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Project-based learning implementation to enhance student learning outcomes in meeting management

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Abstrak

Penelitian ini mengkaji efektivitas Project-Based Learning (PjBL) dalam meningkatkan hasil belajar siswa pada materi pengelolaan rapat. Penelitian Tindakan Kelas dengan model Kemmis dan McTaggart dilaksanakan melalui dua siklus pembelajaran, masing-masing terdiri dari tahap perencanaan, pelaksanaan, observasi, dan refleksi. Subjek penelitian adalah 36 siswa Kelas XI MPLB 2 di SMK Negeri 6 Surakarta. Hasil menunjukkan peningkatan signifikan pada rerata hasil belajar, dari 81,33 pada pra-siklus menjadi 93,89 pada Siklus I dan 94,72 pada Siklus II. Selain pencapaian akademik, penerapan PjBL meningkatkan keterlibatan siswa, mendorong partisipasi aktif, dan mengembangkan keterampilan berpikir kritis. Temuan ini merekomendasikan PjBL sebagai strategi pembelajaran efektif yang selaras dengan penekanan Kurikulum Merdeka pada pengembangan kompetensi siswa secara komprehensif.

Keywords: berpikir kritis; kurikulum merdeka; partisipasi aktif; pendidikan vokasi; penelitian tindakan kelas

Abstract

This study examined the effectiveness of Project-Based Learning (PjBL) in improving student learning outcomes in meeting management. Classroom Action Research employing the Kemmis and McTaggart model was conducted through two learning cycles, each comprising planning, implementation, observation, and reflection stages. The study involved 36 students from Class XI MPLB 2 at SMK Negeri 6 Surakarta. Results demonstrated significant improvement in mean learning outcomes, increasing from 81.33 in the pre-cycle to 93.89 in Cycle I and 94.72 in Cycle II. Beyond academic achievement, PjBL implementation enhanced student engagement, encouraged active participation, and developed critical thinking skills. These findings recommend PjBL as an effective learning strategy aligned with the Merdeka Curriculum's emphasis on comprehensive student competency development.

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Keywords : active participation; classroom action research; critical thinking; merdeka curriculum; vocational education

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Introduction

Education in the 21st century has undergone substantial transformation, driven primarily by accelerated innovation and technological advancement. These technological developments have fundamentally altered human interaction and work practices while demanding corresponding evolution in educational approaches to address contemporary challenges. Modern education extends beyond academic achievement to emphasize skill mastery essential for future success. Within this context, educators must master and implement the 4C skills Critical Thinking, Communication, Collaboration, and Creativity to develop students who demonstrate both intellectual capability and adaptability (Wulansari & Sunarya, 2023). Consequently, teachers assume a strategic role in developing innovative, contextually relevant, and meaningful learning models that optimally prepare students for evolving societal demands (Muthmainnah et al., 2023). This aligns with Government Regulation of the Republic of Indonesia No. 57 of 2021 concerning National Education Standards, which mandates interactive and inspiring learning processes capable of comprehensively enhancing student abilities.

In vocational education, particularly within the Office Management and Business Services (MPLB) program, the Office Management subject serves a critical function in preparing students for workforce entry. This subject provides both theoretical knowledge and practical skills alongside professional attitudes required in office administration. The learning process must therefore bridge theory with practice relevant to Business and Industrial World (DUDI) requirements. However, implementation challenges persist, notably insufficient innovation in instructional delivery methods. This condition results in diminished learning interest and reduced active student involvement, ultimately affecting learning outcomes negatively. Student engagement constitutes a crucial factor influencing motivation and learning effectiveness; actively engaged students demonstrate higher learning motivation and achieve more optimal outcomes (Waruwu & Helsa, 2025). Therefore, designing and implementing learning approaches that enhance student engagement across cognitive, affective, and psychomotor dimensions is essential.

Rahman (2023) describes learning outcomes as comprising two interconnected concepts: "outcomes" and "learning." Salsabila et al. (2024) define learning as a conceptual framework for understanding how individuals acquire new knowledge, skills, attitudes, or behaviors through educational experiences. Bahri and Nurhayati (2023) characterize outcomes as measurable and evaluable results obtained from structured activities such as learning. Synthesizing these definitions, learning outcomes represent student achievements encompassing knowledge, attitudes, and skills acquired through the learning process.

This study focused on Class XI students in the Office Management and Business Services (MPLB) 2 program at SMK Negeri 6 Surakarta. A preliminary study revealed that most students had not achieved the Learning Outcome Achievement Criteria (KKTP), indicating a gap between learning processes and student outcomes. Pre-cycle results showed a mean score of 81.33, with only 21 students (58.33%) of 36 total students meeting the 80% KKTP standard, while 15 students

(41.67%) did not. These findings underscore the necessity for strengthened learning strategies addressing not only cognitive and technical aspects but also social and emotional skill development to support comprehensive competency achievement. Within 21st-century learning contexts, 4C skill mastery is crucial for students facing increasingly complex work and life challenges. Project-Based Learning (PjBL) represents one alternative strategy for optimizing learning outcomes, particularly within the Merdeka Curriculum implementation. Ramadhani and Ardi (2024) demonstrate that this model effectively improves learning outcomes through contextual and applicative approaches.

Bulkini and Nurachadijat (2023) describe Project-Based Learning (PjBL) as a model integrating real-world contexts into learning, enabling students to learn through meaningful experiences. Sholekah (2020) reinforces this characterization, stating that PjBL actively involves students in problem-solving, investigation, and reflection based on authentic experiences under teacher guidance. The PjBL approach emphasizes student involvement in completing real projects. This study specifically applies PjBL to improve learning outcomes in Office Management and Business Services (MPLB), particularly meeting management material at SMK Negeri 6 Surakarta. Students are required to solve problems, explore topics, collaborate in groups, and apply knowledge and skills in contexts relevant to real-world situations (Banawi, 2019). Through this approach, students gain deep conceptual understanding while applying knowledge to authentic situations, making learning contextual and relevant. Project-based learning integrates cognitive aspects with skills, attitudes, values, and social-emotional abilities, constituting a holistic approach well-suited to office management competency requirements such as meeting management. Teacher-student collaboration in project-based learning implementation is expected to enhance learning process effectiveness while significantly improving student outcomes.

Based on preliminary study findings, this research aimed to improve student learning outcomes through Project-Based Learning (PjBL) application in meeting management material as an integral component of Office Management competencies. The application of this learning model was expected to enhance overall student engagement, resulting in significantly improved learning outcomes aligned with 21st-century education demands and contemporary workforce requirements.

Research Method

This study employed Classroom Action Research (CAR) using the Kemmis and McTaggart cycle model, comprising planning, action implementation, observation, and reflection stages. CAR was selected for its systematic, reflective, and continuous improvement orientation. Within this framework, the Project-Based Learning (PjBL) model served as an intervention to test its effectiveness in improving meeting management competencies. The research was conducted at SMK Negeri 6 Surakarta during the even semester of the 2024–2025 academic year, from February to April 2025, scheduled to avoid interference with regular academic activities.

The selection of Project-Based Learning (PjBL) as the primary intervention was positioned within the Classroom Action Research (CAR) framework. CAR provides a systematic research approach for improving learning practices, while PjBL represents a learning strategy tested for its effectiveness in improving meeting management competencies. Theoretically, PjBL emphasizes active student involvement in completing real projects, creating meaningful and contextual learning experiences. This model develops critical thinking, teamwork, problem-solving, and effective communication skills all essential aspects of professional meeting management competencies. Practically, activities such as agenda planning, minute-taking, meeting simulation, and meeting evaluation serve as concrete projects relevant to the workplace, enabling students to directly apply learned skills in realistic situations.

Research subjects comprised 36 students from Class XI MPLB 2, selected through purposive sampling based on class characteristic suitability for research needs, particularly readiness for PjBL implementation in meeting management material. Class XI MPLB 2 was selected because the

curriculum addressed material relevant to meeting management, student ability diversity allowed comprehensive observation of intervention effectiveness, and motivation and learning involvement levels were adequate for smooth action implementation. This class was therefore considered representative for testing PjBL implementation effectiveness in improving meeting management competencies.

Data collection combined quantitative and qualitative methods. Quantitative data were obtained from written tests (multiple-choice and essay questions) with instruments tested for validity and reliability to ensure accuracy in measuring competence and consistency of results. Qualitative data were collected through observation and field notes. Observation instruments were also tested for content validity and inter-rater reliability to ensure objective and reliable data. This approach provided comprehensive data in both numerical and descriptive forms.

Data analysis employed quantitative descriptive techniques to calculate mean scores, learning completeness percentages, and learning outcome improvement differences between cycles. Qualitative data analysis utilized data reduction, data presentation, and conclusion drawing techniques. This process began with selecting and grouping observation findings and field notes into specific categories: active involvement, collaboration, initiative, and student responsibility. Reduced data were then presented in descriptive narrative form to interpret learning dynamics more deeply and understand changes in student learning behavior during the intervention. Qualitative data interpretation was integrated with quantitative data to produce a comprehensive picture of PjBL effectiveness in improving learning quality.

Success criteria for this study were determined based on Minimum Completion Criteria (KKM) achievement by at least 75% of students, accompanied by increased student engagement as observed through designated indicators. Fulfillment of both indicators indicated successful PjBL application in improving student learning outcomes in meeting management competencies.

Results and Discussion

The classroom action research conducted across two cycles primarily aimed to examine the effectiveness of Project-Based Learning (PjBL) implementation in improving student learning outcomes, particularly in meeting management. Each research cycle was systematically designed to include several stages: planning to prepare learning needs and strategies, implementation involving direct PjBL application in the classroom, observation to document student activities and responses during learning, and reflection to evaluate results and determine improvement measures for subsequent cycles. The PjBL approach was selected for its advantages in increasing overall active student involvement while developing critical and collaborative thinking skills relevant to contemporary workforce demands. Additionally, this model was expected to increase student learning motivation through direct involvement in contextual, project-based learning processes.

Research results

Research results demonstrated that Project-Based Learning (PjBL) application significantly positively affected student learning outcomes in meeting management. These findings were obtained through classroom action research conducted in Class XI MPLB 2 at SMK Negeri 6 Surakarta. Collected data described individual learning achievement increases for each student. Based on data presented in Table 1 comparing student learning outcomes across pre-cycle, Cycle I, and Cycle II stages, significant learning achievement increases were evident among Class XI MPLB 2 students. These findings indicate that Project-Based Learning (PjBL) application effectively improves student understanding and skills, particularly in meeting management.

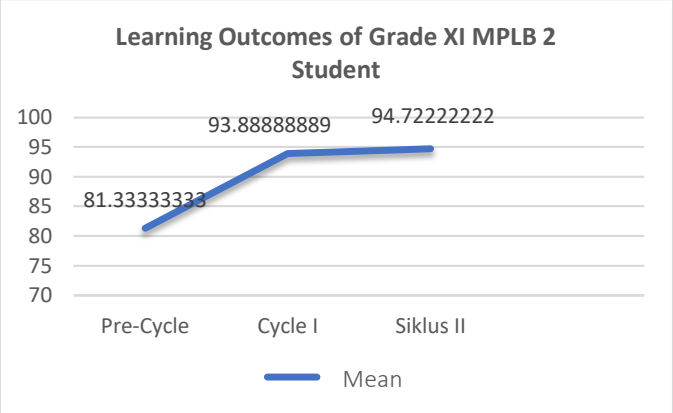
The initial step to identify student baseline conditions began with administering a pretest to Class XI MPLB 2 students before implementing the Project-Based Learning (PjBL) model. The subsequent stage involved PjBL learning model implementation to observe and measure changes during this approach application in learning activities. The final stage comprised a posttest to ensure applied learning model effectiveness and evaluate student learning outcomes comprehensively. Figure 1 presents a graph of mean learning outcome increases for Class XI MPLB 2 students during

the research process, visualizing a positive trend from the pre-cycle stage through Cycle II aligned with Project-Based Learning (PjBL) application.

Table 1
Comparison of Student Learning Outcomes in the Pre-Cycle, Cycle I, and Cycle II Stages

Student No.	Pre-Cycle	Cycle I	Cycle II
1	80	100	100
2	83	100	90
3	83	100	90
4	82	100	100
5	79	100	100
6	80	100	100
7	80	100	90
8	83	90	90
9	87	90	100
10	77	90	100
11	77	100	100
12	79	100	100
13	87	90	90
14	77	100	100
15	82	80	90
16	77	80	100
17	83	100	100
18	77	90	90
19	77	90	90
20	87	90	100
21	80	80	90
22	87	80	100
23	79	100	90
24	79	100	80
25	79	100	90
26	82	100	100
27	83	90	100
28	80	100	100
29	79	90	90
30	82	100	90
31	80	90	100
32	87	80	90
33	87	100	90
34	82	80	90
35	82	100	100
36	83	100	90
Mean	81.33	93.89	94.72

Figure 1
Graph of the Average Increase in Learning Outcomes of Grade XI MPLB 2 Students



Learning achievement results for Class XI MPLB 2 students at SMK Negeri 6 Surakarta in meeting management during the pre-cycle stage indicated relatively low learning completeness levels. Of 36 total students, only 21 (58.33%) achieved or exceeded the established 80% Minimum Completion Criteria (KKM), while 15 students (41.67%) did not meet this standard. This condition illustrated the urgent need for more efficient and effective learning methods to enable all students to gain deeper understanding of meeting management material and demonstrate adequate competence in preparing and conducting meeting simulations according to office operational standards.

Entering Cycle I, learning evaluation results for Class XI MPLB 2 students on meeting management material showed significant improvement. Most students successfully achieved learning mastery with satisfactory results. The highest score achieved was 100, while the lowest was 80, with a class mean (M) of 93.89. Both median and mode scores were 100, indicating that most students achieved perfect evaluation scores. Score distribution showed 20 students (55.6%) scored 100, nine students (25%) scored 90, and seven students (19.4%) scored 80. These findings indicate that most students thoroughly mastered the material, although a small number required more intensive guidance to improve learning outcomes in the subsequent cycle.

In Cycle II, evaluation data demonstrated that most students exhibited excellent and consistent material mastery. Of 36 students, the highest score remained 100 while the lowest was 80, with the class mean score increasing to 94.72. Scores of 90 and 100 dominated the distribution with frequencies of 17 and 18 respectively, while the median remained 100. Only one student scored 80, while 17 students scored 90 and 18 students achieved 100. These data indicate that nearly all students demonstrated solid and deep understanding of learning material. Only a few students still required additional support for continued academic performance improvement. This condition demonstrates that the applied learning model effectively improved overall student learning outcomes.

Discussion

Study findings confirm that Project-Based Learning (PjBL) application contributes significantly to improving student learning achievement. These findings align with research by Rani et al. (2021), which states that PjBL application contributes significantly to improving learning outcomes because it encourages students to be more active, creative, and innovative through heightened curiosity about studied material, making learning more effective and concepts more easily understood. This is evidenced by data showing significant mean score increases from the pre-

cycle stage (M = 81.33) to Cycle I (M = 93.89) and further increase in Cycle II (M = 94.72). The larger score increase from pre-cycle to Cycle I can be explained by the novelty effect of the PjBL method, which substantially boosted student motivation and participation after prior acclimatization to lecture methods. The smaller increase from Cycle I to Cycle II occurred due to limited improvement potential, as mean scores were already very high (93.89) with minimal room for further increase, despite more mature project implementation in Cycle II following teacher reflection and improvements.

In the pre-cycle phase, the learning process remained dominated by the lecture method, which proved ineffective in optimally improving student learning outcomes. This condition demonstrates that lecture methods cannot significantly impact student achievement improvement due to their one-way nature, which positions students as passive listeners in teaching and learning processes (Dulyapit & Lestari, 2024). A primary weakness of this approach is low student involvement in deep material understanding, ultimately reducing opportunities for developing critical and creative thinking skills. Additionally, Wulandari (2022) states that this approach forces students to listen to learning material, making the learning process tedious and causing drowsiness, resulting in passive student learning.

Entering Cycle I, significant changes in student learning outcomes emerged. This improvement resulted from direct student involvement in learning projects implemented through the PjBL model. Active involvement positively affected material comprehension and increased overall student participation. Hulkin et al. (2024) support this finding, stating that through Project-Based Learning (PjBL) implementation, students become more active and involved in learning processes, are able to apply concepts practically, and demonstrate increased learning motivation. Overall, PjBL encourages students to assume greater responsibility as citizens and prepares them for future challenges.

In Cycle II, student learning outcomes again demonstrated further improvement. Students appeared more enthusiastic and motivated to achieve higher learning outcomes. These findings align with research by Bulkini and Nurachadijat (2023), which revealed that PjBL application in learning processes can increase student active participation and strengthen their sense of responsibility for achieving learning outcomes. Thus, the PjBL learning model effectively improves learning quality and student learning outcomes sustainably.

Conclusion

Study results indicate that Project-Based Learning (PjBL) application to meeting management material in Class XI MPLB 2 at SMK Negeri 6 Surakarta contributed significantly to improving student learning outcomes, reflected in mean score increases from 81.33 in the pre-cycle stage to 93.89 in Cycle I, and further to 94.72 in Cycle II. Beyond cognitive aspects, PjBL positively affected affective and psychomotor aspects, including increased learning motivation, active student involvement, collaboration ability, and individual responsibility in project completion. These findings imply that PjBL serves as an effective learning strategy for developing critical, collaborative, creative, and communicative thinking skills relevant to office management workforce requirements while supporting Merdeka Curriculum implementation, which emphasizes competency-based and differentiated learning. However, this study has several limitations, including implementation duration of only one semester, dependence on teacher readiness in designing and facilitating projects, and variations in student learning independence levels requiring intensive assistance for some students. Therefore, further research is recommended with broader scope and longer duration across various conditions and different subjects, considering PjBL integration with other learning models that are more flexible and adaptive to student characteristics to optimize learning outcomes.

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