International Journal of Social Science, Educational, Economics, Agriculture Research and Technology (IJSET) | ISSN (e) : 2827-766X
Volumes 4 No. 7 (2025)

THE INFLUENCE OF THE PROBLEM BASED LEARNING MODEL ON STUDENTS' LEARNING OUTCOMES IN SOCIAL STUDIES SUBJECT OF GRADE VIII AT STATE JUNIOR HIGH SCHOOL 3 P EMATANGSIANTAR

Rahmat Pauzi Butarbutar[1]*, Anggun Tiur Ida Sinaga[2] , Tumpal Manahara Siahaan[3]
[1,2,3] Universitas HKBP Nommensen Pematangsiantar
Corresponding E-mail: rahmatpauji1234@gmail.com, sinagaangguntiur@gmail.com

Received	: 21 May 2025	Published	: 28 July 2025
Revised	: 29 May 2025	DOI	: https://doi.org/10.54443/ijset.v4i7.932
Accepted	: 17 June 2025	Publish link	: https://www.ijset.org/index.php/ijset/index

Abstract

This study aims to determine the influence of the Problem Based Learning (PBL) model on students' learning outcomes in the Social Studies (IPS) subject for Grade VIII at SMP Negeri 3 Pematangsiantar. The background of this research is based on the low learning outcomes of students, which are caused by the lack of active student involvement during the learning process. The PBL model was chosen because it emphasizes student involvement in solving real problems, which is expected to improve both understanding and learning outcomes. This research employs a quantitative approach with a quasi-experimental method. The research design used is the Nonequivalent Control Group Design involving two classes, namely class VIII-1 as the experimental group that applied the PBL model, and class VIII-2 as the control group that received conventional learning. Data collection techniques were carried out through pre-test and post-test. Instrument testing included validity, reliability, normality, homogeneity tests, and hypothesis testing using the Independent Samples t-Test with the assistance of SPSS version 26. The results of the study show that there is a significant difference in learning outcomes between students who were taught using the PBL model and those who were taught using conventional methods. The significance value in the t-test was 0.001 < 0.05, with the average N-Gain score of the experimental class being 44.67% and the control class being 31.24%. This indicates that the application of the PBL model has a significant effect on improving student learning outcomes.

Keywords: ***Problem Based Learning, Learning Outcomes, Social Studies***

INTRODUCTION

Education is the primary foundation for a nation's development, as it fosters individual potential, fostering faith, piety, and noble character, as well as possessing the knowledge and skills to contribute effectively to society. According to Law Number 20 of 2003 concerning the National Education System, education aims to develop capabilities and shape the character and civilization of a dignified nation, in order to enhance the nation's intellectual development. In this context, teaching and learning activities play a crucial role as a means to achieve these national education goals. An effective learning process is key to achieving optimal learning outcomes for students. At the Junior High School (SMP) level, Social Studies (IPS) plays a crucial role in equipping students with knowledge and understanding of social, economic, historical, and geographical aspects. However, the implementation of IPS learning often faces challenges in the form of a lack of active student engagement in the learning process. This is demonstrated by low student learning outcomes, reflected in scores below the Minimum Completion Criteria (KKM). Initial observations at SMP Negeri 3 Pematangsiantar show that the majority of students scored in the fair to poor category, with only 8.06% achieving the excellent category. This situation demonstrates the need for innovation in learning approaches to improve the quality of student learning outcomes.

The learning model commonly used at SMP Negeri 3 Pematangsiantar is Teacher-Centered Learning (TCL), in which the teacher plays a dominant role as a source of information, while students are merely passive recipients of information. This model tends to be monotonous, with minimal interaction, and does not provide space for students to explore critical thinking or problem-solving skills. This is in line with Ruseffendi's (2005) opinion, which states that conventional learning such as TCL emphasizes memorization over conceptual understanding. This condition results in low student engagement, which ultimately has a negative impact on

learning outcomes. As an alternative to conventional approaches, the Problem-Based Learning (PBL) model offers a more innovative solution. PBL emphasizes active student involvement in solving real-world problems as a means of understanding concepts. Arends (2012) stated that PBL can develop students' critical thinking and problem-solving skills because they are directly involved in the investigation process and group discussions. Furthermore, PBL facilitates meaningful learning that is relevant to students' daily lives. This is crucial for increasing student motivation and engagement in learning.

The effectiveness of the PBL model has been supported by various previous studies. Nurhadi (2017) found that implementing the PBL model significantly improved student learning outcomes, with a 20% increase compared to conventional learning models. Another study by Megawati and Octamaya (2022) also showed that the classical mastery rate in social studies learning increased dramatically from 47.36% to 92.10% after implementing PBL. These findings reinforce the notion that interactive and contextual learning models can improve the quality of learning and student learning outcomes. Based on the urgency and empirical facts, this study was conducted to evaluate the effect of the implementation of the Problem Based Learning model on student learning outcomes in social studies in grade VIII of SMP Negeri 3 Pematangsiantar. This study is expected to provide a real contribution to improving the quality of education, particularly in the use of a more participatory and contextual learning approach in social studies learning.

LITERATURE REVIEW

Student Learning Outcomes

Learning outcomes are the primary benchmark for assessing the success of the educational process. According to Sudjana (2016), learning outcomes are the abilities students acquire after going through the learning process, encompassing knowledge, attitudes, and skills. The success of learning outcomes can be seen from changes in student behavior after receiving instruction. Purwanto (2002) emphasized that learning outcomes reflect students' success in internalizing the material presented. Therefore, learning outcomes are a direct indicator of the effectiveness of the learning model or approach used. According to Bloom (1956), there are three main domains of learning outcomes: cognitive, affective, and psychomotor. The cognitive domain encompasses aspects of thinking, such as knowledge and understanding; the affective domain encompasses attitudes, values, and interests; and the psychomotor domain encompasses physical skills or concrete actions. These three domains must be considered equally in teaching and learning activities. In the context of social studies learning, the cognitive and affective domains are very dominant because this subject demands conceptual understanding and reflection on social values. Therefore, a learning approach that can address these three domains is necessary to improve the quality of learning outcomes as a whole.

Problem Based Learning (PBL)

Problem-Based Learning (PBL) is a student-centered learning model that aims to develop critical thinking skills through solving real-world problems. Arends (2012) defines PBL as an approach that engages students in an investigation process into an authentic and relevant problem. In PBL, students not only acquire knowledge but also learn to analyze, formulate solutions, and collaborate in groups. The teacher acts as a facilitator, not a central source of information. This approach aligns with the principles of active learning and constructivism. The steps of PBL include problem identification, data collection, discussion and exploration of solutions, and presentation and reflection of results. Barrows (1996) emphasized that the success of PBL depends heavily on the quality of the problem presented, as it must be challenging and encourage in-depth exploration. According to Hmelo-Silver (2004), PBL not only encourages students to understand the content but also the thinking process and teamwork. Therefore, this model is considered effective in improving learning outcomes, especially in the context of social materials that require complex understanding and argumentative skills.

Various empirical studies have shown that PBL has a positive impact on improving student learning outcomes. Megawati and Octamaya (2022) reported that the application of PBL in social studies learning increased student learning completion from 47.36% to 92.10% in two cycles. Another study by Permadani (2023) showed an N-Gain value of 0.56 for students in an experimental class (using PBL), compared to 0.44 for the control class. Similar results were found by Alda and Dedy (2022), who found a significant difference between the learning outcomes of students taught using PBL and those taught using conventional methods. These data demonstrate the consistent effectiveness of PBL in improving student academic achievement.

The Relevance of PBL in Social Studies Learning

Social Studies (IPS) subjects contain complex and analytical material, such as social conflict, interpersonal interactions, and societal dynamics. Much of the material in Social Studies requires conceptual understanding that requires more than rote memorization, but also critical and reflective thinking skills. Therefore, approaches such as Problem-Based Learning (PBL), which places students in contextual situations to solve real-life problems, are highly appropriate for social studies learning. Through discussions, case analysis, and social problem-solving, students are encouraged to understand concepts not only theoretically but also through their application to everyday life (Widiasworo, 2018). The use of PBL can also increase active student participation, which has been a major weakness in conventional learning models such as Teacher-Centered Learning (TCL). In TCL, students are often passive and simply receive information from the teacher without the opportunity for exploration. In contrast, in PBL, students act as researchers, decision-makers, and problem-solvers. This has a direct impact on increasing motivation and learning engagement, two key factors in achieving optimal learning outcomes (Kurniasih & Berlin, 2015). Thus, the application of PBL has great potential in improving the quality of social studies learning at the junior high school level.

METHOD

Research Design

This study used a quantitative approach with a quasi-experimental method. The research design used was a Nonequivalent Control Group Design, which involved two different class groups without random assignment. The experimental group received treatment in the form of the application of the Problem Based Learning (PBL) learning model, while the control group received conventional learning with the Teacher Centered Learning (TCL) model. This design allowed researchers to compare the effectiveness of the two learning approaches on student learning outcomes. Internal validity was maintained through the equalization of material and learning time between the two groups.

Participants

The population in this study was all eighth-grade students of SMP Negeri 3 Pematangsiantar in the 2024/2025 academic year, consisting of 10 classes with a total of 313 students. The sampling technique used cluster random sampling, because the population is divided into natural groups (classes). The sample consisted of two classes, namely class VIII-3 as the experimental group (31 students) and class VIII-2 as the control group (32 students). Class selection was carried out randomly to maintain the objectivity of the results. All participants have received uniform learning materials according to the curriculum.

Variables

This study consists of two main variables. The independent variable is the Problem-Based Learning (PBL) model, a model that emphasizes solving real-world problems as the basis of learning. The dependent variable is student learning outcomes in Social Studies (IPS). Learning outcomes are measured based on pre-test and post-test scores. This study aims to determine whether there are significant differences in learning outcomes between students taught using PBL and those taught using the TCL method.

Instruments and Data Collection

The main instrument in this study was a written test consisting of 25 multiple-choice questions, structured based on basic competency indicators for the social conflict material. This test served as a pre-test and post-test. Instrument validity was assessed using product-moment correlation, while reliability was assessed using Cronbach's alpha. In addition to the test, supporting data were collected through observation and documentation. All data were collected over a two-week period during the study.

Data Analysis

Pre-test and post-test data were analyzed using descriptive and inferential statistics. The average of each group's pre-test and post-test scores was calculated and compared using an independent samples t-test using SPSS version 26. Gain score analysis (normalized gain) was also conducted to measure the proportional improvement in learning outcomes. The normality test was conducted using the Shapiro-Wilk test, while the homogeneity test was conducted using Levene's Test. Significance was determined at the $\alpha = 0.05$ level.

Ethical Considerations

The entire research process was conducted in accordance with ethical principles of educational research. Approval was obtained from the principal of SMP Negeri 3 Pematangsiantar and the social studies teacher. Student participation was voluntary and had no impact on their formal academic assessment. Participants' identities were kept confidential, and data were used solely for research purposes. The researchers also committed to non-discriminatory treatment between groups during the learning process.

RESULTS AND DISCUSSION

This research was conducted at SMP Negeri 3 Pematang Siantar on eighth-grade students. Before being applied to the main sample, the research instrument was first tested on students in grades VIII-5 who were not included in the experimental or control groups. The purpose of this trial was to determine the validity and reliability of the questions. After the instrument was declared feasible, the research was conducted in grades VIII-1 as the experimental class using the Problem Based Learning (PBL) model, and grade VIII-2 as the control class using conventional learning methods. The discussion focused on comparing learning outcomes between the two classes before and after the treatment.

Instrument Test Results

Validity Test

Validity testing is conducted to determine the extent to which the items in the instrument are able to measure what they are supposed to. In this study, the validity test was conducted on a multiple-choice instrument with 30 items, which was piloted on students in grades VIII-5 of the UPTD SMP Negeri 3 Pematangsiantar. This validity test uses the Pearson Product Moment correlation technique. The correlation results are then compared with the r-table value at a significance level of 5% ($\alpha = 0.05$). The number of respondents in this study was 32 students, so the degrees of freedom (df) = n – 2 = 32 – 2 = 30. Based on the r-table, it is known that the r-table value at df = 30 is 0.349.

Table 1 Validity Test

No	r-count	r-table	Information
1	0.642	**0.349**	**Valid**
2	0.488	**0.349**	**Valid**
3	0.483	**0.349**	**Valid**
4	0.525	**0.349**	**Valid**
5	0.344	**0.349**	**Invalid**
6	0.265	**0.349**	**Invalid**
7	0.500	**0.349**	**Valid**
8	0.538	**0.349**	**Valid**
9	0.757	**0.349**	**Valid**
10	0.439	**0.349**	**Valid**
11	0.548	**0.349**	**Valid**
12	0.764	**0.349**	**Valid**
13	0.553	**0.349**	**Valid**
14	0.517	**0.349**	**Valid**
15	0.554	**0.349**	**Valid**
16	0.488	**0.349**	**Valid**
17	0.347	**0.349**	**Invalid**
18	0.459	**0.349**	**Valid**
19	0.312	**0.349**	**Invalid**
20	0.472	**0.349**	**Valid**
21	0.623	**0.349**	**Valid**
22	0.459	**0.349**	**Valid**
23	0.406	**0.349**	**Valid**
24	0.465	**0.349**	**Valid**
25	0.534	**0.349**	**Valid**
26	0.446	**0.349**	**Valid**
27	0.488	**0.349**	**Valid**

No	r-count	r-table	Information
28	*0.399*	***0.349***	**Valid**
29	0.587	**0.349**	**Valid**
30	0.337	**0.349**	**Invalid**

(Source: data processed by researchers using Spss 26)

Based on the calculation results, of the 30 questions that have been tested, there are 25 questions that are declared valid because the calculated r-value is greater than the r-table, and 5 questions are declared invalid because the calculated r-value is smaller than the r-table. For time efficiency and because the number of valid questions is sufficient, the researcher decided to use the 25 valid questions in the next data collection stage.

Reliability Test

After conducting a validity test and obtaining 25 valid statement items, a reliability test was conducted to determine the extent to which the instrument could produce consistent results. The reliability test was conducted using SPSS version 26 and the Cronbach's Alpha technique. The results of the reliability test are shown in the following table:

Table 1 Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.739	31

(Source: data processed by researchers using Spss 26)

Based on the data processing results, a Cronbach's Alpha value of 0.739 was obtained. Referring to Table 3.5, the Item Reliability Category, this value is in the interval of 0.60–0.799, which is included in the strong category. Thus, it can be concluded that this research instrument has a strong level of reliability and is suitable for use in data collection in this study.

Data Normality Test

After the reliability test, a normality test was conducted to determine whether the pre-test and post-test data in the experimental and control classes were normally distributed. This normality test was conducted using SPSS version 26 using the Kolmogorov-Smirnov method. The results of the data normality test are presented in Table 4.4 below:

Table 3 Normality Test

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pre_kontrol	.107	31	.200*	.965	31	.394
post_kontrol	.146	31	.089	.953	31	.192
pre_eksperi	.112	31	.200*	.977	31	.717
post_eksperi	.120	31	.200*	.946	31	.123

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

(Source: data processed by researchers using Spss 26)

Based on the results in the table, it was found that the significance values of all groups were greater than 0.05, namely the control pretest (0.200), control posttest (0.200), experimental pretest (0.200), and experimental posttest (0.089). Because all significance values were greater than the 0.05 significance level, it can be concluded that the four data groups are normally distributed. Therefore, the data meets the assumption of normality and can be used for further statistical analysis.

N-Gain Score Test

The N-Gain test is used to measure improvements in student learning outcomes by comparing pre-test and post-test scores. N-Gain (Normalized Gain) indicates the extent to which learning effectiveness can improve students' understanding of the material being taught. The N-Gain score interpretation criteria refer to the classifications described in Chapter III.

The N-Gain test was applied to the experimental class and the control class, as presented in Table 4 below.

Table 4 N-Gain Test Results

N-Gain Score Test Results				
Experimental class		**Control Class**		
No	**N-Gain Score (%)**	**No**	**N-Gain Score (%)**	
1	27.27	1	70.59	
2	18.18	2	9.09	
3	72.73	3	33.33	
4	10.00	4	38.46	
5	69.23	5	46.67	
6	44.44	6	8.33	
7	23.08	7	23.08	
8	38.46	8	64.29	
9	55.56	9	47.06	
10	25.00	10	23.08	
11	27.27	11	37.50	
12	53.33	12	42.11	
13	44.44	13	27.27	
14	72.22	14	12.50	
15	100.00	15	73.33	
16	-28.57	16	-20.00	
17	50.00	17	60.00	
18	80.00	18	52.94	
19	71.43	19	-40.00	
20	-25.00	20	62.50	
21	46.67	21	-16.67	
22	10.00	22	-22.22	
23	80.00	23	61.54	
24	57.14	24	26.09	
25	55.56	25	41.18	
26	45.45	26	42.86	
27	33.33	27	6.67	
28	50.00	28	60.00	
29	56.25	29	30.43	
30	54.55	30	30.00	
31	27.27	31	28.57	
		32	39.13	
Average	**44.6676**		**Average**	**31.2406**
Minimum	**-28.57**		**Minimum**	**-40.00**
Maximum	**100.00**		**Maximum**	**73.33**

(Source: data processed by researchers using Spss 26)

Based on these results, the average N-Gain score in the experimental class was 44.67%, which is included in the moderate category. The highest score in the experimental class reached 100.00%, while the lowest score was -28.57%. This indicates that the implementation of the Problem Based Learning (PBL) learning model resulted in a significant increase in student learning outcomes. Although some students experienced a decline (indicated by negative scores), overall, most students showed improvement. Meanwhile, in the control class, the average N-Gain was 31.24%, which is also in the moderate category, but lower than the experimental class. The highest score in the control class was 73.33%, and the lowest was -40.00%. These data indicate that conventional learning has a less than optimal impact on improving student learning outcomes. Thus, it can be concluded that the use of the Problem Based Learning (PBL) learning model is more effective than conventional learning methods in improving student learning outcomes in social studies subjects.

Homogeneity Test

The homogeneity test aims to determine whether the data from the control and experimental classes have the same variance. The test was conducted using Levene's Test for Equality of Variances, and the results are presented in the following table:

Table 5 Homogeneity Test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Hasil belajar	Based on Mean	.080	1	61	.778
	Based on Median	.029	1	61	.866
	Based on Median and with adjusted df	.029	1	59.189	.866
	Based on trimmed mean	.068	1	61	.795

(Source: data processed by researchers using Spss 26)

Based on the test results in Table 5, it can be seen that the significance value (Sig.) for all testing methods is greater than 0.05. The significance value based on the mean is 0.778, the median is 0.866, the median with df adjustment is 0.866, and the trimmed mean is 0.795. Since all Sig. values are > 0.05, it can be concluded that the data have homogeneous variance. Thus, the data from the control and experimental classes meet the assumption of homogeneity and are suitable for analysis using further parametric statistical tests.

Hypothesis Testing with t-Test (Independent Samples t-Test)

Hypothesis testing was conducted to determine whether there was a significant influence of the use of the Problem Based Learning (PBL) learning model on student learning outcomes in the 8th grade Social Studies subject. The test was conducted using the Independent Samples t-Test type t-test with the help of the SPSS version 26 program, and the results are presented in Table 4.7 below.

Table 6 Results of the Independent Samples t-Test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil belajar	Equal variances assumed	.080	.778	3.398	61	.001	2.549	.750	1.049	4.049
	Equal variances not assumed			3.402	60.923	.001	2.549	.749	1.051	4.048

(Source: Data processed by researchers using SPSS 26)

Based on the results in Table 6, the Levene's Test for Equality of Variances value shows Sig. = 0.778 > 0.05, thus concluding that the data has homogeneous variance. Therefore, the test is continued using the Equal variances assumed row. The results of the Independent Samples t-Test show that the Sig. (2-tailed) value = 0.001 < 0.05, so it can be concluded that there is a significant influence of the use of the Problem Based Learning (PBL) learning model on student learning outcomes. The mean difference value of 2.549 shows that the average learning

outcomes of students in the experimental class are higher than those in the control class that did not use the PBL model.

Based on this test, then:

- H_a is accepted, namely there is a significant influence on learning outcomes in students who use the Problem Based Learning learning model in the Social Studies subject for class VIII at SMP Negeri 3 Pematangsiantar.

This indicates that the implementation of the Problem-Based Learning model has a positive impact on student learning outcomes. Students who participate in PBL tend to be more active, engaged in problem-solving, and able to understand the material better, resulting in higher grades compared to students who participate in learning without this model.

CONCLUSION

Based on the results of research conducted at SMP Negeri 3 Pematangsiantar regarding the influence of the Problem Based Learning (PBL) learning model on student learning outcomes in eighth-grade social studies, several conclusions can be drawn. First, the instrument used in this study has been tested for validity and reliability. Of the 30 questions, 25 were declared valid and reliable with a Cronbach's Alpha value of 0.739, indicating that the instrument is in the strong category and is suitable for use in data collection. Second, the results of the normality test indicate that all data, both pre-test and post-test from the experimental and control classes, are normally distributed with significance values above 0.05 for each. Meanwhile, the homogeneity test also shows that the data has homogeneous variance (Sig. = 0.778 > 0.05), thus fulfilling the requirements for parametric statistical tests.

Third, the N-Gain analysis showed that the average increase in student learning outcomes in the experimental class using the PBL learning model was 44.67%, while the average increase in the control class using conventional learning methods was only 31.24%. Both were classified as moderate, but the experimental class experienced significantly higher improvement. Fourth, the results of the hypothesis test using the Independent Samples t-Test showed that there was a significant difference between the learning outcomes of students in the experimental class and the control class, with a Sig. (2-tailed) value of 0.001 < 0.05. The average difference value (mean difference) of 2.549 points showed that the PBL model was able to provide better learning outcomes compared to conventional learning methods. Thus, it can be concluded that the Problem Based Learning learning model has a significant effect on the learning outcomes of class VIII students in the Social Studies subject at SMP Negeri 3 Pematangsiantar.

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