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Development of Learning Media Video Interactive Basic Motion Volleyball Game by Edpuzzle

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ABSTRACT

The quality of education is significantly influenced by the implementation of high-quality learning processes by teachers, supported by technology, to prepare an advanced and excellent younger generation for the Golden Years. Integrating technology-based media, such as Edpuzzle, into educational materials can enhance the learning experience. This study explores the application of Edpuzzle in teaching volleyball to improve educational outcomes. The research employs the Research and Development (R&D) ADDIE model, which encompasses five phases: analysis, design, development, implementation, and evaluation. This comprehensive approach involves collaboration with media experts and subject matter experts to ensure the quality and relevance of the developed educational media. The study resulted in the creation of an interactive multimedia learning product using the EdPuzzle application for volleyball materials. This product incorporates various multimedia elements, including videos, sound, text, images, and questions, structured in a way that follows educational syntax such as material concepts and activity phases. The effectiveness of this product was assessed through user reviews from students, who gave it an average score of 93.8%, categorizing it as excellent. The findings indicate that the EdPuzzle-based interactive multimedia learning product is highly effective in teaching volleyball. The high user review score suggests that students find this method of learning enjoyable and beneficial. The multimedia elements and interactive features likely contribute to a more engaging and efficient learning experience. The research concludes that the EdPuzzle-based interactive multimedia learning product is feasible and effective as a learning resource for volleyball materials. This technology-enhanced approach not only improves the quality of education but also makes the learning process more enjoyable and efficient. Therefore, it can be recommended for broader use in educational settings to support the development of an advanced and excellent younger generation.

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1. INTRODUCTION

In the evolving landscape of education, leveraging technology to create engaging and effective learning experiences is paramount. The development of interactive video-based learning media, particularly through platforms like Edpuzzle, offers a promising solution to enhance students' understanding and skills. This research focuses on the development of interactive learning media for teaching the basic movements of volleyball, utilizing the Edpuzzle application. By integrating multimedia elements such as videos, audio, images, text, and quizzes, Edpuzzle not only makes learning more interactive but also allows for continuous monitoring of student progress. This approach aims to foster a deeper understanding of volleyball techniques, from cognitive recognition to the automation of movements, thus enhancing both the teaching and learning processes in physical education.

To implement learning catch-up in the current digitalization era, teachers must implement technology-based learning processes with various learning applications. According to (Supriyanto, 2018), everything used in the transmission process with learning media is an effort by teachers in all forms to convey information to students in order to inspire a motivation for learning interest. Technology-based learning aids are a big support in the learning process in conditions and situations wherever they are. One measure for teachers that can be used to support the learning process is interactive educational media, which aims to facilitate the learning process and promote teacher creativity and innovation in learning design. The learning process through reading student books will be easily tedious to learn, and what is expected will not be achieved, but they will be much more interested in using the study aids included with the application (Arsyad, 2022).

The tendency of students to use interactive learning multimedia applications is much more efficient. With the help of the edpuzzle application, students can access and use the application anytime, anywhere. Edpuzzle adalam is a video-based application and learning media that teachers can use to make learning interesting and fun. At edpuzzle, videos are very easy to make yourself or can be accessed from other platforms to upload through edpuzzle. The benefits of video can include questions that require students to answer questions before continuing to watch. With this edpuzzle app, teachers can monitor whether students have watched a given learning video or answered questions about the video. It can be used to trim the video to fit the textbook and audio. The novelty (state of the art) of this evolutionary research is the interactive learning media based on the edpuzzle application, which comes in the form of videos (Qadriani et al., 2021), where videos are inserted directly into the field during the sports learning process, make text read (Amaliah, 2021), ask questions based on sports learning performance during video breaks, It monitors student activities or can be integrated into the classroom.

Media is one of the essential components in learning, considering its role in delivering information from the teacher to the learners to make the learning process more easily understandable (Lvhua, 2011). Previous studies have shown that multimedia elements, such as videos and interactive tools, can significantly enhance students' engagement and comprehension (Mayer, 2009; Clark & Mayer, 2016). "Interactive" is a term used for communication that involves active two-way communication between the teacher and the learners, with the expectation that the information conveyed by the teacher is more easily accepted by the learners. Research has demonstrated that interactive learning environments, which promote student participation and feedback, lead to better learning outcomes compared to traditional methods (Bonwell & Eison, 1991; Prince, 2004). One interactive medium that can be used to create interactive teaching materials is Edpuzzle, as it allows the integration of various alternatives into the application (videos, audio, images, text, and quizzes). Studies have highlighted the effectiveness of Edpuzzle in enhancing student engagement and providing personalized learning experiences (Khalil et al., 2016; Bergmann & Sams, 2012).

Edpuzzle itself also requires students and teachers to have their own accounts so that teachers and students can access their accounts anytime and anywhere. Teachers can create video content and share it with the class. In other words, this application is a tool to help students become autonomous learners

(Ernawati, 2023). Research has shown that tools promoting autonomous learning can significantly enhance students' self-regulation and motivation (Zimmerman, 2008; Benson, 2011). In this media, teachers can add videos, audios, images, and comments. Teachers can also add quizzes to the meeting section. Previous studies have highlighted the benefits of multimedia learning in supporting student engagement and comprehension (Mayer, 2009; Clark & Mayer, 2016). Edpuzzle media can support various aspects of child development, such as the development of basic volleyball skills by emphasizing understanding of implementation. The use of multimedia elements in physical education has been shown to improve students' skill acquisition and retention (Casey & Jones, 2011; Mitchell et al., 2013). The development of basic volleyball movement skills is evident when children can demonstrate basic volleyball movement techniques based on what they have seen and explain the stages of the movement.

Volleyball is an activity that consists of basic movements such as serving, passing underhand, passing overhead, smashing, and blocking (Suhairi & Dewi, 2021). All basic volleyball techniques require an understanding of each stage in the basic technique, starting from the cognitive, associative, and automation stages (Supriatana & Suhairi, 2021). In addition to physical factors and dedication to practice, the role of media in reinforcing understanding of a movement is also one of the factors that learners can demonstrate movements well because they can see the movement through real video (Suhairi, et al., 2020). Edpuzzle media is an alternative to provide understanding before demonstrating the movements to be trained. Edpuzzle makes watching instructional videos more interactive and enjoyable (Bili & Surat, 2022). Edpuzzle learning media is one option that can be used as a means of distance learning because it is interactive (Hidayat et al., 2021).

This research investigates how the integration of Edpuzzle as an interactive learning media can enhance the understanding and execution of basic volleyball movements among students in physical education classes. The objective is to develop and evaluate the effectiveness of Edpuzzle-based interactive learning media in teaching these movements, focusing on students' cognitive recognition, associative learning, and automation of volleyball techniques, as well as its potential to boost student engagement and self-regulation. While previous studies have shown the general benefits of multimedia and interactive tools in education, there is a notable lack of research specifically targeting their application in physical education for volleyball. This study fills this gap by creating a novel Edpuzzle-based interactive learning media that integrates various multimedia elements (videos, quizzes, audio, text) to support both cognitive and physical skill acquisition. In conclusion, the use of Edpuzzle as an interactive learning media presents a promising method for improving the teaching and learning of basic volleyball movements. By utilizing multimedia elements and continuous monitoring, Edpuzzle enhances understanding and execution of techniques, demonstrating significant potential for technology-based aids in physical education. The study underscores the importance of innovative and engaging instructional methods, showing that such tools not only increase student engagement and motivation but also promote autonomous learning, leading to better educational outcomes. Future research should explore Edpuzzle's broader application across different sports and educational settings to further validate its effectiveness and versatility.

2. METHODS

The research and development (RnD) approach utilized in this ADDIE study encompasses five stages: analysis, design, development, implementation, and evaluation, as delineated by Robert Maribe Branch (2009). The ADDIE model, known for its sequential and systematic activities, aims to address learning problems by aligning educational resources with the specific needs and characteristics of students. This study will be conducted from June to November 2023 at Lake Teluk Tayan 25 State Elementary School in Sanggau Regency, West Kalimantan, Indonesia. The participants include 20 fifth-grade students and 10 teachers from the Tayan-Toba Education Teacher Working Group (KKGP) in Sanggau Regency, West Kalimantan, Indonesia. Data collection methods comprise observations, interviews, and questionnaires (Gusti, Ngurah, Jayantika, Made, & Andini, 2022). The observations aim to identify supporting media used by teachers, teaching materials, instructional methods, and student

behaviors during the learning process. Interviews will assess the needs for material development and the creation of interactive learning media for volleyball instruction.

The use of the questionnaire method aims to determine the evaluation responses from material experts, media experts, and users or students about the feasibility of Google Site-based learning media. The questionnaire used used a Likert scale with a scale of 1 to 4, with the number 1 representing negative answers, number 2 representing negative responses, number 3 representing affirmative answers, and number 4 representing very pleasant answers. Meanwhile, there are four types of responses used to collect questionnaires, namely questionnaires to evaluate media experts, questionnaires to evaluate material experts, questionnaires to evaluate students, and questionnaires to evaluate teachers. The data collection tool in this study used a questionnaire or questionnaire (checklist). A data collection tool, or research tool, is a tool used to measure search variables and find answers to pre-formulated problems. The preparation of assessment tools is divided into three types based on the role and position of the subject in this study, namely: (a) tools for material experts, (b) tools for media experts, (c) reaction tools for student assessment and teacher assessment. The data analysis technique carried out in this study uses quantitative descriptive analysis techniques that describe the application of learning media. Data analysis was conducted after collecting data from all research subjects, including material experts, media experts, and students. Data analysis is carried out by converting points collected from material experts, media experts, and students, which were originally qualitative data, into quantitative data using Likert scale rules.

Table 1. Scala Likert

No.	Category	Score
1.	Agree	4
2.	Well	3
3.	I disagree	2
4.	I totally disagree with that	1

Determine the average score you get from media experts, material experts, and student response questionnaires (Suharsimi Arikunto, 2010).

$$\bar{x} = \frac{\sum x}{n}$$

Information:

$\bar{x}$ = average points per aspect

$\sum x$ = The sum of the scores of each aspect

n = number of participants or users.

3. FINDINGS AND DISCUSSION

3.1 Results of Student Needs Analysis

The results obtained by students show that in every volleyball match studied, students receive learning media in the form of books about volleyball matches, the learning process does not use IT-based learning support tools, and field exercises are conducted with volleyball matches without prior material guidance. The needs assessment results, based on observations and interviews, indicate that 100% of students learn with the help of books, 75% of participants learn with visual media, and 23% of students learn through videos. These findings underscore the necessity for integrating IT-based learning tools and comprehensive material guidance to enhance the effectiveness of the volleyball learning process.

Table 2. Results of the Learning Process

Question	Response (%)
Learning, Which is often used by	Book (100%) Image (75%) Video (23%)

Based on the results of the survey conducted, 100% of students often receive teaching materials in the form of books. Additionally, 75% of the learning process is supplemented with visual aids such as pictures, and 25% of students engage with educational content through videos. These statistics highlight a predominant reliance on traditional print and visual media, with limited incorporation of digital and interactive tools. This suggests a significant opportunity for enhancing the learning experience by integrating more diverse and technology-based educational resources, which could cater to varied learning preferences and potentially improve student engagement and comprehension.

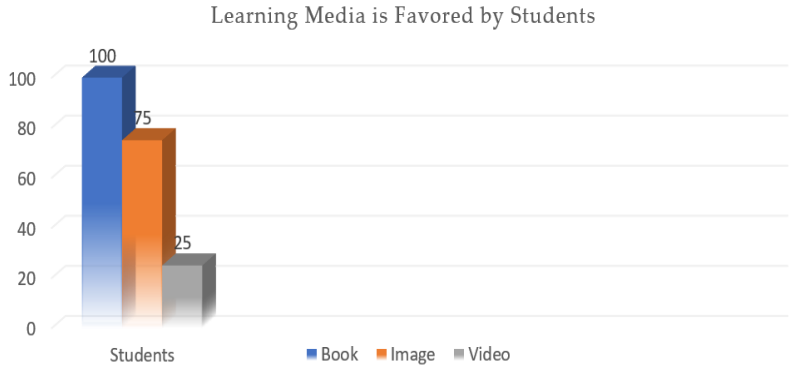

Figure 1. Selected Learning Media for Educated Students

Table 3. Desired Learning Outcomes

No	Question	Response (%)
1	Didactic aids appreciated by participants	Book (46%) Image (68%) Video (100%)

Based on the results of the survey conducted, it was found that 46% of students prefer learning with books, 68% favor visual media, and 100% enjoy learning through videos. According to the respondents, video-based learning materials are particularly engaging, easy to understand, and enjoyable to use. These findings emphasize the importance of incorporating video content into the curriculum to align with student preferences and enhance their learning experience.

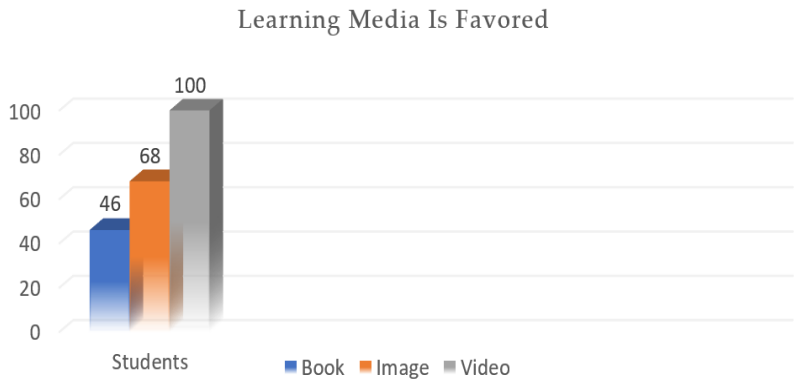

Figure 2. The Results of The Learning Process of Exceptional

3.2 Teacher Needs Assessment Results

In the process of analyzing learning needs, 14 teachers responded to a survey distributed via Google Forms and completed online simultaneously. The results of the PJOK teacher needs assessment revealed that 70% of PJOK teachers did not fully master the interactive volleyball multimedia material taught. Conversely, 85% of PJOK teachers were proficient in volleyball techniques based on modules, textbooks, and experience. Additionally, 75% of PJOK teachers had never created teaching aids, although 100% of the teachers expressed a need for interactive learning. Only 25% of the teachers used interactive video learning media created by themselves. These findings underscore a significant gap in the mastery and use of interactive multimedia resources, highlighting the necessity for professional development in creating and utilizing these tools to enhance the teaching of volleyball.

Table 4. Learning Process For Teachers

Indicator	Yield (%)
Mastery of the subject	70%
Mastery of techniques	85%
No interactive media	75%
The Need for Intaractive Sideboards	100%
Madia was invited	25%

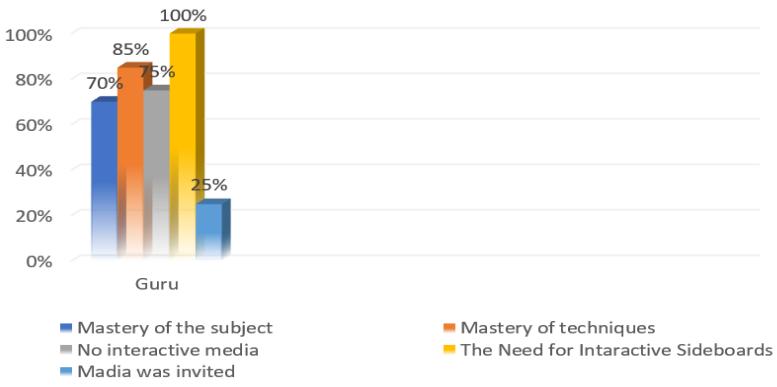

Figure 3. Teacher Needs Assessment Data

3.3 Student Usage Test Results

Before conducting the evaluation, students will be invited to observe and assess the multimedia products. The assessment will encompass five key aspects: 1) ease of learning and use of the multimedia, 2) suitability of content to the discussion/topic of the material, 3) the role of the media in supporting guided learning activities, 4) the role of video in enhancing students' understanding of the learning process, and 5) overall media quality. This comprehensive evaluation aims to ensure that the multimedia resources are effective, relevant, and supportive of the students' learning experience.

Table 5. Student Usage Test Results

Answer	N1	N2	N3	N4	N5	Mean	%
R1	5	5	5	5	5	25	100
R2	4	4	5	5	4	22	88
R3	3	4	5	4	5	21	84
R4	3	5	4	4	4	20	80
R5	5	4	5	5	5	24	96
R6	4	5	5	4	4	22	88
R7	4	4	5	5	5	23	92
R8	5	5	4	3	5	22	88
R9	5	5	5	5	5	25	100
R10	5	3	5	5	4	22	88
R11	5	5	5	5	5	25	100
R12	5	5	4	5	4	23	92
R13	4	4	5	4	5	22	88
R14	4	5	4	5	4	22	88
R15	5	5	5	5	5	25	100
R16	5	5	4	5	4	23	92
R17	5	5	5	5	5	25	100
R18	3	4	4	4	5	20	80
R19	4	5	3	5	5	22	88
R20	5	5	5	5	5	25	100
Mean	88	92	92	93	93	458	
%	77.44	80.96	80.96	81.84	81.84	91.6	

From the average results of user reviews by students, an average rating score of 4 was obtained. 69 or 93.8% of the maximum score, in the excellent category. Based on this assessment, the product is declared suitable for use in learning.

3.4 Teacher Use Test Results

Like the Student Use Test, the Teacher Use Assessment covers the same 5 aspects of assessment, namely: 1) ease of learning and multimedia use, 2). suitability of content for discussion/material topic, 3). The role of media in supporting guided learning activities, 4). The role of video in understanding student learning process, 5). Quality of multimedia through and through. Before evaluating the product, the instructor is asked to access the product through a link shared in the WhatsApp group, after which the instructor conducts an assessment using the evaluation tool through a Google form.

Table 6. Evaluation Teacher Use Test Results

Answer	N1	N2	N3	N4	N5	Mean	%
R1	5	5	5	5	5	25	100
R2	4	5	4	5	4	22	88
R3	4	4	5	5	5	23	92
R4	5	5	5	5	5	25	100
R5	5	5	5	5	5	25	100
R6	4	4	4	5	5	22	88
R7	5	5	5	5	4	24	96
R8	5	4	4	4	5	22	88
R9	4	4	4	4	4	20	80
R10	4	4	4	4	4	20	80
Mean	45	45	45	47	46	228	
%	90	90	90	94	92	91.2	

From the average results of user evaluations by teachers, a score of 4.52 or 90.4% of the maximum score was obtained in the very good category. Based on the assessment results, the product is declared suitable for use in learning.

3.5 Results of interactive learning multimedia products based on EdPuzzle

3.5.1 Material Concept

A concept is an abstract idea or idea that refers to the core of a topic or thing that students want to understand and that contains some related element or attribute. A concept represents a general understanding or view of a problem or situation. In a variety of contexts, concepts can refer to principles, basic ideas, or abstractions from things identified and defined.

3.5.2 Support System

Learning Support Systems *(SPdP)* Refers to different types of technology and software designed to support or enhance the learning process. These systems can help teachers, students, and even educational institutions as a whole deliver, manage, and enrich the learning experience. Here are some types of learning support systems: Learning Management System *(LMS),* such as lesson plans, daily lesson plans, student assignment sheets, and other learning resources.

3.5.3 Phases of Activity

The stages of the teaching-learning process are the stages or stages of the teaching-learning process that need to be overcome, and the use of games, compatibility with *FMS* games is developed. In general, experts agree that game learning models will be able to optimally develop basic motor skills. The use of themes / themes in some plays needs to be studied in more detail, pay attention to the spirit values in the game, the level of students' ability to perform the game, and the teacher's introduction to skills, the use of play in the teaching-learning process is necessary to easily accommodate children in this case, the game must be varied and mixed, so that the child does not experience boredom and is happier Be cheerful when learning.

Table 7. Stages of The Teaching Process

No	Phases Of Activity	Event Description
1	Opening	Revelation; Morning meeting (Circle Time); Questions and answers.
2	Main areas of activity	Proximity of feedback
3	Cease-fire	Stop praying; Prayers for embarkation and disembarkation
4	Cover	evaluation and reflection of today's activities; Conclusion: Concluding Prayer and Greetings

3.5.4 Video

Video in multimedia can be utilized effectively in the context of learning, leveraging technological advancements to enhance educational experiences. These videos can be provided in various formats such as MP4, AVI, and MPEG, each offering different levels of quality and compatibility with a range of devices and platforms. By incorporating video content, educators can present information in a dynamic and engaging manner, catering to visual and auditory learners. Videos can also be paused, replayed, and reviewed at the students' convenience, facilitating a self-paced learning environment. Additionally, videos can integrate animations, simulations, and real-life demonstrations, making complex concepts more accessible and easier to understand. This flexibility and richness in content delivery make video a valuable tool in modern educational practices.

3.5.5 Voice

In the context of interactive media, audio or audiovisual learning is a means of conveying messages transmitted in the form of auditory symbols, both verbal (in words or spoken language) and non-verbal. Audiovisual media such as voice recordings, podcasts, or audio lectures can be used to convey information orally.

3.5.6 Text

SMS (Structured Mentoring Sessions) is a teaching and learning activity designed to align closely with the text being taught. Text-based learning in the classroom requires students to understand various types of texts and demonstrate their structure, content, and language. Texts, which convey specific meanings, can be found in books, on whiteboards, and even in videos. They are used to convey information, explain concepts, or express ideas. The different types of texts include descriptive texts, discussion texts, argumentative texts, expository texts, explanatory texts, and anecdotal texts. By engaging with these diverse forms of text, students develop comprehensive literacy skills and critical thinking abilities, essential for academic success and effective communication. This approach underscores the importance of mastering textual analysis and production in a variety of contexts.

3.5.7 Image

A learning model is a learning method that uses images and pairs or sorts them in a logical order. This learning has the characteristics of Active, Innovative, Creative and Fun, which serves to convey messages from teachers to students, in terms of various information, messages, ideas, etc., with a greater impression in the use of verbal language. Photo media can be: (1) posters; (2) cartoons; (3) comic books; (4) photographic images; (5) Slides; (6) Diagrams; and (7) graphics.

3.5.8 Question

A question is a series of questions about the most important things in a learning topic. This question comes from meaningful understanding and is discussed with the student before starting the topic or course, with the aim of identifying and knowing the student's level of understanding. Use questions clearly and concisely. The teacher's questions should be clearly and concisely formulated in words that can be understood by students according totheir level of development. Show references.

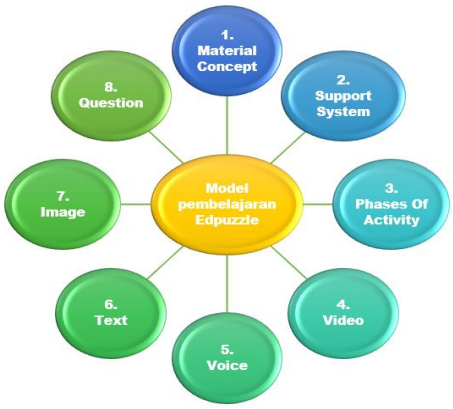

Figure 1. Product Outcome Learning Model Level Edpuzzle Interactive Volleyball Game Media

Based on the research findings, digital teaching materials based on Edpuzzle for basic volleyball movements can significantly enhance learning outcomes. The positive responses to the created media indicate that volleyball teaching materials integrated with Edpuzzle effectively support student learning. Generally, the research results suggest that using Edpuzzle can improve the quality of education (Afifah, Ulfah, & Nurhayati, 2023).

The product of this research is a learning medium presented in the form of videos integrated with YouTube into Edpuzzle. One notable advantage of Edpuzzle is its small application size, which does not consume large storage space. Additionally, the videos include subtitles, and teachers can easily create media by inserting the YouTube video link/URL to be displayed and edited directly within the Edpuzzle application, thus eliminating the need for other applications.

Another benefit of Edpuzzle is that it allows students to watch the entire video, enabling teachers to ensure that students grasp the concepts and can explain the stages in the movements of each basic technique being learned. This feature ensures a thorough understanding before students practice the movements according to the material learned. Interactive media like Edpuzzle can also increase students' interest in learning, particularly in reinforcing their knowledge (Syaparudin, Suhairi, & Rahmat, 2023).

In conclusion, the integration of Edpuzzle into volleyball teaching materials not only supports effective learning but also leverages technological advancements to create an engaging and efficient educational environment. This approach exemplifies how digital tools can enhance traditional teaching methods, making learning more accessible and enjoyable for students.

4. CONCLUSION

Based on the results of this development research, it is concluded that the development and implementation of interactive learning media based on Edpuzzle meet the criteria of validity, practicality, and effectiveness. Therefore, the developed Edpuzzle interactive media is suitable for use in classroom learning. Future researchers are advised to complement interactive media with various types of formative assessment questions integrated as student question media to enhance motivation and understanding in volleyball skills. One limitation identified in developing interactive teaching materials through Edpuzzle is the lack of a variety of online accessible evaluation questions. Additionally, the research subjects were limited to one school, indicating the need for a larger sample in future studies. Despite these limitations, it is evident from the product test results that the development of interactive learning media for volleyball material can facilitate a meaningful, enjoyable, and engaging learning process, thereby improving students' volleyball abilities. To maximize the effectiveness and efficiency of this technology-based learning approach, technical guidance for teachers is necessary to ensure proper implementation and adherence to instructional design principles.

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