

Development of Interactive Learning Media for Fundamental Pencak Silat Techniques in Junior High School

Bagus Yoga Pradisetya¹, Herman Dwi Surjono²

¹ Student of Information Technology Education, Universitas Negeri Yogyakarta

² Lecturer in Engineering Faculty, Universitas Negeri Yogyakarta, Indonesia

Corresponding Author: bagusyoga.2023@student.uny.ac.id

Abstract

This study aims to develop, validate, and test the effectiveness of interactive learning media for fundamental Pencak Silat techniques for junior high school students. The background of this research is the difficulty students face in visualizing complex motor movements in Pencak Silat through conventional methods. This research employed the Research and Development (R&D) method with the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The study was conducted at SMP Muhammadiyah 4 Yogyakarta with 8th-grade students as the subjects. Data were collected using validation sheets from material and media experts, as well as student response questionnaires. The results showed that the developed media achieved a validation score of 83.9% from both material and media experts, placing it in the "Very Feasible" category. Furthermore, the media proved to be effective in improving student learning outcomes, evidenced by an average post-test score of 84.8% and an N-Gain score of 0.757, which is categorized as "High Effectiveness." This study concludes that the interactive learning media created with Adobe Flash CS6 is a viable and effective tool for enhancing the mastery of fundamental Pencak Silat techniques in physical education.

Keyword: Image Processing, Mobile Devices, Algorithm.

INTRODUCTION

Education in the 21st century is undergoing a significant transformation due to the rapid integration of information technology. The use of interactive multimedia in the learning process is no longer just an alternative but has become a necessity to improve the quality and efficiency of instruction. According to Surjono (2017), interactive multimedia provides an advantage by

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IJETER, Volume 04 Issue 01, 2026



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combining various elements such as text, graphics, audio, video, and animation, which can enhance students' motivation and understanding of complex concepts. In the context of physical education, technology plays a crucial role in helping students visualize motor movements that are difficult to capture through traditional verbal explanations or static images alone.

Pencak Silat, as a vital part of Indonesia's cultural heritage and a core component of the physical education curriculum in junior high schools, requires a high level of precision in its fundamental techniques. However, observations at SMP Muhammadiyah 4 Yogyakarta revealed that students often struggle to master these techniques, such as stances (*pasang*), footwork (*langkah*), and strikes. The limited duration of physical education classes and the lack of interactive learning resources often result in students having difficulty practicing independently outside of school hours. Previous studies, such as those by Pratama et al. (2022), indicate that the development of digital-based learning modules can provide a more flexible and effective way for students to learn sports techniques.

Despite the potential of technology, many schools still rely on conventional teaching methods where the teacher is the sole source of information. This often leads to a lack of engagement and inconsistent mastery among students. While some digital resources exist, very few are specifically designed to cater to the needs of junior high school students with a focus on fundamental Pencak Silat. Therefore, there is an urgent need for a specialized interactive learning medium that is not only informative but also engaging and easy to use.

This research aims to address these challenges by developing an interactive learning medium for Pencak Silat using Adobe Flash CS6. The study focuses on creating a product that is both feasible and effective in improving learning outcomes for 8th-grade students. By utilizing the ADDIE development model, this research expects to provide a validated instructional tool that can assist students in mastering fundamental Pencak Silat techniques more effectively, both in the classroom and through independent study.

METHOD

This study is a Research and Development (R&D) project aimed at producing a specific product and testing its effectiveness. The development model used in this research is the ADDIE model, which consists of five phases: Analysis, Design, Development, Implementation, and Evaluation. This model was selected because it provides a structured and systematic framework for creating high-quality instructional materials that are both functional and pedagogically sound.



The research was conducted at SMP Muhammadiyah 4 Yogyakarta, with 8th-grade students as the primary subjects for product testing. Data collection instruments included validation sheets for material and media experts, as well as questionnaires to gather student responses regarding the media's usability and engagement. To measure the impact of the media on student learning, a pre-test and post-test design was implemented.

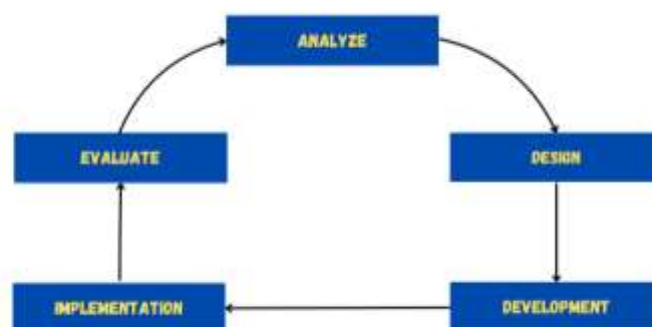


Figure 1. Stages of the ADDIE Model in Learning Media Development

The stages of the ADDIE model implemented in this study are as follows:

1. Analysis: This phase involved identifying the needs of students and teachers, analyzing the existing curriculum for Pencak Silat, and determining the technical requirements for the interactive media.
2. Design: In this stage, a storyboard and flowchart were developed to map out the structure of the media. The design focused on creating a user-friendly interface using Adobe Flash CS6.
3. Development: This stage involved the actual production of the media, integrating videos, animations, and interactive quizzes. The initial product then underwent a validation process by material and media experts to ensure its feasibility.
4. Implementation: The validated media was tested in a real classroom setting to observe how students interacted with the content and to collect data on its effectiveness.
5. Evaluation: The final phase involved analyzing the collected data, including expert scores, student feedback, and the N-Gain results, to determine if the media met the research objectives.

Data analysis was conducted using descriptive quantitative techniques. The effectiveness of the learning media was determined using the N-Gain formula, which compared the students'

pre-test and post-test scores to measure the improvement in their mastery of fundamental Pencak Silat techniques.

RESULTS AND DISCUSSION

The interactive learning media was developed using the ADDIE model. The Analysis phase identified that students at SMP Muhammadiyah 4 Yogyakarta required a visual-based learning resource for Pencak Silat. Following the Design and Development phases using Adobe Flash CS6, the product was tested for its feasibility and effectiveness.

Figure 2. Several Display Interfaces of the Pencak Silat Interactive Learning Media.





The developed interactive media features a structured and user-friendly interface designed to support self-directed learning, as shown in Figure 2. The application includes: (a) a main menu for easy navigation across all features; (b) a detailed list of basic Pencak Silat techniques; (c) specific instructional material pages that combine text and visual demonstrations; and (d) a set of usage instructions to guide students in operating the media effectively.

Feasibility Analysis The feasibility of the media was evaluated by material experts, media experts, and the students as users. The results are presented in Table 1.

Table 1. Feasibility Test Results

No	Assessment Aspect	Score (%)	Category
1	Material Expert	83.9%	Very Feasible
2	Media Expert	83.9%	Very Feasible
3	Student Response (Users)	81.18%	Very Feasible
Average Score		82.99%	Very Feasible

As shown in Table 1, all aspects of the feasibility study achieved a score above 80%, placing the media in the "Very Feasible" category. The material experts validated the accuracy of the Pencak Silat movements, while the students' high response score (81.18%) indicates that the media is user-friendly and engaging for junior high school learners.

EFFECTIVENESS ANALYSIS

The effectiveness of the media was determined through a pre-test and post-test conducted with 8th-grade students. The results showed a significant increase in student performance, with the average post-test score reaching 84.8%. The calculated N-Gain score was



0.757, which, according to Hake's criteria, falls into the "High Effectiveness" category. This proves that the interactive learning media is significantly more effective than conventional methods in helping students master fundamental Pencak Silat techniques.

DISCUSSION

The high level of feasibility and effectiveness found in this study is consistent with the theory that interactive multimedia can enhance motor skill acquisition. By providing a step-by-step visual breakdown of complex movements, the media allows for repeated independent practice. This technological intervention effectively addresses the limitations of instructional time in physical education classes at SMP Muhammadiyah 4 Yogyakarta.

This technological intervention effectively addresses the limitations of instructional time in physical education classes at SMP Muhammadiyah 4 Yogyakarta. Furthermore, this result is consistent with the findings of Pratama et al. (2022), which emphasize that digital learning resources specifically designed for martial arts can bridge the gap between theoretical understanding and practical performance. This study reinforces the idea that interactive elements, such as slow-motion video and immediate feedback quizzes, are critical for self-regulated learning in sports education.

CONCLUSION

This research successfully developed an interactive learning media for fundamental Pencak Silat techniques using Adobe Flash CS6 for junior high school students. Based on the validation results, the media is declared "Very Feasible" for instructional use, with an average feasibility score of 82.99% from experts and students. Furthermore, the media proved to be highly effective in improving student learning outcomes, as evidenced by an N-Gain score of 0.757, which falls into the high-effectiveness category. This study concludes that the developed interactive media provides a significant contribution to physical education by helping students visualize and master complex motor movements independently.

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