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Problem-Based Learning Model to Increase Self-Efficacy of Grade IV Elementary School Students

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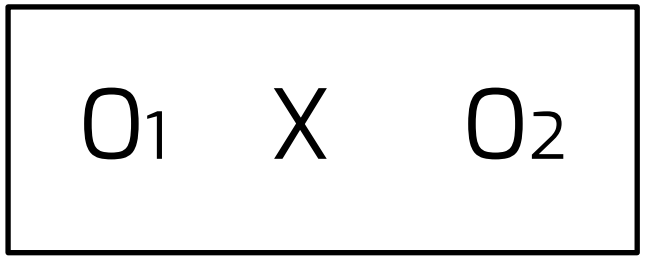
Introduction

The purpose of this study is to examine the effect of the Problem-Based Learning (PBL) model on improving students' self-efficacy. PBL emphasizes active student engagement in solving real-life problems through group collaboration, critical thinking, and reflection, thereby fostering confidence, learning independence, and perseverance in facing challenges. In Grade IV at SDN Ngampelsari, low self-efficacy is reflected in students' lack of confidence to complete tasks independently and their tendency to be passive in science learning. This condition is believed to be influenced by limited opportunities to practice critical thinking and engage in contextual problem-solving experiences. Therefore, applying PBL to the topic "Stories About My Region" is considered strategic in providing meaningful learning experiences relevant to students' daily lives. In line with Bandura's view, self-efficacy plays an essential role in shaping students' motivation, behavior, and academic achievement. Through the implementation of PBL, students are expected to develop confidence in their abilities, increase active participation, and build effective learning strategies to address real-world challenges.

Problem Solving

1. Does the implementation of the Problem-Based Learning (PBL) model significantly improve the self-efficacy of fourth-grade students in science learning?
2. What is the level of effectiveness of the Problem-Based Learning (PBL) model in enhancing students' self-efficacy based on N-Gain analysis?

Method



This study used a pre-experimental One-Group Pretest-Posttest Design involving 32 fourth-grade students at SDN Ngampelsari. The Problem-Based Learning (PBL) model was applied in science lessons, and students' self-efficacy was measured using a questionnaire before and after the intervention. Data were analyzed using the Wilcoxon Signed-Rank Test and N-Gain analysis to assess significance and effectiveness.

Result

In this study, the average pre-test score of students' self-efficacy was 26.97, which increased to 33.97 in the post-test, showing an improvement of 7 points after the implementation of the Problem-Based Learning (PBL) model. N-Gain analysis showed an average score of 0.7835, categorized as high effectiveness, with 59.4% of students in the high category and 40.6% in the medium category. This indicates that the application of the PBL model had a strong positive effect on students' self-efficacy.

Normality Test

The Shapiro-Wilk test results showed that the significance value for the pre-test was 0.006 and for the post-test was 0.000. Both values are less than 0.05, indicating that the data were not normally distributed. Therefore, the Wilcoxon Signed-Rank Test was used for hypothesis testing.

Result

Hypothesis Test Result

The Wilcoxon Signed-Rank Test showed a significance value of 0.000 (< 0.05), indicating a significant difference between pre-test and post-test self-efficacy scores. This confirms that the PBL model significantly improved students' self-efficacy.

N-Gain Interpretation

The average N-Gain score was 0.7835, classified as high effectiveness. A total of 19 students (59.4%) achieved high improvement and 13 students (40.6%) achieved medium improvement, with no students in the low category. This demonstrates the strong effectiveness of PBL in enhancing students' self-efficacy.

Discussion

The results showed that the pre-test and post-test data were not normally distributed; therefore, the non-parametric Wilcoxon Signed-Rank Test was used. The analysis revealed a significant improvement in students' self-efficacy after the implementation of the Problem-Based Learning (PBL) model, with an average increase of 7 points and a significance value of 0.000 (< 0.05). N-Gain analysis indicated high effectiveness, with an average score of 0.7835; 59.4% of students achieved high improvement and 40.6% achieved medium improvement. These findings demonstrate that PBL is more effective in fostering students' confidence, independence, and persistence through active engagement in solving contextual problems. By encouraging collaboration, critical thinking, and reflection, PBL provides a meaningful learning experience that can serve as an appropriate instructional strategy to enhance self-efficacy in elementary school students.

Important Research Findings

Several previous studies have confirmed the effectiveness of the Problem-Based Learning (PBL) model in enhancing elementary school students' self-efficacy and critical thinking skills, as reported by Sujanem et al. (2023), Jayanti & Pertiwi (2023), and Cahyani & Ahmad (2024). This study reinforces those findings, with the Wilcoxon Signed-Rank Test showing a significant improvement in students' self-efficacy by an average of 7 points (Sig. 0.000) after the implementation of PBL. N-Gain analysis indicated high effectiveness, with an average score of 0.7835; 59.4% of students experienced high improvement and 40.6% achieved medium improvement. The effectiveness of PBL lies in its ability to provide contextual learning experiences, encourage collaboration, and train students in problem identification, analysis, and solution development. These processes not only strengthen students' confidence and learning independence but also foster perseverance and motivation in tackling real-world challenges.

Benefits of Research

With the results of this study, it is expected that the Problem-Based Learning (PBL) model can be more widely implemented in the learning process at SDN Ngampelsari and other schools. The application of PBL has been proven to significantly improve students' self-efficacy, making it an effective strategy to support the development of 21st-century skills. There is a need for teacher training and professional development to ensure effective implementation of PBL in the classroom. Teachers should also receive adequate support and resources to conduct problem-based learning optimally. Further research can be conducted to measure the effectiveness of PBL at various educational levels and in different subjects, as well as to explore its integration with digital technology to enrich the learning process.

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