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The Effect Of Using The Problem Solving Learning Method On Improving Basic Short Service Techniques In Badminton For Grade VIII Students At Smp Pab 8 Sampali Academic Year 2024/2025

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Abstract.

Background

An appropriate strategy for improving the quality of badminton learning, particularly short serve techniques, is to use the problem-solving method. This aligns with efforts to create education that is relevant to students' needs while supporting national education goals.

Objectives

This study aims to determine the effect of the Problem Solving learning method on improving the basic short serve technique of class VIII students of SMP PAB 8 Sampali in 2024/2025 Academic Year.

Methods

The research used a quasi-experimental design with a one-group pre-test and post-test. The sample size was 16 students, and data were collected through a short service skills test.

Results

The results of the paired-samples t-test showed an increase in the average score from 49.06 in the pretest to 58.82 in the posttest, with a difference of 9.76 points. The calculated t-value of -28.68 and a significance level of $p = 0.000$ ($p < 0.05$) indicate that the difference is significant.

Conclusion

It was concluded that the Problem Solving method significantly improved the basic short service technique skills of class VIII students of SMP PAB 8 Sampali.

Keywords: Problem Solving, Short Service, Badminton

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INTRODUCTION

Education is the foundation of sustainable national development. In the context of formal education, the Indonesian curriculum is designed to provide a holistic learning experience, encompassing intellectual, physical, and character aspects. One important element in education is physical education, sports, and health (PE), which aims to support students' physical, mental, and social development. This education is based on Law Number 20 of 2003 concerning the National Education System, which states that the goal of national education is to shape healthy, creative, and character-based Indonesians. Physical education addresses not only physical activity but also character building through values such as sportsmanship, cooperation, and responsibility. In the school curriculum, one of the sports taught is badminton, which serves as a learning medium for developing basic motor skills, such as the short serve technique. This technique is important because it determines the course of the game. However, many students, including those at SMP PAB 8 Sampali, face difficulties in mastering this technique.

Various factors contribute to these difficulties. Traditional learning methods, such as lectures and demonstrations, are often used in badminton lessons. While these methods facilitate knowledge transfer, they have weaknesses such as a lack of active student engagement and a low variety of learning activities. This approach tends to make students passive, making learning monotonous and ineffective. Furthermore, the lack of sports facilities and the lack of attention to individual student differences, both in physical aspects and understanding, further exacerbate their difficulties. Implementation at SMP PAB 8 Sampali faces a number of significant challenges, including the continued use of traditional learning methods, such as lectures and demonstrations, often used to teach basic techniques such as the short serve in badminton. While these methods facilitate knowledge transfer, they tend to be less effective in encouraging active student participation. Students become passive, learning becomes monotonous, and teaching effectiveness is reduced. This is exacerbated by students' low interest in understanding the techniques taught. Despite their strong interest in badminton, students often do not care about the correct application of the techniques.

Student learning motivation is also relatively low. They tend to be less engaged in learning processes that require detailed techniques. This situation is further exacerbated by inadequate school facilities. SMP PAB 8 Sampali does not have a badminton court, making learning even more difficult. This lack of facilities reduces students' opportunities to practice correct techniques in a supportive environment.

To address this issue, innovation in learning methods is crucial. One approach considered relevant and effective is the problem-solving method. This method engages students in an active and interactive learning process. Unlike conventional methods, the problem-solving approach provides students with the opportunity to identify problems, explore various solutions, and implement those solutions independently. Thus, this method not only improves psychomotor skills but also students' cognitive and affective aspects.

The advantage of the problem-solving method over other learning methods lies in its approach, which places students at the center of learning. This method encourages students to think critically, creatively, and logically. This approach is relevant for implementation at SMP PAB 8 Sampali, where students tend to have difficulty practicing basic techniques such as the short badminton serve.

Compared to other methods, such as lectures or demonstrations, the problem-solving method has several key advantages. First, it increases student engagement in learning because they actively seek solutions to the problems they face. Second, this approach encourages the development of higher-order thinking skills, such as analysis, evaluation, and synthesis. Third, this method is more adaptive to individual student differences, providing greater opportunities for each student to learn at their own pace. Fourth, previous research has shown that problem-solving methods can increase student motivation and self-confidence, which are important factors in sports learning. The legal basis also supports the importance of innovation in sports learning. Law Number 11 of 2022 concerning Sports states that sports aim to improve health, physical fitness, and build national character. Article 4 of this law emphasizes that physical education in schools must be able to instill values such as discipline, cooperation, and fighting spirit in students. Furthermore, this law encourages the implementation of innovative learning methods to ensure students receive meaningful learning experiences.

In terms of badminton learning, the application of the problem-solving method can help students at SMP PAB 8 Sampali overcome the obstacles they experience in mastering the short serve technique. This method allows students to understand the obstacles they face, such as less than optimal motor coordination or inadequate technical understanding, and gradually find ways to overcome them. For example, students are encouraged to evaluate their own movements, improve techniques based on feedback, and practice relevant game strategies. With the problem-solving approach, learning not only focuses on the end result, but also on the process that actively involves students. This approach aligns with the broader goal of physical education, namely creating learning experiences that not only improve physical skills but also shape students' character. This way, badminton instruction at SMP PAB 8 Sampali can be more effective and make a real contribution to student development holistically.

Through this research, it is hoped that appropriate strategies can be identified to improve the quality of badminton instruction, particularly short serve techniques, using the problem-solving method. This aligns with efforts to create education that is relevant to students' needs while supporting national education goals.

METHOD

Research Design

This study used a quasi-experimental research method with a one-group pretest-posttest design. This quasi-experimental method was chosen because not all the requirements of a pure experiment can be met in a field context, for example, the difficulty of randomizing participants and the unavailability of a separate control group.

Participant

This research was conducted in a single class as an experimental group without a comparison group, in accordance with Arikunto's (2006) definition that a quasi-experiment is conducted on a single group without a control group. This research design involved one group of students who were given a pre-test (O1), treatment (X), and post-test (O2). The one-group pretest-posttest approach is widely used in educational research because it facilitates the evaluation of changes in student learning outcomes after treatment, especially when research is conducted with limited time and resources (Creswell, 2010; Lestari, 2021). The advantage of this design is that researchers can compare the same scores in participants before and after treatment to see changes in ability.

Data Analysis

Data analysis is the activity of organizing, sorting, grouping, coding or marking, and categorizing signs so that working hypotheses can be found and formulated based on the data. Analysis Prerequisite Test: In order for data to be analyzed using parametric statistics, a prerequisite test is required. The prerequisite test determines whether the data to be analyzed meets the requirements, which serves to determine the next steps. The data is not normally distributed, and the Wilcoxon test can then be used to determine significant efforts to improve short serve skills using the Problem Solving learning method for eighth-grade students of SMP PAB 8 Sampali.

RESULTS AND DISCUSSION

Results

To test the research hypothesis, a Paired-Samples T-Test was used because there were two tiered measurements (pretest and posttest) on the same sample. This test aimed to determine whether there was a significant difference in the average scores before and after the Problem-Solving learning treatment.

Table 1. Paired Samples Statistics

	Mean	Std. Deviation
Pretest	49.06	4.50
Posttest	58.82	5.04

The table above shows the mean and standard deviation of the Pretest and Posttest scores.

Table 2. Paired Samples Test

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Pretest	49.06	1.86	0.34	-28.68	29	0.000
Posttest	58.82					

Based on Table 2, the calculated t-value is -28.68 with 29 degrees of freedom and a 2-tailed significance value of 0.000. Since $p < 0.05$, the null hypothesis (H0) is rejected, indicating a significant difference between the average pretest and posttest scores. The histogram comparing the pretest and posttest illustrates the improvement in scores.

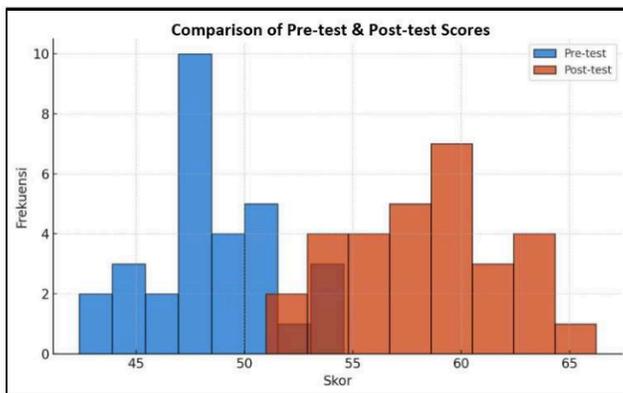


Figure 1. Comparison of Pre-test & Post-test Scores

Discussion

This discussion aims to explain the research findings in detail, from data descriptions and prerequisite tests to hypothesis testing, as well as the implications of the results for the short serve (backhand) learning context.

First, descriptive analysis shows that the average student pretest score was 49.06 with a standard deviation of 4.50, while the average posttest score was 58.82 with a standard deviation of 5.04. The range of pretest scores (40.40–57.90) and posttest scores (48.40–68.30) illustrates a substantial improvement in ability after the treatment. The relatively consistent variation in the range across both phases indicates that students with both low and high initial ability experienced similar improvements.

Second, the Shapiro-Wilk normality test yielded a p-value of 0.691 for the pretest and p-value of 0.754 for the posttest, both of which were greater than 0.05. Thus, both distributions met the assumption of normality, justifying the use of the parametric test (paired-samples t-test). Third, the paired-samples t-test showed $t(29) = -28.68$ with $p < 0.001$, indicating a highly significant difference between the pretest and posttest mean scores. The mean difference of 9.76 points confirmed the effectiveness of the Problem Solving learning method in improving students' short serve skills.

Fourth, the classification of pretest and posttest scores showed a shift in categories toward the higher end. In the pretest, 60.0% of students were in the "Fair (40–49)" category and 40.0% were in the "Good (50–59)" category. After treatment, the posttest classification with the same scheme showed 46.7% in "Good (50–59)" and 43.3% in "Excellent (≥ 60)", which means that many students rose to the highest category.

Fifth, these findings have practical implications for sports teachers and coaches. The use of the Problem-Solving learning model has been shown to significantly improve short serve technical motor skills. Therefore, it is recommended that similar methods be applied to other sports technical materials, along with further training to maintain and develop students' abilities.

However, this study has limitations, namely the sample size was limited to one class and the short duration of the treatment. Future research is recommended to use a larger sample size, across schools, and to measure the long-term sustainability of the results via a follow-up post-test. Overall, the discussion concludes that the Problem-Solving learning method is effective in improving short serve (backhand) skills in junior high school students. These results are consistent with constructivist theory and previous research emphasizing the importance of problem-solving in the learning process.

CONCLUSION

Based on the research results and data analysis, it can be concluded that: 1. The application of the Problem-Solving learning method significantly improved the basic short serve badminton skills of eighth-grade students at SMP PAB 8 Sampali. This was demonstrated by a 9.76-point increase in the average post-test score (58.82) compared to the pre-test score (49.06). The paired-samples t-test showed a significance value of 0.000 ($p < 0.05$), indicating a significant difference between students' initial and final abilities. 2. The Problem-Solving method was effective in improving students' understanding of short serve technique. The process of problem identification, solution exploration, and self-evaluation enabled students to critically analyze technical errors (such as foot position, racket grip, and accuracy), thereby gradually improving their performance. 3. The main supporting factor for the success of this method is active student engagement in learning. Students not only receive passive instruction but also engage in group discussions, independent practice, and reflection through video-based feedback. However, limited badminton court facilities pose a barrier to optimal training, although this is overcome by the use of alternative spaces and creative aids such as cardboard targets.

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AUTHOR CONTRIBUTION STATEMENT

This research was conceptualized and designed by Hiskia Tarigan, who developed the research objectives and methodology, managed data collection, coordinated with participants, and supervised fieldwork at STOK Bina Guna Medan. Dicky Hendrawan performed data analysis, interpreted the findings, and contributed significantly to the preparation of the manuscript. All authors participated in manuscript

revisions, approved the final version for submission, and take full responsibility for the integrity and accuracy of the work.

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CONFLICT OF INTEREST AND FUNDING

The authors declare no conflict of interest related to the conduct, authorship, or publication of this study.

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