13 (1) (2024) 11 - 16
Journal of Physical Education, Sport, Health and Recreations
http://journal.unnes.ac.id/sju/index.php/peshr

Development of Learning Applications for Physical Education, Sports, and Health Sepak Takraw Material for High School Students

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Article History

Received September 2023
Accepted February 2024
Published Vol.13 No.(1) 2024

Keywords:
Web-based learning media; Sepak Takraw.

Abstract

This research has created a web-based Sepak Takraw learning tool to evaluate its feasibility and effectiveness. This study is an R&D project that follows the Sugiyono development approach. The development process involves identifying potential problems, collecting data, designing the product, validating the design, revising the plan, testing the product, modifying the product, conducting usability testing, changing the product, and producing it in a limited quantity. The findings show that this web-based Sepak Takraw learning media tool is suitable for learning. The product was validated by subject matter experts and media experts, with average ratings of 3.7 and 3.27, respectively; both were categorized as "very valid." In small-scale field tests, the product received an average rating of 4.65, classified as "very good." It also received an average rating of 4.82 in large-scale field tests, which was also categorized as "very good" for practical testing. Effective testing was also conducted with 47 participants, resulting in an average N(gain) score of 0.848, which was categorized as "high," and an N(gain) score percentage of 84.8%, which was classified as "effective." The improvement in students' learning outcomes, as shown by pretest and posttest evaluation data, demonstrates the effectiveness of the web-based Sepak Takraw learning media.

How to Cite

Helmi, M., Iyakrus., & Hartati. (2024). Development of Learning Applications for Physical Education, Sports, and Health Sepak Takraw Material for High School Students. Journal of Physical Education, Sport, Health and Recreation, 13 (1), 11-16.

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p-ISSN 2460-724X
e-ISSN 2252-6773

INTRODUCTION

Technology is developing rapidly, so technological science cannot be separated from other disciplines, including sports science. Many innovations in sports technology have sprung up in recent times. With this development, it is hoped that this sport will be more advanced and well-known in the community so that people are increasingly fond of exercising in the current era; the development of fruit technology is extraordinary. Digital sports equipment is now easy to use in all fields, especially sports. In addition, many changes and actions occur in education, especially in learning PE. Changes that happen in the world of education require PE teachers to have varied learning techniques. According to (Bayu et al., 2021), education teachers utilize technology to facilitate their tasks in managing learning.

The development of modern technology cannot be separated from people with high ideas and creativity. So that, with the development of technology today, it can be used or accessed easily by others. The development and advancement of technology in sports are also essential to advance sports achievements the use of technology to improve the performance of athletes. Within the scope of the school, supporting facilities are needed to create excellent and smooth learning; a school must own good facilities and complete physical and health education facilities and infrastructure to achieve a good teaching and learning process (Sudibyo & Nugroho, 2020). Comprehensive school infrastructure will foster a conducive learning environment to attain educational objectives.

Education encompasses diverse learning models, each tailored to specific goals and objectives. Consequently, educators must be adaptable to select the most appropriate model for each lesson (Hartati et al., 2018). Media plays an integral role in the learning process, serving as a valuable tool for educators in effectively conveying instructional materials.

Learning media encompasses various tools or containers that facilitate the transmission of messages or information, often presented as learning materials, to stimulate individuals' interest in learning and foster the attainment of educational objectives. Learning media serves as an intermediary or bridge between the information provider, namely the teacher, and the information recipient, the students, aiming to motivate students and enable them to engage in the learning process comprehensively and meaningfully (Hasan et al., 2021). Learning media functions as a set of tools or containers for conveying messages or information, often presented as learning materials, to cultivate individuals' interest in learning and facilitate the achievement of learning goals (Zahwa et al., 2022). Learning media, in its broader sense, encompasses individuals, objects, or events that enable students to acquire knowledge and skills. The message conveyed through learning media is the subject matter, and its effectiveness enhances students' comprehension and understanding. Learning media plays a crucial role in the educational process by bridging the gap between information providers and recipients, fostering motivation, and promoting meaningful engagement with learning materials.

Learning media comprises a combination of instructional components, encompassing personnel, messages, and equipment. These components serve as conduits for effectively conveying lesson content or message information (Noka Sitepu, 2021). The growth of learning technology is closely intertwined with the development of educational media (Rohani, 2019). Learning media supports learning so that learning can run well with the help of media. Education using digital learning media is beneficial for students in understanding abstract mathematical concepts even though learning must be done remotely (Khairunnisa & Ilmi, 2020). The higher the motivation and accompanied by high and good parental attention, the better the learning outcomes of students (Iyakrus et al., 2022)

There are technological advances at this time so that students can bring smartphones and laptops to school. However, unfortunately, this opportunity is still not used by teachers to create interactive learning media that uses technology. Effective learning media fosters student engagement and enhances their learning experience. Engaging and interactive media captivates students' attention, leading to improved knowledge acquisition and active participation, ultimately impacting their academic performance. Physical education serves as a multifaceted educational tool that capitalizes on the adaptive nature of physical activities to promote the holistic development of individuals, encompassing physiological, neurological, cognitive, social, cultural, emotional, and ethical dimensions.

The sport of sepak takraw originated from a folk game modified into a competitive modern game. Sepak takraw games generally use all parts of the body except the arms. Mastery of sepak takraw skills is needed so that the game runs well. The basic skills of sepak takraw are sepak sila, sepak kura, memaha, mendada and header (Iya-

krus & Ramadhan, 2021). The game begins with a service in the service circle; then, a hitter is tasked with serving using his feet; this player can be called Mekong (Bakti Saputro, 2017).

Sepak Takraw is one of Indonesia's leading branches in getting various medals at the International level, which has created experienced coaches and human resources nationally and internationally (Gani et al., 2022). Currently, sepak takraw is very popular among the public after seeing live broadcasts on television during the Asian Games in 2018 in Jakarta-Palembang winning the gold medal, both in the city and the village, from children to parents, men and women know sepak takraw.

Based on previous research by Panjaitan et al. (2022) titled "Development of Website-Based Learning Media to Increase Student Learning Motivation during the Covid-19 Pandemic," which yielded an average effectiveness score of 95.48%, a hybrid implementation was conducted on December 15, 16, and 18, 2021, involving 35 participants from class X of SMA Taruna PBD Medan. The researchers' future improvements to the web-based learning media include enhancing the website's visual appeal and ensuring compatibility with cellphones and laptops. Inspired by the challenges above, the author intends to develop web-based sepak takraw learning media that is easily accessible on teachers' cellphones/laptops to facilitate the learning process for students at Sriwijaya State Sports School.

METHODS

The research method employed in this study was Research and Development (R&D). R&D is a type of research that aims to create specific products while simultaneously evaluating their effectiveness (Sugiyono, 2013). R&D is a process or series of steps involved in developing a new product or enhancing existing ones, making it a time-consuming endeavor. This study utilizes the R&D method because its outcome will be the creation of a Web-Based Sepak Takraw Learning Media product.

This development research utilizes a procedural, descriptive model that outlines the steps involved in the development process. Drawing upon Sugiyono's theory (2014), the efforts in product development encompass identifying potential and problems, data collection, product design, design validation, product design revision, product trials, product revision, usage trials, product revision, and mass production. Several experts have proposed various development procedures.

Needs analysis is the first step in conducting this research. This step aims to produce web-based learning media products for sepak takraw learning in high schools. At this stage, the researcher conducts preliminary studies and observations by making observations about physical education learning. The needs analysis was done by word, licensing the use of research subjects and sites, and interviewing the PE teacher about the product developed. The results of interviews with the PE teacher and the author's observations found that web-based sepak takraw learning media were needed where the school had not implemented sepak takraw learning due to the absence of sepak takraw media and infrastructure. According to the above statement, developing a learning media that can accommodate the needs of teachers and students in the sepak takraw learning process is essential. Researchers hope that the products designed can overcome the problems of teachers in learning, with well-structured learning supported by quality learning media that will facilitate the achievement of previously formulated learning objectives.

The initial product development carried out by researchers was to design the appearance of web-based sepak takraw learning media products. The web contains three levels of education: junior high school, high school, and PT (Higher Education); each group will have its own material, modules, and learning videos. The product design will be as attractive as possible to spark students' interest in learning.

The types of data used in this research are quantitative and qualitative data. Data is a collection of facts from research, observation, or research on an object. There are two types of data, namely quantitative and qualitative data. Quantitative or numerical data contains information in numeric symbols or numbers. Meanwhile, qualitative data is data that contains information in the form of verbal sentences, not in the form of numerical characters or numbers. Qualitative data is obtained by conducting an in-depth analysis; it cannot be obtained directly. In this study, quantitative data was obtained from calculations from validation instruments, calculations from student questionnaires, and calculations from test result data (pretest and posttest). At the same time, this qualitative data is obtained by researchers from students through responses on the use and efficiency of the media, as well as suggestions and input from material and media experts.

Effectiveness test data was obtained through the learning outcomes test technique.

The learning outcomes test determines student mastery of the material in the developed web-based learning media. The learning outcomes test uses items to evaluate the effectiveness of web-based learning media.

Table 1. Classification of gain (Hake, 1998)

N-Gain Score	Description
0.30 ≤ N-gain ≤ 0.70	Medium
N-gain ≤ 0.30	Low
0.70 ≤ N-gain	High

Source: Handayani et.al., (2018: 36)

Table 2. Effectiveness Interpretation Category

Percentage %	Interpretation
< 40	Ineffective
40-50	Less Effective
56-75	Effective Enough
>75	Effective

Source: (Nasir, 2016)

RESULTS AND DISCUSSION

This discussion will explore the outcomes of developing a web-based sepak takraw learning media model. Herminingsih et al. (2022) state that learning media serves as tools or means teachers employ to impart specific subject matter through knowledge transfer aided by certain media. Learning media constitutes an integral component of the learning system, and a diverse range of teaching media exists for utilization. The selection of learning media must be guided by sound principles (Novitasari et al., 2021). Media plays a crucial role in conveying learning messages from teachers to students. This sepak takraw learning media encompasses sepak takraw teaching materials and teaching modules intended for teachers, supplemented by learning videos. The reviews to be discussed are Research Preparation, Planning Stage, Initial Product, Product Validation, Main Trial, Product Revision, Practicality Operational Test, Effectiveness Operational Test, and Product Implementation.

Planning Stages

Web-based sepak takraw learning media can make it easier for educators and students to access it and can be studied in conditions still connected to the internet. For this Web-based learning media to be more focused, this Web material is based on the current Merdeka curriculum teaching module. At this stage, researchers prepare and compile material according to the Merdeka curriculum teaching module, then schedule a Web design for this Web-based learning media, prepare validation instruments, and prepare some video material, which will be very useful later so that the process of making products will be more focused and can produce media that is efficient and effective to use.

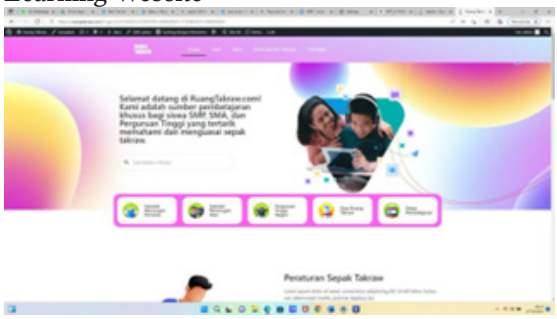
Initial Product Development Stages

The research team completed the initial phase of developing web-based sepak takraw learning media. Following this initial development, the next step involved conducting material and media validation. Validation is performed to assess the effectiveness of the developed material. The initial phase involves validating the web-based learning media material against the teaching modules employed in sepak takraw instruction. The second validation stage entails evaluating the overall effectiveness of the web-based sepak takraw learning media.

Table 3. Results of Material and Media Validation

Validation	Assessment Results	Category
Material Validation	3.7	Highly Valid
Language Validation	3.27	Valid
Average	3.48	Valid

Figure 1. Product in the form of Sepak Takraw Learning Website



Source : (www.ruangtakraw.com)

Small Group Trial

Measuring the practicality of the learning media made by researchers, an initial stage trial was conducted on Muhammadiyah 3 Palembang High School students in the PJOK learning subject of sepak takraw material, totaling 20 students. Researchers asked respondents to answer the items of the research instrument for the practicality of Web-based sepak takraw learning media. The following are the results of the initial stage trial of sepak takraw learning media by 20 students for each descriptor of the assessment

criteria provided five options that say very good with a score of 5, good with a score of 4, sufficient with a score of 3, less with a score of 2, significantly less with a score of 1.

Table 4. Main practical trial results

Testing	Percentage (%)	Category
Small group practice	93 %	Excellent
Large group practice	96.4 %	Excellent

Large Group Trial

To measure the practicality of the learning media made by researchers, a large-scale main trial was conducted on Muhammadiyah 3 Palembang high school students, totaling 47 students. Researchers asked respondents to answer the items of the research instrument for the practicality of Web-based sepak takraw learning media. The following are the results of the initial stage trial of sepak takraw learning media by 47 students of SMA Muhammadiyah 3 Palembang for each research criterion provided five options stating very good with a score of 5, good with a score of 4, sufficient with a score of 3, less with a score of 2, significantly less with a score of 1.

Table 5. Main trial results are effective

Descriptive Statistics				
	N	Min	Max	Mean
Ngain Score	47	.57	1.00	.848
Ngain Percent	47	57.14	100.00	84.8

Final Product

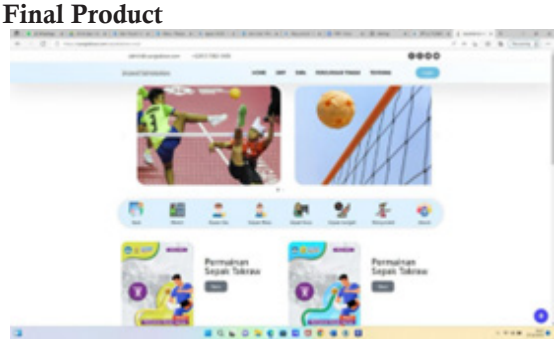


Figure 2. Final Product

The resulting product is in the form of a web-based sepak takraw learning media where the website contains sepak takraw learning material, modules according to sepak takraw material, which can be a guide for teachers to teach and also contains exciting learning videos that can attract students' interest in learning sepak takraw. Articles written from research results, then in the initial part of the results and discussion of the research are preceded by implementation, namely (1) Description of the schedule of research activities, (2) Stages of product development, (3) Results of validation tests and product tests and product revisions, (4) ending with a description of the process and results of the product.

CONCLUSION

This research has resulted in the developing of a web-based sepak takraw learning media. Based on the research findings, it can be concluded that this web-based PE learning media meets the criteria for validity and practicality. An average assessment score of 3.48, placing it in the "valid" category, was obtained from the validation conducted by multiple validators. The material aspect received a score of 3.7, while the media aspect received a score of 3.27. This indicates that the web-based sepak takraw learning media aligns with the independent curriculum and is valid based on these two aspects. Additionally, the practicality and effectiveness of the web-based PE learning media are consistent with the independent curriculum.

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