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THE INFLUENCE OF PROJECT-BASED LEARNING MODEL ON STUDENT LEARNING OUTCOMES IN GENERAL JOURNAL SUBJECT FOR GRADE X AT SMK NEGERI 1 PEMATANGSIANTAR

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Abstract

This study aims to examine the effect of Project-Based Learning (PBL) model on the learning outcomes of students in the General Journal subject for grade X Accounting and Financial Institution program at SMK Negeri 1 Pematangsiantar. The background of this research is based on the low learning outcomes of students, which have not met the Minimum Competency Criteria (KKM), caused by conventional teaching methods that are less varied and limited active involvement from students during the learning process.This research employs a quantitative method with a quasi-experimental design using a Pretest-Posttest Control Group Design approach. The sample consisted of two classes: an experimental class taught using the Project-Based Learning model, and a control class taught using conventional methods. The instrument used was a 35-item multiple-choice test that had been validated and tested for reliability. Data analysis was performed using the non-parametric Wilcoxon Signed Rank Test due to the non-normal distribution of data as determined by the Kolmogorov-Smirnov and Shapiro-Wilk normality tests. The results revealed a significant increase in learning outcomes for the experimental class compared to the control class. The average pretest and posttest scores of the experimental class increased from 43.71 to 74.29, while the control class scores increased from 38.00 to 66.43. Wilcoxon test results showed a significance value of $p = 0.000$ (<0.05) for both classes, indicating that the improvement in learning outcomes was statistically significant. This demonstrates that the implementation of the Project-Based Learning model effectively enhances students' conceptual understanding and skills in the General Journal subject. The study concludes that Project-Based Learning has a significant positive effect on improving student learning outcomes. Therefore, it is recommended that teachers and schools consistently implement this model in teaching to create a more active, creative, and enjoyable learning environment, as well as to sustainably improve student achievement. Furthermore, this study can serve as a reference for future research development in vocational learning or other subjects relevant to workforce demands.

Keywords: Project-Based Learning, Learning Outcomes, General Journal, Vocational School, Accounting.

INTRODUCTION

Education plays a fundamental role in shaping the quality of human resources and determining the progress of a nation. Through education, individuals acquire knowledge, skills, values, and attitudes that enable them to adapt to social changes and contribute productively to society. In the context of formal schooling, the success of education is commonly reflected in students' learning outcomes, which represent the extent to which instructional objectives have been achieved. Learning outcomes encompass not only cognitive achievement but also affective development and psychomotor skills, forming a holistic picture of students' growth after participating in the learning process. In vocational education, particularly at vocational high schools, learning outcomes are expected to demonstrate students' readiness to enter the workforce. Vocational institutions are designed to equip learners with practical competencies aligned with industry needs. Therefore, teaching and learning processes should emphasize both conceptual understanding and real-world application. One of the core subjects in the Accounting and Financial Institution program is General Journal, which serves as a foundational component of accounting education. Mastery of General Journal concepts is essential because it introduces students to systematic financial recording, transaction analysis, and the principles of debit and credit that underpin the entire accounting cycle. Without a solid understanding of this subject, students may face difficulties in more

advanced accounting topics and professional practice. However, preliminary observations and evaluation data indicate that students' learning outcomes in the General Journal subject have not yet reached the expected level. A significant proportion of students fail to achieve the Minimum Competency Criteria, suggesting that many still struggle to understand basic concepts and apply them accurately in transaction recording. This condition reflects a broader issue in classroom practice, where conventional teaching methods dominated by lectures and teacher-centered instruction tend to limit students' active participation. As a result, learners often become passive recipients of information rather than active constructors of knowledge, which negatively affects their motivation and academic achievement. Learning outcomes are influenced by various internal and external factors. Internal factors include students' motivation, prior knowledge, learning readiness, cognitive ability, and psychological condition. External factors involve teaching strategies, classroom environment, learning resources, and teacher competence. Among these, instructional approach plays a particularly crucial role, as it directly shapes students' engagement and learning experiences. Traditional methods that rely heavily on explanation and memorization often fail to accommodate diverse learning styles or promote higher-order thinking skills. Consequently, students may find it difficult to connect theoretical material with practical situations, especially in vocational subjects that require hands-on competence.

To address these challenges, innovative and student-centered learning models are needed. One approach that has gained increasing attention in educational practice is Project-Based Learning (PBL). Project-Based Learning emphasizes active student involvement through meaningful projects that are closely related to real-life contexts. In this model, students are encouraged to investigate problems, design solutions, collaborate with peers, and produce tangible outcomes. Learning is organized around complex tasks that require critical thinking, creativity, communication, and teamwork. Through these processes, students are not only exposed to content knowledge but also trained to apply concepts in authentic situations. Project-Based Learning is grounded in constructivist learning theory, which views knowledge as actively constructed by learners through experience and reflection. By engaging in projects, students develop a deeper understanding of subject matter because they learn by doing rather than merely listening. In addition, PBL supports humanistic educational principles by fostering autonomy, responsibility, and self-confidence. Students take ownership of their learning, manage their time, and evaluate their own progress, which contributes to the development of independent learning habits. Furthermore, PBL is aligned with motivational theories, as it enhances intrinsic motivation by making learning more relevant, meaningful, and enjoyable.

Previous studies have reported positive effects of Project-Based Learning on students' academic performance, motivation, creativity, and problem-solving skills, particularly in vocational and skill-oriented subjects. Learners who participate in project-based activities tend to demonstrate higher engagement and improved conceptual understanding compared to those taught using conventional approaches. In accounting education, PBL has been shown to help students better comprehend abstract concepts by linking them to practical applications, such as preparing financial records, analyzing transactions, and simulating business activities. These findings suggest that Project-Based Learning holds strong potential to improve learning outcomes in subjects that require both theoretical mastery and practical competence. In the context of General Journal instruction, Project-Based Learning provides opportunities for students to practice recording transactions through realistic projects, such as creating simulated business cases or managing simple accounting scenarios. Such activities enable learners to experience the accounting process directly, thereby strengthening their procedural knowledge and technical skills. Moreover, working collaboratively in projects helps students develop communication abilities and social responsibility, which are essential competencies in professional environments. By integrating cognitive, affective, and psychomotor domains, PBL offers a comprehensive learning experience that aligns well with the objectives of vocational education.

Despite its potential benefits, implementing Project-Based Learning also presents challenges. Teachers must carefully design projects that align with curriculum goals, manage classroom dynamics, and provide continuous guidance throughout the learning process. PBL often requires more instructional time and adequate learning resources. Therefore, empirical evidence is necessary to evaluate its effectiveness in specific educational contexts and subjects. Understanding how PBL influences students' learning outcomes in General Journal will provide valuable insights for teachers, schools, and policymakers seeking to enhance instructional quality. Based on these considerations, this study investigates the influence of Project-Based Learning on students' learning outcomes in the General Journal subject for Grade X students in the Accounting and Financial Institution program. The research aims to determine whether the implementation of Project-Based Learning significantly improves students' conceptual understanding and practical skills compared to conventional teaching methods. The findings

of this study are expected to contribute to the development of more effective instructional strategies in vocational education and to support efforts to produce competent, motivated, and work-ready graduates.

LITERATURE REVIEW

Project-Based Learning (PjBL) is widely recognized as a student-centered instructional model that engages learners in investigating authentic problems and producing concrete outputs through collaborative, inquiry-driven activities. In vocational and accounting-related contexts, PjBL is considered relevant because it connects abstract concepts to practical tasks, allowing students to apply accounting procedures (e.g., analyzing transactions and recording entries) in realistic scenarios. The literature commonly links PjBL to constructivist perspectives, emphasizing that meaningful understanding is built through active experience, reflection, and social interaction. When implemented effectively, PjBL is reported to foster higher-order thinking, teamwork, communication, and learner autonomy competencies that support both cognitive achievement and skill development in practice-based subjects.

Empirical studies in secondary and vocational education generally indicate that PjBL can improve students' learning outcomes compared with conventional teacher-centered approaches, particularly when learning requires procedural accuracy and contextual application. Research also highlights that the model tends to increase motivation and participation because students have clearer ownership of tasks and can see the usefulness of what they learn. In accounting learning, these advantages are especially important, as students often struggle when instruction is dominated by explanation and memorization without sufficient guided practice. Therefore, prior findings support examining PjBL as an alternative strategy to enhance students' understanding and performance in the General Journal topic in Grade X vocational classrooms.

METHOD

This study employed a quantitative approach using a quasi-experimental design with a Pretest–Posttest Control Group Design. The participants consisted of two Grade X classes in the Accounting and Financial Institution program: one experimental class taught using the Project-Based Learning model and one control class taught using conventional instructional methods. Both groups were given a pretest to measure initial ability and a posttest to assess learning outcomes after the intervention. The research instrument was a 35-item multiple-choice test that had been validated and tested for reliability. Data were analyzed using descriptive statistics and inferential analysis. Because the data were not normally distributed, hypothesis testing was conducted using the Wilcoxon Signed Rank Test to examine differences in students' learning outcomes before and after treatment. This design enabled a systematic comparison of learning gains between the experimental and control groups to determine the effect of Project-Based Learning on students' achievement in the General Journal subject.

RESULTS AND DISCUSSION

This study investigated the effect of Project-Based Learning (PBL) on students' learning outcomes in the General Journal subject using a quasi-experimental design. Students' achievement was measured through pretest and posttest scores in both experimental and control groups.

Table 1. Pretest and Posttest Mean Scores

Group	Pretest Mean	Posttest Mean	Gain
Experimental (PBL)	43.71	74.29	30.58
Control (Conventional)	38	66.43	28.43

The results show that both groups experienced improvement after instruction. However, the experimental class taught using Project-Based Learning achieved a higher posttest mean score (74.29) compared to the control class (66.43). The learning gain in the experimental group (+30.58) was also greater than that of the control group (+28.43), indicating better learning progress among students exposed to PBL. Normality testing using Kolmogorov Smirnov and Shapiro Wilk revealed that the data were not normally distributed. Therefore, a non-parametric Wilcoxon Signed Rank Test was applied to examine differences between pretest and posttest scores.

Table 2. Wilcoxon Signed Rank Test Results

Group	Z	Sig. (p-value)
Experimental	–	0
Control	–	0

The Wilcoxon test produced a significance value of p = 0.000 (< 0.05) for both groups, indicating statistically significant differences between pretest and posttest scores. This confirms that learning outcomes improved significantly after instruction. Nevertheless, the experimental group demonstrated higher mean achievement, suggesting that Project-Based Learning had a stronger positive impact on students' performance in the General Journal subject.

DISCUSSION

The findings indicate that Project-Based Learning significantly enhanced students' learning outcomes in the General Journal subject. Although both instructional approaches led to measurable improvement, students who participated in PBL activities achieved higher posttest scores than those taught through conventional methods. This result suggests that learning experiences based on projects provide added value by actively involving students in meaningful tasks that integrate theory with practice. The superior performance of the experimental group can be attributed to several characteristics of Project-Based Learning. First, PBL encourages students to analyze real or simulated accounting transactions and collaboratively construct journal entries, allowing them to directly apply conceptual knowledge. This hands-on engagement supports deeper understanding compared to traditional lecture-based instruction, where students tend to rely on memorization. Second, PBL promotes collaboration, critical thinking, and problem-solving, enabling learners to discuss ideas, correct mistakes, and refine their understanding through peer interaction. Furthermore, Project-Based Learning fosters student motivation and responsibility. By working on structured projects, students become more invested in the learning process and develop ownership of their outcomes. This increased engagement likely contributed to the higher achievement observed in the experimental class. In vocational education contexts, such experiential learning is especially important, as it aligns academic content with workplace-relevant skills. These findings are consistent with previous studies reporting that Project-Based Learning improves academic achievement and practical competence, particularly in vocational and accounting-related subjects. The present results reinforce the view that PBL is an effective instructional model for enhancing both conceptual mastery and procedural skills in General Journal learning. Overall, this study demonstrates that Project-Based Learning has a significant positive effect on students' learning outcomes. Implementing PBL in accounting classrooms can help create a more active, contextual, and student-centered learning environment, thereby supporting the development of competent and motivated vocational graduates.

CONCLUSION

Based on the results of the thesis research with the title of the influence of the Project Based Learning learning model on the learning outcomes of class X AK students of SMK Negeri 1 Pematangsiantar in the 2025/2026 Academic Year, researchers can conclude that the Project Based Learning learning model has a significant influence on improving student learning outcomes. The learning outcomes of experimental class students experienced a fairly high increase from an average pretest score of 48.41 to 72.76 for the posttest score. Meanwhile, for the control class, the average pretest score was 44.55 to 68.00 for the posttest score. This test was carried out through the Wilcoxon Signed-Ranks Test with a Z value of -5.113 and a significance of 0.000 (<0.05), thus indicating a significant difference.

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