EFEKTIVITAS PEMBELAJARAN BERBASIS MASALAH DALAM MENINGKATKAN KEMAMPUAN BERPIKIR KRITIS SISWA

THE EFFECTIVENESS OF PROBLEM-BASED LEARNING IN IMPROVING STUDENTS' CRITICAL THINKING SKILLS

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Abstrak

Pembelajaran sejarah memiliki peran strategis dalam membentuk karakter, identitas nasional, serta mengembangkan keterampilan berpikir kritis siswa. Namun, metode pembelajaran yang masih didominasi ceramah membuat siswa kurang aktif dalam proses berpikir kritis. Penelitian ini bertujuan untuk mengetahui efektivitas model Problem-Based Learning (PBL) dalam meningkatkan kemampuan berpikir kritis siswa pada mata pelajaran Sejarah di SMK Muhammadiyah-Kalisat-Jember. Penelitian menggunakan pendekatan kuantitatif dengan desain quasi experiment tipe pretest-posttest control group design. Subjek penelitian adalah 60 siswa kelas XI yang dibagi menjadi dua kelompok, yaitu kelompok eksperimen yang menggunakan model PBL dan kelompok kontrol yang menggunakan metode konvensional. Data dikumpulkan melalui tes esai berpikir kritis berdasarkan indikator dari Ennis dan dianalisis menggunakan uji statistik parametrik. Hasil penelitian menunjukkan adanya peningkatan skor berpikir kritis yang signifikan pada kelompok eksperimen dibandingkan kelompok kontrol (p = 0,000). Dengan demikian, model PBL terbukti efektif dalam meningkatkan kemampuan berpikir kritis siswa dan dapat dijadikan alternatif strategi pembelajaran sejarah yang kontekstual dan partisipatif.

Abstract

History education has a strategic role in shaping character, national identity, and developing students' critical thinking skills. However, the dominance of the lecture method often results in students being less active in the critical thinking process. This study aims to determine the effectiveness of the Problem Based Learning (PBL) model in improving students' critical thinking skills in History subjects at SMK Muhammadiyah-Kalisat-Jember. This study uses a quantitative approach with a quasi-experimental design using a pretest-posttest control group design. The subjects of the study were 60 grade XI students who were divided into an experimental group (using the PBL model) and a control group (using conventional methods). Data collection was carried out through a critical thinking essay test based on Ennis indicators and analyzed using parametric statistical tests. The results showed a significant increase in critical thinking scores in the experimental group compared to the control group (p = 0.000). Therefore, the PBL model has proven effective in improving students' critical thinking skills and can be used as an alternative strategy for contextual and participatory history learning.

INTRODUCTION

History education plays a very strategic role in shaping character, national identity, and developing students' critical thinking skills. History is not only related to the presentation of chronological facts and past events but also serves as a reflective medium that enables learners to understand social, political, economic, and cultural relationships across time. Through history learning, students can build historical awareness, appreciate diversity, and cultivate empathy towards human experiences in the past, which ultimately contributes to the formation of an inclusive and tolerant character towards the past (Yuliana, 2023).

In 21st-century education, history is not only required as a medium for cultural or national heritage but also as an important means in developing higher-order thinking skills, such as critical thinking, creativity, problem-solving, argumentative skills, and reflective thinking. These skills are part of the Pancasila student profile outlined in the Merdeka Curriculum, which positions learners as active subjects in the learning process (Kemendikbudristek, 2022). Thus, history education should be directed towards equipping students with the ability to understand and critique information, rather than merely memorizing facts.

History as a discipline demands a deep understanding of historical context, cause-and-effect relationships, and the ability to interpret various historical sources in a thorough, objective, and multi-perspective manner (Damayanti, 2024). These abilities are important so that students not only understand what happened, but also why it happened, what its impact was, and what its relevance is to contemporary life. Through the right approach, history learning can become a medium for cognitive and affective transformation that fosters critical awareness of contemporary issues such as social conflict, injustice, and global climate change. Therefore, the approach to history education needs to transform from the conventional teacher-centered model to a more participatory, contextual, and problem-based approach that allows students to actively and meaningfully explore history (Latifah, 2024). Therefore, the process of learning History should no longer be trapped in a rote or memorization approach, but rather directed towards developing analytical and reflective thinking skills in students. History is not just about remembering dates and important figures, but about understanding context, interpreting changes, and evaluating the impact of past events on present and future conditions.

In practice, as is the case at Muhammadiyah Vocational School, history learning is still dominated by teacher-centered lecture methods that focus on one-way information transfer. This method often makes students passive, merely receiving information without being given the space to explore, question, and construct meaning from historical events critically and contextually. This condition impacts the low critical thinking skills of students, particularly in formulating meaningful questions, evaluating various historical information sources, and linking historical facts to contemporary issues (Nurfadilah, 2024).

The main challenge in history education is the lack of teaching approaches that allow for dialogue, analysis, and argumentation involving students' reasoning (Putri, 2024). This reinforces the need to implement innovative approaches such as Problem-Based Learning (PBL). PBL is a learning strategy that places real problems at the center of the learning process, encouraging students to think critically through activities such as information search, group discussions, and collaborative problem-solving (Susanti, 2023). In the context of history learning, PBL can be developed through the use of historical scenarios, case studies, or moral dilemmas that reflect the complexities of human life in the past. These scenarios can include ideological conflicts, social changes, and political debates

412

Suryadi. dkk. (The Effectiveness of Problem-Based Learning....)

that not only open up spaces for historical interpretation but also foster awareness of the plurality of perspectives and the importance of evidence-based thinking (Ramadhani, 2024).

The critical thinking skills developed through PBL align with the definition (Facione, 2015), which is the ability to think rationally, systematically, and reflectively in evaluating information, making decisions, and solving problems. Furthermore, Ennis identifies four main indicators of critical thinking: providing simple explanations, making inferences, providing further explanations, and determining strategies (Ennis, 1996). PBL, both practically and theoretically, is capable of addressing these four indicators.

In its implementation, students are encouraged to understand the historical context, evaluate historical sources, build arguments based on data, and formulate recommendations or conclusions based on logical reasoning (Rahmawati, 2024). The application of PBL in history education not only improves students' learning outcomes but also strengthens their ability to express opinions critically and defend arguments based on facts (Kurniawan, 2024). Therefore, the implementation of PBL becomes one of the pedagogical strategies that is not only relevant but also highly needed in providing contextual, meaningful history learning that empowers students' critical thinking. This study aims to determine the effectiveness of implementing the Problem-Based Learning (PBL) model in enhancing students' critical thinking skills in History subjects at Muhammadiyah Vocational School. By comparing students' learning outcomes before and after the implementation of PBL, it is hoped that this research will provide empirical contributions to the development of more meaningful history teaching strategies and foster students' critical thinking abilities.

METHOD

This research uses a quantitative approach with a quasi-experimental design aimed at determining the effect of the Problem-Based Learning (PBL) model on students' critical thinking skills in History subjects. The design used is a pretest-posttest control group design, where two groups of students are compared: the experimental group that receives instruction using the PBL model, and the control group that receives conventional instruction in the form of lectures and guided discussions. The research population consists of all 11th-grade students at SMK Muhammadiyah Kalisat Jember for the 2024/2025 academic year, with sampling using purposive sampling techniques based on academic ability equivalence and class availability, resulting in two classes, each consisting of 30 students; class XI-A as the experimental group and class XI-B as the control group. The research instrument is an essay test of critical thinking skills developed based on four indicators from Ennis, namely providing simple explanations, making inferences, providing further explanations, and determining strategies and tactics, with the context of the questions adjusted to the history material. The content validity of the instrument was obtained through expert review, and reliability was tested using the Alpha Cronbach test with a result of $\alpha = 0.86$, indicating a high level of reliability (Ghozali, 2021). Data collection techniques include pretests and posttests to measure students' critical thinking skills before and after the treatment, as well as observations to document the learning process. Data analysis was conducted using the latest version of SPSS software, starting with the normality test (Kolmogorov-Smirnov), homogeneity test (Levene's Test), independent t-test (Independent Sample T-Test) to determine differences in critical thinking abilities between groups, and paired t-test (Paired Sample T-Test) to determine improvements within each group. All analyses were conducted at a significance level of 5% ($\alpha = 0.05$), with significance criteria if the p-value < 0.05.

Suryadi & dkk. (The Effectiveness of Problem-Based Learning....)

413

RESULTS AND DISCUSSION

Result

1. Normality and Homogeneity Tests

Before further analysis is conducted, the data is first tested to determine the distribution and similarity of the variables as shown in the following Table 1:

Table 1. Results of the Normality Test (Kolmogorov-Smirnov)

Group	Type of Test	N	Sig. (p-value)	Distribution
Experiment	Pretest	30	0,200	Normal
Experiment	Posttest	30	0,172	Normal
Control	Pretest	30	0,189	Normal
Control	Posttest	30	0,156	Normal

Based on the results of the Kolmogorov-Smirnov normality test in Table 1, it was found that all data in each group, both the experimental group and the control group, showed significance values (p-values) greater than 0.05, namely 0.200 for the experimental pretest, 0.172 for the experimental posttest, 0.189 for the control pretest, and 0.156 for the control posttest. Therefore, it can be concluded that the data from these four groups are normally distributed. This result indicates that the normality assumption has been met, making the data suitable for analysis using parametric statistical tests such as the t-test, both for comparing pretest and posttest results within each group and for comparing results between the experimental and control groups.

Tabel 2. Result of Homogenity Test (Levene's Test)

Type of Test	F	Sig. (p-value)	Conclusion
Pretest	0,783	0,381	Homogeneous
Posttest	0,629	0,431	Homogeneous

Based on the results of the variance homogeneity test using Levene's Test shown in Table 2, a significance value (p-value) of 0.381 for the pretest data and 0.431 for the posttest data was obtained. Both values are greater than the significance level of 0.05, so it can be concluded that the variance of the data between the experimental group and the control group in both the pretest and posttest is homogeneous.

2. Description of Pretest and Posttest Results

Description of pretest and posttest results is conducted to determine the development of students' critical thinking skills before and after learning in each group. The pretest scores reflect the initial abilities of the students, while the posttest scores depict the achievements after undergoing the learning process, both with the Problem-Based Learning (PBL) model in the experimental group and conventional learning in the control group. The measurement results show that the average pretest scores between the two groups are relatively equal, indicating that before the treatment, there was no significant difference in initial critical thinking abilities. However, after the treatment, there was a greater increase in the average scores in the experimental group compared to the control group, indicating the effectiveness of the PBL

414

Suryadi. dkk. (The Effectiveness of Problem-Based Learning....)

model in enhancing students' critical thinking skills. The following are the average pretest and posttest scores for each group shown in Table 3.

Table 3. Description of Pretest and Posttest Results of Critical Thinking Ability

Group	Mean Pretest	Mean Posttest	Difference	Information
Ekxeriment (PBL)	56,47	82,93	+26,46	Significant increase
Control	55,73	68,40	+12,67	Moderate increase

Based on Table 3, it can be seen that the average pretest score in the experimental group is 56.47, while in the control group it is 55.73. The values indicate that the initial critical thinking abilities of the students in both groups were relatively equal before the treatment was given. This equivalence is important because it serves as a strong foundation for comparing the effectiveness of the treatment given to each group. After the treatment, which involved the implementation of the Problem-Based Learning (PBL) model in the experimental group and the conventional method in the control group, there was an increase in the average posttest scores in both groups. In the experimental group, the average posttest score increased to 82.93, while in the control group it increased to 68.40. The difference between the posttest and pretest scores in the experimental group was +26.46, while in the control group it was only +12.67. This indicates that the group receiving the PBL treatment experienced a significantly higher increase in critical thinking skills compared to the group learning with conventional methods. This improvement indicates that the PBL model is capable of stimulating students to think more critically through problem-solving activities, discussions, and reasoning based on the historical context provided.

3. **Results of the Paired Sample T-test and Independent Sample T-Test**

Table 4. Result of Paired Sample T-test

Group	t(df)	*Sig. (p-value)*	Information
Experiment (PBL)	-15,21(29)	0,000	There is a significant improvement from pretest to posttest.
Control	-8,84(29)	0,000	There was a significant improvement from pretest to posttest, but it was lower compared to the experimental group.

Based on the results of the Paired Sample T-Test in Table 4, it shows that there is a very significant difference between the pretest and posttest scores in the experimental group, with a t-value of (29) = -15.21 and p = 0.000 (p < 0.05). This indicates that the implementation of the Problem-Based Learning (PBL) model effectively enhances students' critical thinking skills. Meanwhile, in the control group, there was also a significant improvement, with a t-value of t(29) = -8.84 and p = 0.000. However, the improvement in this group was relatively smaller compared to the experimental group, indicating that the conventional method still had an impact, but not as strong as the impact caused by PBL.

Table 5. Result of Independent Sample T-Test

Comparison		t(df)	Sig. (p-value)	Information
Posttest Control	Experiment-	6,75 (58)	0,000	There is a significant difference between the experimental group and the control group.

Based on the results of the Independent Sample T-Test in Table 5, the findings are reinforced, where there is a significant difference between the posttest scores of the experimental group and the control group with t(58) = 6.75 and p = 0.000. This means that the PBL learning model is statistically superior in enhancing students' critical thinking skills compared to conventional teaching methods.

Discussion

The results of this study indicate that the implementation of the Problem-Based Learning (PBL) model has a significant impact on improving students' critical thinking skills in History subjects at SMK Muhammadiyah Kalisat Jember. This can be seen from the difference in pretest and posttest scores between the experimental group and the control group, where the experimental group that received treatment in the form of problem-based learning experienced a significantly higher increase in critical thinking scores. Based on the results of the independent t-test, a significance value (p-value) < 0.05 was obtained, indicating a significant difference between the posttest results of the two groups. These findings support the theory (Barrows, 2000) that PBL is effective in stimulating higher-order thinking skills, as it is designed to actively engage students in facing authentic problems, exploring information, discussing, and reflecting on various alternative solutions.

Through this process, students not only understand historical facts but also are able to relate historical events to social, political, economic, and moral contexts in depth. The PBL approach aligns with constructivist theory, where students build knowledge through direct experience and investigation of real-world problems. In the context of history learning, the application of PBL allows students to explore past events through complex case studies such as political conflicts, ethical dilemmas, and social transformations, enriching the meaning of learning.

Thus, students are not only asked to memorize chronologies but are also encouraged to assess, critique, and respond to historical situations reflectively and argumentatively. This is in line with the principles of meaningful learning, where active student engagement in constructing understanding is key to developing critical thinking competence. The success of PBL implementation in this study is reflected in the improvement of the four critical thinking indicators according to Ennis (1996), namely: (1) providing simple logical explanations, (2) making inferences based on evidence, (3) expanding explanations with various perspectives, and (4) determining strategies and solutions to historical problems. These indicators developed more in the experimental group compared to the control group, which only followed conventional teaching methods such as lectures and guided discussions. These results are also supported by the findings of Rahmawati (2024), which state that the implementation of PBL in history learning significantly enhances students' critical thinking skills through the presentation of challenging learning contexts and the encouragement of collaboration.

Additionally, a recent study by Nugroho (2023) shows that the PBL model consistently enhances learning outcomes and critical thinking skills across various subjects, especially when combined with a reflective approach and the use of contextual learning resources. In history learning, the inquiry context offered by PBL creates space for students to investigate cause-and-effect

416

Suryadi. dkk. (The Effectiveness of Problem-Based Learning....)

relationships, compare perspectives, and develop argumentative skills that are essential in understanding history. The shift in students' roles from passive recipients to active subjects of learning is one of the main advantages of this model, as students are involved in formulating questions, examining sources, discussing in groups, and presenting their reflections. Thus, it can be concluded that the implementation of PBL in History learning has proven to be more effective than the lecture method in developing students' critical thinking skills. PBL not only enhances cognitive learning outcomes but also shapes reflective, independent, and collaborative learning characters. Therefore, this model deserves to be considered as a primary approach in the transformation of history learning at the secondary education level, particularly in equipping students to face the challenges of analytical and critical thinking in the 21st century.

CONCLUSION AND RECOMENDATIONS

Based on the research results, it can be concluded that history learning using the Problem-Based Learning (PBL) model significantly enhances students' critical thinking skills compared to conventional learning. The application of PBL provides a participatory and contextual learning experience through the presentation of real problems that challenge students to analyze, make inferences, provide further explanations, and determine problem-solving strategies. This is reflected in the results of the paired t-test, which showed a significant increase between pretest and posttest scores in the experimental group, as well as in the independent t-test, which showed a significant difference between the experimental and control groups. These findings reinforce the experts' opinion that problem-based learning not only enhances content mastery but also develops higher-order thinking skills that are highly needed in 21st-century education. In the context of history subjects, PBL makes students more active and reflective in understanding historical events, linking past information with contemporary issues, and building critical and tolerant historical awareness. Therefore, the PBL model is highly relevant to be systematically integrated into history learning to create more meaningful, transformative learning and support the realization of the Pancasila student profile.

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Suryadi & dkk. (The Effectiveness of Problem-Based Learning….)

417

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418

Suryadi. dkk. (The Effectiveness of Problem-Based Learning....)