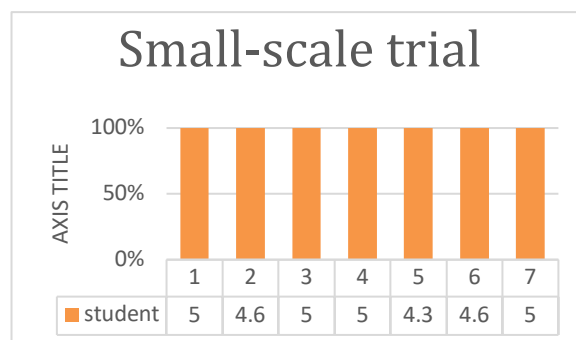


Figure 15. Histogram of small-scale trial

Based on Figure 15, Histogram of Small-Scale Trial Data, the results of the small-scale trial conducted with 10 students show that the mobile learning media was assessed based on 7 aspects. Each aspect received an average score of 4.8, with an overall average score of 32.3 and a feasibility percentage of 92.28%. This indicates that the mobile learning media falls into the "highly feasible" category. These results also show that in the small-scale trial, the mobile learning media functioned well and received positive responses from users. Based on these results, the mobile learning media can proceed to the large-scale trial stage to find out how users respond on a broader scale,

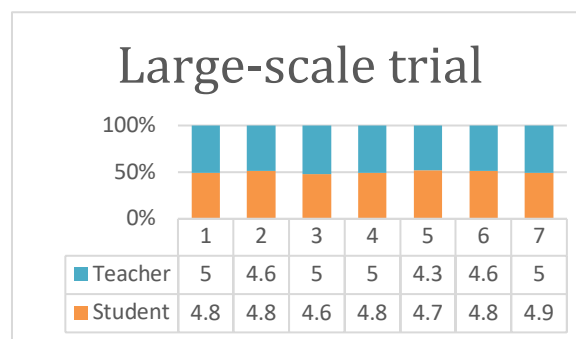


Figure 16. Histogram of large-scale trial

Based on Figure 16, Histogram of Large-Scale Trial Data, the results of the large-scale trial involving 3 teachers showed that the media obtained an average score of 4.8 for each aspect, with an overall average score of 33.6 and a feasibility percentage of 96.19%. Meanwhile, the trial involving 35 students resulted in an average score of 4.8 for each aspect, an overall average score of 33.62, and a feasibility percentage of 96.08%. Therefore, it can be concluded that the developed mobile learning media is highly feasible

Evaluation is conducted to improve the mobile learning media that has been developed. Feedback and suggestions given at the validation and implementation stages will be considered for the final revision to improve product quality. This aims to produce mobile learning media that is suitable for use and provides benefits for many users.

CONCLUSION

This research produces a mobile learning media in the form of an android-based learning application called "Belajar Olahraga (BORA) for Physical Education, Sports, and Health (PJOK) subjects for junior high school students in grade VII second semester. This application includes five learning topics, namely: floor gymnastics, rhythmic movement activities, health-related physical fitness, healthy and balanced nutrition, and freestyle swimming. These materials are developed in accordance with the Merdeka Curriculum. Learning sports (BORA) can be downloaded from the Google Play Store and installed on Android devices. Based on validation and revision by material experts (91.42%), learning media experts (97.14%), linguists (97.14%), and PJOK educators (94.28%). In addition, in the small-scale trial conducted to 10 students obtained a percentage of 92.28%, while in the large-scale trial, the teacher gave a percentage of 96.19% and students of 96.08%. Therefore, it can be concluded that the mobile learning media developed is suitable for use as a learning media for PJOK at SMP Negeri 5 Bandar Lampung.

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