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The Effect of Problem Based Learning Model Assisted with Poster Media on Students' Critical Thinking Skills

Lutfiahtulzanah[1*], Mayarni[2]

[1,2] Pendidikan Guru Sekolah Dasar, Universitas Muhammadiyah Prof. DR Hamka, Jakarta, Indonesia

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ABSTRAK

Kurangnya kemahiran analisis siswa sekolah dasar terlihat dari kurang terlatihnya siswa dalam menjawab soal-soal kontekstual yang memerlukan analisis. Oleh karena itu, kemampuan untuk mengevaluasi pekerjaan siswa secara kritis terbilang terbatas. Penelitian ini bertujuan untuk melihat dampak dari model pembelajaran PBL yang menggunakan media poster terhadap pemahaman siswa dalam menyampaikan pendapat pada pelajaran IPAS sekolah dasar. Riset ini menggunakan metodelogi kuantitaif eksperimen memakai desain nonequivalent control grup design. Populasi yang digunakan sebanyak 60 siswa yang terdiri dari kelas eksperimen dan kelas kontrol. Analisis Rational menunjukkan bahwa persen N-Gain pada kelompok eksperimen lebih unggul dibandingkan dengan persen N-Gain pada kelompok kontrol, dengan persen N-Gain kelompok eksperimen sebesar 72,44% lebih unggul dibandingkan dengan persen N-Gain kelompok kontrol sebesar 38,61%. Abstrak memaparkan secara ringkas tentang masalah, tujuan, metode, hasil dan kesimpulan. Hasil uji paired sample t-test, ditemukan bahwa nilai sig. (2-tailed) sebesar 0,000 < 0,05. Riset menujukan bahwa penggunaan PBL berbantuan media poster memberikan umpan balik yang signifikan terkait kemampuan siswa dalam berpikir kritis. Dari data tersebut dapat dinyatakan bahwa adanya pengaruh PBL berbantuan media poster mengenai kemampuan untuk mengamati secara kritis siswa di pelajaran IPAS Kelas V.

ABSTRACT

The lack of analytical proficiency among elementary school students is evident from their insufficient training in answering contextual questions that require analysis. Consequently, their ability to critically evaluate their work is quite limited. This study aims to examine the impact of the PBL model using poster media on students' understanding of expressing opinions in elementary science and social studies (IPAS) lessons. This research employs a quantitative experimental methodology using a nonequivalent control group design. The population consists of 60 students divided into an experimental group and a control group. Rational analysis shows that the N-Gain percentage in the experimental group is superior to that in the control group, with the experimental group achieving an N-Gain percentage of 72.44%, compared to 38.61% in the control group. The results of the paired sample t-test found that the sig. (2-tailed) value was 0.000 < 0.05. The research indicates that the use of PBL assisted by poster media provides significant feedback on students' critical thinking skills. From this data, it can be stated that there is an impact of PBL assisted by poster media on students' ability to observe critically in fifth-grade IPAS lessons.

1. INTRODUCTION

The Merdeka Curriculum gives teachers the opportunity to act as facilitators to shape the character of their students to be analytical, innovative, creative and able to overcome problems of communication skills (Ariga, 2022; Asfiati & Mahdi, 2020). Critical thinking skills are referred to as an advantage that should be developed by students in order to overcome problems and as provisions in the future (Aini et al., 2019; Fatmawati & Sujatmika, 2018). Through analyzing exercises, students can improve their dexterity in problem solving. In problem-solving activities, student must apply critical thinking skills to analyze problems and identify patterns based on their understanding (Awaliyah et al., 2024; Siregar et al., 2019). Using critical thinking skills, students can bypass the barriers of the processes related to organizing, managing, and reinforcing knowledge as part of the overall learning process (Evi & Indarini, 2021; Ikhsan et

*Corresponding author
E-mail addresses: lulumulyanah7@gmail.com (Lutfiahtulzanah)

al., 2017). However, the reality is that critical thinking skills in schools today are still very low (Andayani et al., 2020; Suhirman & Khotimah, 2020).

Including in science learning, students' analytical skills are relatively small, due to the lack of students' ability to analyze a problem (Hasnawati et al., 2021; Nugraha, 2018). In addition, the ability to analyze students in social studies lessons is still below average, because in the implementation of learning students are only focused on remembering material without the need to understand the existing material (Susilawati et al., 2020). Therefore, it is necessary to foster students' interpretation through logical reasoning without anxiety in expressing opinions, so the correct learning reference is needed to see the improvement of students' analysis (Al Hadiq, 2023). So, in conclusion, students' science and social studies learning is still relatively low, so the correct learning model and media are needed to improve students' understanding to argue logically and convey ideas so that it can increase their capacity to analyze a problem.

The learning model to foster students' analytical reasoning is to use the PBL learning model, because in this method the teacher no longer uses the lecture method so that students do not constantly listen to the educator's presentation but students are asked to be agile and can convey critical thinking in existing problems (Ariyani & Prasetyo, 2021). Problem-based learning can be a preference to grow students' activeness in solving problems (Fatmawati & Sujatmika, 2018). In addition, the utilization of problem-based learning is a revolution in the educational paradigm that is expected to overcome problems in solving problems and also provide confidence to succeed (Al Hadiq, 2023). The purpose of applying this problem-based learning model is to help students improve their logical thinking skills and problem-solving abilities so that students are expected to be able to analyze and understand problems to start the learning process. As such, PBL is an effective way of teaching, as it combines a hands-on method with an approach that helps students to think critically and proactively about problems, thereby helping them to overcome difficulties in solving problems. Media can be used as a tool to illustrate or highlight certain aspects of the educational field. Media that can help improve critical thinking skills in the teaching process among the types of media that can be used are posters. The use of poster media is one method that can be used to help and facilitate students in understanding a subject matter (Nurfadhillah et al., 2021). Poster media is a tool to facilitate teachers in the learning process and has a good contribution to increase student inspiration in order to improve critical thinking skills (Salmitha et al., 2021). In addition, the purpose of using poster media is to help students not only understand the message of the poster, but also learn how to implement it (Intaha et al., 2020). This means that the PBL learning model with poster media can improve students' critical thinking skills in analyzing problems and can hone one's potential to think critically.

Based on the analysis of the research findings, the researcher has decided to seek solutions to the issues arising from elementary school students' critical thinking by exploring educational theories that can assist them in understanding these problems. One such approach is the use of problem-based learning, which is widely recognized as a teaching strategy that utilizes real-world issues from the surrounding environment as a starting point to develop advanced understanding and knowledge of concepts through essential thinking and problem-solving skills. This method allows students to demonstrate progress in accordance with their potential and abilities, rather than being confined solely to theoretical knowledge. In addition, students can work in groups to communicate, define problems, and come up with appropriate solutions to given problems.

This is supported by previous research which found that there were substantial variations in critical thinking skills between groups of students using conventional learning models and students using problem- based learning models assisted by Canva-based animation media (Purbarani et al., 2018). In addition, in the previous research indicates that through the results of research and analysis, if the Independent Sample T-test has an accuracy level of 0.002 <0.005 (2-tailed), it shows that Ho is rejected and Ha is accepted (Yampap & Hasyda, 2023). There are advantages to the application of problem-based learning related to students' ability in critical thinking skills. From these findings, the objective of this research is to analyze how the support of the PBL model assisted by poster media affects students' ability to think critically in the IPAS curriculum in elementary schools (Yampap & Hasyda, 2023).

2. METHOD

This research uses a Quantitative approach. Quantitative research is a methodology that uses data, especially numerical data, to improve the analysis of research findings through objectively determined statistical analysis. The variables used in statistical analysis come from the unit of analysis targeted for measurement, also known as variables. The quantitative approach used in this study uses the Quasi Experimental method. The Quasi Experimental method is a research method that includes a control group but does not have the ability to control outside variables that can affect the implementation of the experiment. The research design used in this study is Nonequivalent Control Group Design. Nonequivalent

Control Group Design is an experimental research method that is usually used to compare control groups and experimental groups, where subjects or participants are not randomly selected and randomization is not possible. In this study, the researcher aims to investigate whether the use of Problem-Based Learning (PBL) equipped with poster media has a significant impact on the critical thinking skills of fifth grade students in the subjects of Natural Sciences and Social Sciences (IPA and IPS) at SD Negeri Duri Kosambi 01 Pagi.

The study population consisted of 60 fifth grade students of West Jakarta SDN, which were divided into two groups: experimental group and control group. Data was collected using an essay test consisting of 12 validated essay questions to assess students' ability to draw conclusions after receiving instructions. The results of this study show that critical thinking skills are demonstrated through essays as a model of critical writing skills. This test was given to the comparison group and the experimental group. Data analysis included N-Gain test, Normality test, and Homogeneity test, followed by paired sample t-test.

3. RESULT AND DISCUSSION

Result

The results of the average N-Gain Score test indicate that the calculation of N-Gain in the experimental class reached 72.44447, which falls into the high category, with a minimum value of 40% and a maximum value of 100%. Meanwhile, the control class achieved an average N-Gain score of 38.61114, with a minimum score of 7.40% and a maximum score of 75%. Therefore, it can be concluded that the implementation of problem-based learning strategies using poster media supports the development of students' critical thinking skills.

Table 1. Normality Test Results

Group	Statistic	df	Sig.	Statistic	df	Sig.
Pre-Test Experimental	0.138	30	0.152	0.935	30	0.068
Post-Test Experimental	0.133	30	0.182	0.949	30	0.161
Pre-Test Control	0.138	30	0.153	0.945	30	0.123
Post-Test Control	0.113	30	0.200	0.956	30	0.249

Based on the Table 1, the Sig value for the experimental class pre-test is 0.152 > 0.05 and the post-test is 0.182 > 0.05. For the control class, the Sig value for the pre-test is 0.153 > 0.05 and the post-test is 0.200 > 0.05. Based on these data, it can be concluded that both the experimental and control classes have a significant value (Sig) > 0.05, indicating that the initial data in this study are normally distributed.

Table 2. Homogeneity Test Results

Parameters	Levene Statistic	df1	df2	Sig.
Based on Mean	0.008	1	58	0.927
Based on Median	0.000	1	58	1.000
Based on Median and with adjusted df	0.000	1	53.045	1.000
Based on trimmed mean	0.006	1	58	0.940

The homogeneity provisions in the study if the significant value (sig) > 0.05 then the data has a homogeneity variance and if sig < 0.05 then the data is not homogeneous. The homogeneity test in the study was carried out with the help of IBM SPSS Statistics 24. From Table 2, it can be seen that the significance value in the (sig) column is 0.927>0.05. So, it can be concluded that the variance of the experimental and control class data is homogeneous.

Table 3. Hypothesis Test Results

Group		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2 - tailed)
					Lower	Upper			
Pair 1	Pretest - Posttest	-28.700	5.639	1.030	-30.806	-26.594	-7.874	29	0.000

According to Table 3, it is known that sig. (2-tailed) of 0.000 <0.05, it can be concluded in the paired sample t-test that H_0 is rejected and H_1 is accepted. Furthermore, a t-test analysis will be carried out of

27.874. To determine the significance level of the difference, the t-table value = 1.671 must be used, then 27.874> 1.671. Thus, it can be concluded that "there is an increase in students' critical thinking skills by using the Problem-based learning model assisted by poster media in IPAS subjects" in other words, the hypothesis is accepted.

Discussion

The findings of this study, which indicate a significant improvement in students' critical thinking skills through Problem-Based Learning (PBL) assisted by poster media, contribute to a broader understanding of how innovative instructional strategies can enhance cognitive abilities. This result aligns with a substantial body of research that emphasizes the efficacy of PBL in promoting critical thinking, analytical reasoning, and problem-solving among students. By integrating poster media into the learning process, this study adds a novel dimension to the existing literature by highlighting the role of visual aids as a complementary tool in strengthening the learning outcomes of PBL. In comparison with previous research, these findings are consistent with previous study, which emphasizes that PBL encourages students to engage more deeply with content by involving them in real-world problem-solving (Ariyani & Prasetyo, 2021; Siregar et al., 2019). This study demonstrated that PBL requires students to take an active role in their learning process, promoting self-directed inquiry, collaborative learning, and critical thinking (Ananda et al., 2023). This study builds on that notion by incorporating poster media, which may have further enhanced students' engagement and ability to conceptualize and solve problems visually.

The use of poster media as a visual aid in the experimental class complements Cognitive Theory of Multimedia Learning, which posits that students learn more effectively when information is presented through a combination of verbal and visual means (Intaha et al., 2020; Salmitha et al., 2021). According to this theory, visual aids such as posters can improve cognitive processing by helping students organize and integrate knowledge (Harsono et al., 2018; Nurfadhillah et al., 2021). In this study, the use of posters allowed students to better visualize and interpret the problems posed by the PBL activities, which likely facilitated a more comprehensive understanding of the subject matter, ultimately leading to improved critical thinking skills. The high N-Gain score (0.7244) achieved by the experimental group further underscores the synergy between PBL and poster media in enhancing critical thinking.

PBL environments lead to sustained improvements in critical thinking skills compared to traditional learning methods. Previous research demonstrated that PBL encourages learners to analyze complex issues, formulate hypotheses, and develop solutions through iterative reflection and inquiry (Al-Najar et al., 2019; Hussin et al., 2018). This process closely mirrors the steps involved in critical thinking. In this study, students in the experimental group were tasked with addressing problems presented in poster form, which likely stimulated reflective thinking and problem-solving activities. The significant difference between the experimental and control groups, as evidenced by the paired sample t-test results (sig value of 0.000 and t-count value of 27.874), corroborates the findings of Savery's research by illustrating the superiority of PBL in fostering higher-order thinking skills when compared to conventional teaching methods.

Additionally, the use of posters in this study can be linked to Vygotsky's theory of social constructivism, which emphasizes the importance of social interaction and collaborative learning in cognitive development (Jumaat et al., 2017; Tamur & Juandi, 2020). Posters likely served as a focal point for group discussions and collaborative problem-solving in the experimental group, allowing students to externalize their thinking, share ideas, and co-construct knowledge. This social interaction is a key element of PBL and contributes to the development of critical thinking as students are exposed to diverse perspectives and are required to justify their reasoning in group settings. From a broader perspective, the combination of PBL and poster media in this study reflects the growing trend in educational research towards integrating multiple instructional strategies to maximize learning outcomes. By merging the inquiry-based, student-centered approach of PBL with the cognitive benefits of visual learning tools, this research highlights the importance of multimodal learning environments in fostering critical thinking. The results of this study not only align with but also extend the findings of previous research, suggesting that the integration of visual aids such as posters into PBL can lead to more profound cognitive benefits compared to PBL or traditional instruction alone.

4. CONCLUSION

This study compared the effect of PBL using poster media on experiential classes and conventional classes on control classes in terms of students' critical reasoning skills. The analysis was carried out by calculating the pre-test and post-test results and conducting data homogeneity and normality tests. Based on paired sample t-test statistics, the significant level (sig) for 2-tailed data reached 0.000, which is smaller

than the 0.05 significance level. This indicates that there is a significant difference between students' critical thinking skills before and after using the PBL learning model assisted by poster media in the experimental class. Thus, it can be concluded that students who successfully completed the PBL learning model using poster media assistance experienced an increase in critical thinking and analysis skills compared to the previous condition. All of this supports the research hypothesis which shows the positive impact of PBL on students' ability to think critically with the help of poster media. This strengthens the idea that PBL-based poster media can be effectively used to improve students' ability to think critically during IPAS learning in class V SDN Duri Kosambi 01 Pagi.

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