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Improving Learning Outcomes Through Problem-Based Learning on Physical Fitness Material in Vocational High School Students

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ABSTRACT

This study aims to improve learning outcomes through Problem-Based Learning (PBL) on physical fitness material in vocational high school students. This research used the Classroom Action Research (CAR) method, consisting of two cycles, where each cycle includes planning, implementation, observation, and reflection stages. The subjects were 30 students of class XI DPB 2 at SMK Negeri 4 Jambi City. Data were collected through observation and written tests on physical fitness material. The research showed that Problem-Based Learning had a positive impact on Physical Education learning, especially on physical fitness material. In the first cycle, only 46.66% of students achieved the minimum completeness criteria (KKM) with scores ≥70. However, after improvements in the second cycle, the percentage of students achieving KKM increased to 86.66%. Besides improving learning outcomes, students also showed higher motivation and participation during the learning process. The use of the Problem-Based Learning model can enhance the effectiveness of physical fitness learning and provide more enjoyable and safe learning experiences for students. Physical Education teachers are expected to apply similar innovations in PE learning to improve students' thinking patterns and interest in sports. This study includes 2 tables, 20 references, and observational instruments.

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D. Manuscript preparation;
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INTRODUCTION

The quality of education plays a crucial role in developing human resources that can contribute to national development. According to Law Number 20 of 2003 concerning the National Education System, national education aims to develop students' potential to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, democratic, and responsible (Mantiri, 2019). Physical education, as an integral part of the overall education system, contributes significantly to achieving these educational goals through physical activities that develop motor skills, character, and physical health (Arifin, 2017).

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Physical fitness is one of the most important topics to explore within the framework of physical education, considering that today's younger generation tends to neglect health. Physical fitness can be defined as the body's ability to perform daily tasks without experiencing excessive fatigue and certainly with remaining energy reserves (Sulistiono, 2014). Good physical fitness will influence students' learning activities because students with good fitness status will be more enthusiastic in participating in the learning process (Utomo et al., 2020). However, preliminary observations revealed that many students lack enthusiasm and tire quickly, which impacts learning outcomes, especially in Physical Education learning.

Recent studies in the area of problem-based learning have shown promising results in improving educational outcomes. Problem-Based Learning (PBL) is one of the techniques that can improve student learning outcomes because it fosters critical thinking, problem-solving skills, and the ability to apply knowledge to real-world difficulties (Darwati & Purana, 2021). The PBL approach uses real-world problems as a framework for teaching students to think critically, solve problems, and connect them with learning ideas, which will test students' critical thinking abilities and creativity (Fanany et al., 2024). Research has shown that the Problem-Based Learning approach significantly improves student learning outcomes in physical education and health subjects (Parwata, 2021).

Based on the preliminary observations conducted at SMK Negeri 4 Jambi City, it was found that students showed less enthusiasm and interaction in the Physical Education learning processes. Students appeared to respond slowly to instructions given by teachers and seemed to tire easily, making the learning process ineffective. This situation calls for innovative teaching methods that can enhance student engagement and improve learning outcomes. Therefore, this study aims to investigate whether the implementation of the Problem-Based Learning model can improve learning outcomes in Physical Education, specifically on physical fitness material for students of class XI DPB 2 at SMK Negeri 4 Jambi City.

METHODS

This research employed Classroom Action Research (CAR) methodology, which is a collaborative and reflective approach to problem-solving or improvement initiatives conducted using classroom action research techniques. The research was conducted at the Korem Garuda Putih field located in Danau Sipin District, Jambi City, over approximately 4 weeks.

The study design consisted of two cycles, with each cycle including four stages: planning, implementation, observation, and reflection. According to (Wala, 2025), the implementation process of classroom action research is a spiral cycle, where each step consists of four stages. This spiral process is essential when conducting classroom action research to identify the desired results for researchers to assess learning in the best way possible.

The research subjects were 30 students from class XI DPB 2 at SMK Negeri 4 Jambi City, consisting of 1 male student and 29 female students. The sampling technique used

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was quota sampling, which is a method for selecting samples from a population with specific characteristics until reaching the desired number (quota) (Sugiyono, 2019). Data collection was conducted through observation and written examinations on physical fitness material. The observation was carried out using prepared observation sheets to monitor and evaluate the learning implementation by teachers and student activities. The aspects observed included student activities in learning, documentation of learning activities, and documentation of observation results and activities conducted.

Data analysis used descriptive quantitative techniques, which can be analyzed descriptively, such as averages, student achievement success, and others. The interval and category assessment of student learning outcomes were determined with a Minimum Completeness Criteria (KKM) of ≥70 for Physical Education subjects at SMK Negeri 4 Jambi City. For classical completeness determination, the class was declared complete if 80% of all students could master the physical fitness material with a minimum score of 70. The success criteria for this action research were the improvement of Physical Education learning outcomes on physical fitness material, which could be seen from individual score achievements based on the overall average scores of students' skills, knowledge, and attitudes. The research instruments included Learning Implementation Plans (RPP), observation sheets, and documentation of activities related to research results (Djonomiarjo, 2020).

RESULTS AND DISCUSSION

The research was conducted to improve student learning outcomes through Problem-Based Learning for students of class XI DPB 2 at SMK Negeri 4 Jambi City. The research results will be presented according to the objectives and hypotheses proposed previously, using two cycles.

Cycle I Results

After implementing learning in class XI SMK Negeri 4 Jambi City in cycle I, the following data were obtained: the highest score in cycle I implementation was 85, while the lowest score was 55. The distribution of student score intervals in cycle I implementation is presented in Table 1.

Table 1.
Interval and Category Assessment of Examination Results Cycle I

Interval	Frequency	Category	Percentage
<60	6	Poor	20%
60-70	19	Fair	63.33%
>70-80	4	Good	13.33%
>80-90	1	Very Good	3.33%
>90-100	0	Excellent	0%
Total	**30**		**100%**

From Table 1, it can be seen that most students obtained scores in the 60-70 interval, namely 19 students (63.33%). Meanwhile, only 1 student (3.33%) obtained a score in the interval (>80-90). Therefore, reflection on cycle I was needed to improve the learning process to achieve a more significant improvement.

Cycle II Results

After conducting the cycle I test, there were still students who had not achieved the KKM score. Therefore, the next step was to conduct a physical fitness assessment in cycle II with the aim that student scores could reach the established KKM target score. Based on the results of the cycle II test, the following data were obtained: the highest score in cycle II implementation was 95, while the lowest score was 60. The distribution of student score intervals in cycle II implementation is presented in Table 2.

Table 2.
Interval and Category Assessment of Examination Results Cycle II

Interval	Frequency	Category	Percentage
<60	0	Poor	0%
60-70	12	Fair	40%
>70-80	12	Good	40%
>80-90	5	Very Good	16.66%
>90-100	1	Excellent	3.33%
Total	**30**		**100%**

Discussion

The implementation of Problem-Based Learning in physical fitness learning showed significant improvement in student learning outcomes. The research results indicated that PBL provided positive changes in improving student learning outcomes in class XI DPB 2 at SMK Negeri 4 Jambi City. In Cycle I, only 14 students or 46.66% successfully achieved the Minimum Completeness Criteria (KKM), while 16 students or 53.33% had not yet achieved the KKM. These results showed that although most students already demonstrated good understanding of the material, there were still several students who needed more attention in the learning process to achieve expected results (Hamzah & Hedina, 2018).

The improvement shown in Cycle II was more encouraging. Of 30 students, 26 students or 86.66% had successfully achieved the KKM, while only 4 students or 13.33% had not yet achieved the KKM. This improvement demonstrated that the improvements made in the Problem-Based Learning model in Cycle II had provided more optimal results. As a comparison, in Cycle I, only 46.66% of students achieved the KKM, while in Cycle II, 86.66% of students had reached the established standard (Hotimah, 2020).

The success of the Problem-Based Learning model in improving learning outcomes can be attributed to several factors (Abdullah & Munawwaroh, 2024). First, PBL encourages students to actively participate in the learning process through real-world problem-solving activities. Students are required to think critically and analytically to find solutions to given problems, which enhances their understanding of physical fitness concepts (Robiyanto, 2021). Second, the collaborative learning environment in PBL allows students to learn from each other through group discussions and knowledge sharing, which contributes to better comprehension of the material.

The improvement from Cycle I to Cycle II also reflects the effectiveness of the reflection and improvement process conducted between cycles. Based on observations and evaluations in Cycle I, several improvements were implemented in Cycle II, including

providing additional literature sources for problem-solving, giving individual guidance to students experiencing difficulties, and providing a deeper understanding regarding the problems being discussed (Dupri et al., 2020). These improvements proved effective in enhancing student learning outcomes.

Furthermore, the Problem-Based Learning approach aligns well with the characteristics of physical fitness learning. Physical fitness concepts are closely related to real-life situations and daily health practices, making them suitable for problem-based learning approaches. Students can directly relate the theoretical concepts they learn to practical applications in their daily lives, which enhances the meaningfulness and retention of learning.

The research findings are consistent with previous studies on the effectiveness of Problem-Based Learning in physical education. According to (Fanany et al., 2024), PBL presents students with real-world problems, through which students evaluate solutions related to the offered learning material and expand their knowledge into more critical and comprehensive insights. Similarly, (Sutrisno & Siswanto, 2016) stated that when the PBL model is used in class, students learn more about topics they frequently encounter in daily life, making the learning process more interesting and enjoyable for them.

The improvement in learning outcomes was also accompanied by increased student motivation and participation during the learning process. Students showed more enthusiasm in participating in discussions and were more active in seeking solutions to the presented problems. This increased engagement contributed significantly to the overall improvement in learning outcomes. However, despite the significant improvement achieved, there were still 13.33% of students who had not yet reached the KKM in Cycle II. This indicates that some students may need additional support or alternative learning approaches to achieve optimal learning outcomes. Individual differences in learning styles, prior knowledge, and learning motivation may contribute to these variations in achievement. The success of this research also highlights the importance of continuous evaluation and reflection in the teaching and learning process. The improvement from Cycle I to Cycle II demonstrates that systematic evaluation and targeted improvements can lead to significant enhancement in learning outcomes. This finding emphasizes the value of action research in identifying and addressing learning challenges in real classroom settings.

CONCLUSION

Based on the research results conducted in class XI DPB 2 SMK Negeri 4 Jambi City, the implementation of Problem-Based Learning in physical fitness learning successfully improved student learning outcomes. In Cycle I, 46.66% of students achieved the KKM, while in Cycle II, it increased to 86.66%. This shows that Problem-Based Learning provides significant changes in improving learning outcomes for students of class XI DPB 2 at SMK Negeri 4 Jambi City.

The research demonstrates that PBL not only improves academic achievement but also enhances student motivation and participation in the learning process. The model's effectiveness lies in its ability to present real-world problems that are relevant to students' daily lives, encouraging critical thinking and collaborative problem-solving skills. However, despite the significant improvement, 13.33% of students still had not achieved the KKM, indicating the need for additional attention and possibly supplementary cycles or individualized approaches for these students.

The findings suggest that Physical Education teachers should consider implementing Problem-Based Learning as an effective pedagogical approach for teaching physical fitness concepts. The model's success in this study provides evidence for its potential application in other Physical Education topics and contexts. Future research should explore the long-term effects of PBL implementation and its application across different educational levels and contexts.

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