Original Article

Development of athletic learning media for elementary school students

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Authors' Contribution: A – Study Design, B – Data Collection, C – Statistical Analysis, D – Manuscript Preparation, E – Funds Collection
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Abstract: Interesting learning media and motivating students to learn together in the form of android-based mobile learning. This study aims to develop the Smart Athletic Apps application and understand the usability of the product based on expert validation and usability factors. This type of research is a development research or Research and Development (R & D) which uses the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). The stages of Analysis identify needs and problems, Design learning objectives and strategies, Development create and test products, Implementation apply products in real situations, and Evaluation of product effectiveness at each stage. The subjects of this study were 1 media expert, 1 material expert, and 22 students of grade V SDN Sambiroto, the instrument used to measure product quality based on validators and usability factors. The results of this study obtained: (1) There is a Smart Athletic Application Product; (2) The use of media cannot be separated properly from the material aspect; the media aspect does not have a usability factor with the category "very lay". The results of the expert validation test: (1) Material Expert of 4.47 points at rent> 4.0 so that it is included in the category "very lay"; (2) The Media Expert Validation Value is 4.70 points at rent >4.0 so it falls into the "very ordinary" category. The results of the usability factor trial are 6.24 at rent >5.5 so it falls into the "very feasible" category.

Keywords: Smart atletic apps; instructional media; athletic learning; physical education
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Development of athletic learning media for elementary school students
Jurnal maenpo: jurnal Pendidikan Jasmani Kesehatan dan Rekreasi
Vol 14, No 2 (2024): Volume 14 Nomor 2 Tahun 2024

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INTRODUCTION

Education is an element that cannot be separated from human life and plays vital role in the aspect of life. As the main pillar in the formation of the human resources quality, education help developing individuals into productive and useful members of society. Through the educational process, a person can acquire the knowledge, skills, and values necessary to contribute positively to their social and professional life (Bakti Bachtiar & Bakti, 2018). Through education, humans can develop into individuals who are beneficial not only to themselves but also to the nation and state. Therefore, education must be implemented optimally to achieve its goals. The success of a nation depends greatly on the quality of education which is able to improve the quality of its human resources (Da'i et al., 2023).

Currently, an advance in the science and technology are developing very quickly, encouraging every individual to respond on these developments quickly to keep up. Modern education refers to a multi-dimensional approach that emphasizes the integration of science and technology (IPTEK) in the learning process (Wibowo et al., 2023). The development of information and communication technology has changed human lifestyles in various aspects such as working, socializing, playing and studying. Entering the 21st century, technological advances have penetrated various areas of life, including the education sector (Mashud, 2017). Teachers and students must have 21st century learning skills to adapt quickly and effectively in a changing world. In the face of various challenges and opportunities in this information age, they are required to develop critical abilities, creativity, collaboration, and communication. These skills are essential to survive and excel in a century of knowledge, where technology and information are evolving rapidly, and lifelong learning is becoming an urgent need. (Malik, 2018). The development of science and technology has an impact on the learning process by enriching learning sources and media, such in textbooks, modules, films, videos, web, and many others. Therefore Professional teachers are expected to be able to choose and use various types of learning media that available around them (Taufik, 2019).

In addition to encourage, increase awareness, and provide direction to of the students, it is necessary to use teaching methods that are easy to understand. In contrast the students can hear, understand, absorb and apply what they learn as a result (feedback) of the learning process (Adnas & Tan, 2022). To encourage, increase awareness, and provide direction to students, it is necessary to use teaching methods that are easy to understand. This is so that

students can hear, understand, absorb and apply what they learn as a result (feedback) of the learning process (Ulfa & Saifuddin, 2018).

Physical education, sports and health (PJOK) learning in elementary schools has an important role in developing students' motor skills and physical health (Aliriad et al., 2023). However, traditional teaching methods are limited in the effectivel conveying athletic content such as running, sprinting, and long jumping. in fact, the development of Android-based learning media in the form of mobile learning applications, specifically designed for PJOK subjects, is an innovative solution to improve the quality of learning (Septiana & Kurnia, 2020). Undoltedly application, named "Smart Athletic Apps," is expected to help teachers to deliver material more interesting and interactive way, this app providing flexibility for students to learn anytime and anywhere, thereby improving their understanding and skills in the field of athletics (Rudd et al., 2021).

The novelty of this research lies in the development of smart application-based athletic Learning media designed specifically for elementary school students. Different from conventional methods that rely more on direct instruction from teachers, this smart athletics app offers an interactive and digital approach that students can access independently. The app not only provides comprehensive learning materials, but also comes with real-time evaluation and feedback features, allowing students to monitor their progress continuously. In addition, the integration of technology in athletic learning is expected to increase student motivation and engagement, as well as facilitate more effective differentiation of teaching according to the individual needs of each student.

Therefore, the authors are encouraged to develop Android-based learning media in the form of Mobile Learning for PJOK subjects, especially for Class V Athletics materials such as running, brisk walking, and long jumping in accordance with the basic competencies taught (Linthorne, 2019). Learning via smartphone will be more practical anywhere and anytime, making it easier for students to learn (Da'i et al., 2021).

MATERIAL AND METHOD

This type of research is research and development. According to Sugiyono (Sugiyono, 2013) research and development has the aim of producing new products through the development process. Then the development model used is the ADDIE model developed by (Triansyah et al., 2023), namely a development model consisting of five stages consisting of

Analysis, Design, Development, Implementation and Evaluating. ADDIE's development Model consists of five main stages. In the analysis phase, the identification of athletic learning needs in elementary school through observation, interview, and curriculum review. The design stage includes the design of the structure, application content, user interface sketches, and evaluation methods. Furthermore, in the development phase, application prototypes are developed and tested internally to gather initial feedback. Implementation is carried out by field trials in several primary schools, teacher training, and application integration in learning activities. The final stage is evaluation, where formative and summative evaluations are carried out to assess the effectiveness of the application, analyze data from questionnaires, performance tests and feedback, and determine the success of the application and areas that require further improvement.

The subjects in this research were one learning media expert lecturer, one material expert lecturer, and 22 class V students at SDN Sambiroto using saturated sampling because the population was relatively small. The trials examined were the quality and suitability of learning media in the form of Android applications, which were aspects of material relevance, material organization aspects, evaluation/practice question aspects, language aspects, visual display aspects, software engineering aspects and effect aspects for learning strategies (Rahmat et al., 2023).

The research instrument used in this research was adapted from research into the development of an Android-based funeral prayer guide by (Rayanto, 2020) with further development by researchers (modification). Moreover the techniques used to collect data in this research are surveys with questionnaires and documentation studies (Handayani, 2023). The questionnaires used in this research were divided into two types, namely questionnaires for experts and questionnaires for users. A questionnaire for users is used to determine feasibility based on usability factors (Sufandi et al., 2022). The user questionnaire was tested on 22 students as respondents.

RESULTS

The results of research and development of Android-based mobile learning media in athletic learning for Sambiroto Elementary School students are as follows:

Figure 1. Smart Athletic Apps

Based on the picture above, you can see an example of the display of athletic learning media development products for Sambiroto Elementary School students. There are 4 stages carried out by researchers in this research procedure, includung analysis, design, development and implementation (Fatirul & Walujo, 2022). Each stage must be carried out according to its respective procedure. However, due to the researcher's negligence in the initial stages, namely analysis and design, the correct research was not carried out according to the procedures. At the analysis and design stage, data collection should first be carried out in the form of questionnaires or observations from potential users, so that the analysis and design made will be more accurate (Arisman & Agun Guntara, 2021).

At the development stage, initial product development, expert validation, and final product development are carried out. The expert validation stage is divided into two, namely material expert validation and media expert validation, namely as follows:

The overall material expert validation test results reached an average of 4.25 in the "very feasible" category. The percentage of value categories is 0% (very poor), 0% (poor), 0% (fair), 75% (good) and 25% (very good).

Table 1. Calculation of Smart Athletic Apps Product Feasibility for Sambiroto Elementary School Students based on material expert validation.

No	Category	Percentage (%)
1	Very Good	25%
2	Good	75%
3	Fair	0%
4	Poor	0%
5	Very Poor	0%

The overall material expert validation test results reached an average of 4.70 in the "very feasible" category. The percentage of score categories is 0% (very poor), 0% (poor), 0% (fair), 29.2% (good) and 70.8% (very good).

Table 2. Calculation of Smart Athletic Apps Product Feasibility for Sambiroto Elementary School Students based on media expert validation.

No	Category	Percentage (%)
1	Very Good	70,8%
2	Good	29,2%
3	Fair	0%
4	Poor	0%
5	Very Poor	0%

Implementation stage, at this stage the researcher carried out a feasibility test for usability/user factors using a questionnaire for 22 students at SDN Sambiroto. The following is the data on the results of the usability factor feasibility test:

Table 3. Calculation of Smart Athletic Apps Product Feasibility based on user factors.

No	Category	Percentage (%)
1	Very Adequate	93,8%
2	Adequate	6,2%
3	Fair	0%
4	Not Adequate	0%
5	Very Inadequate	0%

The overall test results reached an average of 6.24 with a very feasible category. The percentage of value categories is 0% (very inadequate), 0% (not adequate), 0% (fair), 6.2% (adequate) and 93.8% (very adequate). Therefore, it can be concluded that the Android-based Mobile Learning Learning Media in Athletics Learning for Class V Students.

DISCUSSION

Based on the results of testing that has been done, Android-Based Mobile Learning Learning Media for Athletic learning of SDN Sambiroto students with the application name "Smart Athletic Apps" has results with the category "very decent" in each test. Of the three aspects of testing will determine the feasibility of the software, namely the results of the material validation test get a score of 4.25 which indicates a very decent category. The media validation test received a score of 4.70 which also indicates a "very decent"category. Usability factor feasibility test conducted by respondents get a score of 6.24 and entered in the category of "very feasible". From these data, it can be concluded that the Android-based mobile learning learning media for athletic learning at SDN Sambiroto with the "Smart Athletic Apps" application is worthy of being used as a learning medium for PJOK subjects, especially for athletics.

The research offers a significant innovation by combining digital technology and athletic learning, an approach that has not been widely implemented before. Using the smart athletics app, students can access learning materials anytime and anywhere, providing much greater flexibility over conventional methods. The app also comes with a gamification feature, which adds an element of fun and healthy competition to learning, increasing students ' motivation to actively participate. For comparison, research by Arufe-Giráldez et al., (2023) that rely on static learning media such as books and videos, are not able to provide a dynamic and interactive learning experience as offered by this smart athletics app.

In addition, the study showed better results in terms of improved learning outcomes and student engagement. Through field trials conducted, the smart athletics app was shown to improve students ' performance test scores and their level of participation in athletic activities. Real-time evaluation and feedback features allow students to quickly find out and correct their mistakes, which is not possible by traditional learning methods. Research by Norris et al., (2020) and McLaren et al., (2023) despite developing physical training programs and web-based modules, does not provide a feedback mechanism that is as fast and effective as this app. Thus, this study not only effectively integrated technology, but also resulted in a significant improvement in student learning outcomes, making it superior to previous studies.

The main advantage of this study is the development of an interactive smart athletics app that allows students to learn independently and get instant feedback on their performance. The

real-time evaluation features and personalized exercises offered by this app are much more effective in increasing student motivation and engagement compared to conventional learning methods. In addition, the application is designed with an intuitive and attractive interface that corresponds to the characteristics and needs of elementary school students, something that has not been explored much in previous studies.

Thus, this study not only integrates modern technology into athletic learning but also offers a more holistic and adaptive approach to student needs, making it superior to previous studies.

CONCLUSION

The study's conclusion shows that the development of smart application-based athletic learning media for elementary school students provides significant innovation and better results compared to conventional learning methods and previous research. This smart athletics app not only provides comprehensive and interactive materials but also comes with real-time evaluation and feedback features that improve student motivation, engagement, and learning outcomes. Excellence in access flexibility, workout personalization, and gamification make this app effective in meeting the learning needs of athletes in the digital age. Thus, this research succeeded in creating learning solutions that are more adaptive, dynamic, and in accordance with the demands of 21st century learning.

Conflicts of Interest: The authors declare no conflict of interest.

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