

The Effect of the Problem Based Learning (PBL) Model on Improving Student Learning Outcomes in IPAS Subject of Fourth Grade at SDN 6 Sindue



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ABSTRACT: This study aims to determine the effect of the Problem Based Learning (PBL) model on improving student learning outcomes in the IPAS subject of fourth-grade students at SDN 6 Sindue. The research used a quantitative approach with a pre-experimental design, specifically the One Group Pretest-Posttest Design. The population and sample in this study were all fourth-grade students totaling 19 students, consisting of 6 boys and 13 girls. Data were collected using pretest and posttest written tests, and analyzed using descriptive statistics, normality tests, paired sample t-tests, and normalized gain (N-Gain) tests with the help of IBM SPSS Statistics 25. The results showed that the average pretest score was 46.32 and the posttest average increased to 77.37. The results of the paired sample t-test showed a significance value of 0.000 ($p < 0.05$), indicating a significant difference between pretest and posttest scores. In addition, the N-Gain score was 0.6189, which is categorized as moderate. These findings indicate that the Problem Based Learning (PBL) model has a positive and significant effect on improving student learning outcomes in the IPAS subject. Therefore, the PBL model can be recommended as an alternative learning model in elementary schools to enhance student understanding and engagement.

KEYWORDS: Problem Based Learning, learning outcomes, IPAS, elementary school, experimental research

INTRODUCTION

The independent curriculum is one of the programs initiated by the Minister of Education and Culture, Mr. Nadiem Makarim, namely Independent Learning, where it wants to create a happy learning atmosphere. The purpose of independent learning is to create a pleasant atmosphere for teachers and students because independent learning means that the educational process must create a pleasant atmosphere (Nasution, 2022). Schools that implement an independent curriculum can encourage students to learn independently, so that they can explore their interests and potential freely. SDN 6 Sindue is a research location conducted by researchers, where the school has implemented an independent curriculum. The subject that the researcher researched is IPAS, in the independent curriculum of science subjects including subjects that do not stand alone, but in the learning process the teacher teaches science which has been integrated in science and social studies subjects.

In the learning process, teachers have an important role in creating learning conditions that encourage the active role of students. Efforts to create learning conditions that can involve students play an active role and require the ability of teachers to apply appropriate and varied learning models, so that students will play an active role and can achieve the expected learning outcomes (Siswanti, 2019). Learning outcomes are behavioral changes after going through a teaching and learning process that includes cognitive, affective, and psychomotor fields. Learning outcomes can be determined by conducting certain assessments that show the extent to which the assessment criteria have been achieved and this assessment is carried out by giving tests (Gulo, 2022).

Based on the results of observations that have been carried out by researchers in grade IV of SDN 6 Sindue, it shows that the learning outcomes of social studies students are still relatively low. Based on the information obtained, the interest in learning of students in grade IV of SDN 6 Sindue is still relatively low where when the teacher explains the material, the students' views are not focused, this is because the presentation of the material delivered by the teacher is not appropriate and does not use the learning model. From the results of observations and discussions with the homeroom teacher of grade IV at SDN 6 Sindue, it was found that the school had set the KKTP for science subjects, which was 70. From the results of observations related to social studies learning outcomes, it was obtained that out of 19 students in grade IV out of 19 students there were 8 students who had

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reached the KKTP, and those who had not reached the KKTP there were 11 students. The low learning outcomes of IPAS are due to the lack of interest of students and not using the learning model in following the learning process.

There are fourth-grade homeroom teachers at SDN 6 Sindue who rarely use the learning model, where during the learning process the teacher only uses conventional learning methods which of course are teacher-centered such as the lecture method and it is rare for teachers to involve their students to be given opportunities, discuss, ask questions or give opinions on the material being studied. Students just sit quietly listening to the teacher's explanation, after which they are directed to answer the questions in the package book, so that the learning is very boring for students. As for how to overcome these problems, an effective learning approach is needed, one of which is by using an interesting learning model. One of the learning models that can be used is the Problem Based Learning (PBL) learning model. The Problem Based Learning (PBL) learning model, according to Odeh (2021), is one of the learning models that uses real and unstructured problems, open as a context or means for students to develop critical thinking, develop skills and solve problems as well as build new knowledge. Based on the background that has been described above, it is necessary to conduct a study entitled "The Effect of the Problem Based Learning (PBL) Model on Improving Student Learning Outcomes in IPAS Subject of Fourth Grade at SDN 6 Sindue".

LITERATURE REVIEW

The Problem Based Learning (PBL) learning model is a learning model that presents problems contextually so that it is able to encourage students to learn (Akhmad et al., 2023). This model is an effective approach to help students process information and structure their own knowledge about the social world and its surroundings. The Problem Based Learning (PBL) learning model is a learning model in which students work in groups or collaboratively in identifying a problem to learn to solve a problem (Dewi et al., 2022). This model can facilitate students to find a problem in a group and be able to collaborate to be able to solve a problem in the real world and closely related to daily life. The Problem Based Learning (PBL) learning model is a learning model that starts from giving problems according to the real-world context and involves students in solving these problems which causes students' motivation and curiosity to increase (Magdalena et al., 2021). This model is a place for students to develop their abilities with a way of critical thinking and higher thinking skills that students have. Student learning outcomes are achievements achieved by students academically through exams and assignments, the activeness of asking and answering questions that support the acquisition of these learning outcomes. In academic circles, there is often the thought that the success of education is not determined by the student's grades stated on the report card or diploma, but the measure of success in the cognitive field can be known through the learning outcomes of a student (Somayana, 2020).

Learning outcomes are defined as the level of success of students in learning the subject matter at school and are expressed in the form of scores obtained from the results of tests regarding the subject matter that has been studied (Irawati et al., 2021). The learning outcomes obtained by students can provide information about students' ability to understand the subject matter explained by the teacher in the learning process when teaching in class. From some of the definitions above, it can be concluded that learning outcomes are the level of student success that is carried out during the learning process through exams, assignments, the activeness of asking questions and answering questions that support the acquisition of learning outcomes which are usually expressed in the form of scores obtained from test results.

The independent curriculum combines Natural and Social Sciences subjects referred to as IPAS. The subject of science is a science that studies living things, inanimate objects in the universe, human life as individuals and social creatures that interact with their environment. Learning in the IPAS subject aims to help students to be able to understand the work of the universe and its interaction with human life on earth according to Susilo in (Rahmayati & Prastowo, 2023). Efforts are made to improve student learning outcomes in science lessons in grade IV SDN 6 Sindue through the use of the Problem Based Learning (PBL) learning model.

RESEARCH METHODS

The research that the researcher will conduct is experimental quantitative research. Quantitative research is research in which data is in the form of numbers, conclusions are obtained based on statistical hypothesis testing. The experimental quantitative research method can be interpreted as a research method used to find the effect of certain treatments on others under controlled conditions (Sugiyono, 2017). This is in accordance with the problems that will be researched by the researcher, namely to see how the effect on the treatment that will be carried out in the research using the Problem Based Learning (PBL) learning model on the learning outcomes of social studies students in grade IV of SDN 6 Sindue.

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In this study, the researcher used a *Pre-Experimental* research design with the type of *One Group Pretest-Posttest Design*, this research was carried out in one study only without a comparison group and used a *pretest* before being given treatment. The following research design can be seen in the research design scheme table.

Research Design Schema Table

Class	Pretest	Treatment	Posttest
IV	O ₁	X	O ₂

Keterangan :

O1: Pretest score, to measure test results of grade IV students before being given treatment in the experimental class

X: Treatment in the experimental class using the Problem Based Learning (PBL) learning model

O2: Posttest score, to measure test results of grade IV students after applying the Problem Based Learning (PBL) learning model.

The subjects in this study are grade IV students of SDN 6 Sindue which consists of 19 people consisting of 6 males and 13 females, this research was conducted at SDN 6 Sindue which is located in Toaya Village, Sindue District, Donggala Regency., Prov. Central Sulawesi, this research was carried out in an even semester in the 2024/2025 school year. Starting from observation in February 2025 until the implementation of the research in May 2025, population is an equalization area that includes a certain object or subject that has characteristics and qualities determined by the researcher that is useful as material to be studied and in the end will be drawn. The sample is part of the population itself which is part of the characteristics and number chosen by the researcher (Sugiyono, 2017). The population in this study is all grade IV students of SDN 6 Sindue, which is 19 students consisting of 6 male students and 13 female students. The population in this study is also a research sample.

Distribution Table of Grade IV SDN 6 Sindue

No.	Class	Gender		Number of Students
		Men	Woman	
1.	IV	6	13	19

The sampling technique in this study is the saturated sampling technique. In this technique, all members of the population are used as samples. This is done because the population is relatively small, which is less than 30 people (Sugiyono, 2017).

RESULT

This research was conducted at SDN 6 Sindue, located on Jl. Tandiable, Toaya, Sindue District, Donggala Regency, Central Sulawesi. This school is located in a location that is quite easy to reach. This school has been accredited with a B and has state status, and it was founded in 1963. SDN 6 Sindue uses an independent curriculum with 131 students consisting of 70 boys and 61 girls. SDN 6 Sindue is led by the principal, Abdul Latif; the number of teachers is 11, consisting of the principal, six homeroom teachers, 1 Islamic Religious Education subject teacher, and 1 Physical Education and Sports subject teacher. In addition, the school has one school operator and one school guard. SDN 6 Sindue's adequate facilities and internet access support an optimal teaching and learning process. PLN Electricity also supports SDN 6 Sindue to support school operational activities.

The decisive stage in the implementation of research is the data collection stage because this is where the researcher obtains reliable results. The data collection techniques used in this study are written tests and documentation. The data collection technique used in this research is test questions, in this study in the form of multiple-choice questions as many as 20 questions. The tests used are the initial test (pretest) and the final test (posttest). The steps for data collection will be carried out as follows. Initial tests are done before treatment. The pretest is carried out to find out the abilities possessed by students before applying the Problem Based Learning (PBL) learning model. In this case, it is necessary to apply the Problem Based Learning (PBL) learning model to social studies learning. The treatment steps provided are in the form of teaching modules. After treatment, the next action is a posttest to find out the level of student learning outcomes and the influence of the Problem Based Learning (PBL) learning model. Documentation is a tool used for the collection of written/printed data related to facts that will be concrete evidence in research where the results of this documentation research will later be strong. The documentation in question is photographs during the conduct of the research. Research instruments are tools that act as a research measure. Of course, to measure, there must be a good measuring tool as well, this is what is called a research instrument. The instrument used in the implementation of this research is a written test. A written test is a test in which questions and answers will be given to students in the form of writing. This test is useful as a data collection tool to measure students' abilities and also to measure mastery of the material that has been taught before. In this study, the written test that will be used is in the form of multiple choice as many as

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10 questions. The questions given are related to the material to be studied. The test will be given twice, namely before the treatment (pretest) and after the treatment (posttest). The purpose of using this instrument is to measure the achievement of student learning outcomes both before and after being given treatment, namely applying the Problem Based Learning (PBL) model.

The data analysis techniques used are divided into 2, namely descriptive analysis and inferential analysis, descriptive analysis according to Sugiyono (2017) is statistics used to analyze data by describing or describing the data that has been collected as it is without intending to make conclusions that apply to generalities or generalizations. In this study, descriptive analysis was used to describe the mean, minimum amount, maximum amount and standard deviation. The description analysis was carried out with the help of the IBM SPSS Statistic 25 program. Inferential data analysis technique is a statistical data analysis technique used to analyze sample data and the results are applied to the population (Sugiono, 2017). This technique is suitable for use when samples are taken from a clear population, using the normality test as a requirement to be studied, and whether the data is normally distributed or not. The t-test is to find out if there is a difference between the results of the data before treatment and after treatment.

The data analysis to test the hypothesis in this study is as follows, the normality test is carried out to find out whether the sample studied is normally distributed or not. The Lilliefors (Shapiro-Wilk) test calculation method is used to determine whether a data is normally distributed in a normality test. The test criteria that are said to be normal based on their significance values are as follows. 1) If the significance number > 0.05 then, H_0 is accepted and the data is distributed normally. 2) If the significance number < 0.05 then H_0 is rejected and the data is not normally distributed. The hypothesis test in this study uses the t-test. The t-test is a statistic used to test the significance of the difference between two means derived from two pretest and posttest data in the experimental class. The significance test is used to determine whether there is a relationship between free and bound variables. The hypothesis test used in this study uses a paired sample t-test analysis test with the help of the IBM SPSS Statistic 25 application program, the significant decision-making is as follows: 1) A significant value < 0.05 then H_0 is rejected and accepts H_a , 2) A significant value ≥ 0.05 then H_0 is accepted and rejects H_a

If the data is not normally distributed, the test is carried out using a non-parametric wilcoxon statistical test (Nuryanto et al., 2014).

The data on the value of pretest and posttest learning outcomes is a data value that will be analyzed descriptively by calculating the percentage of student learning completeness. The formula for the N-gain test (Rostina Sundayana, 2015) is as follows.

$$N - gain = \frac{skore\ posttest - skor\ pretest}{skor\ maksimal - skor\ pretest}$$

Table of N-Gain Value Criteria

N-Gain score	Interpretation
$g > 0,7$	Tall
$0,3 < g \leq 0,7$	Keep
$g \leq 0,3$	Low

RESULT

The study aims to determine the learning outcomes and the influence of the application of *the Problem Based Learning* (PBL) learning model in the science subject of grade IV students at SDN 6 Sindue. The data collected in this study are *the data of pretest* and *posttest* results in the experimental class through written tests. The data analyzed for hypothesis testing were *pretest* values (before treatment) and *posttest* values (after treatment).

Research Procedure

The quantitative research procedure is the operationalization of the scientific method by paying attention to scientific elements. There are a number of quantitative research steps that must be taken that are expected to ensure the validity of the results (Nuryanto et al., 2014). The stages in the implementation of this research are as follows.

1. Pretest

The pretest is an initial test to find out the learning outcomes and the influence of the application of *the Problem Based Learning* (PBL) learning model of students in social studies subjects, especially in the material chapter 5 of the story about my area topic A "What was the area where I lived before?", before being given treatment in the experimental class. The

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implementation of *the pretest* in the experimental class was carried out in class IV with a total of 19 students. In the implementation of *the Pretest*, an instrument was given in the form of a written test sheet consisting of 10 questions.

2. Teaching Treatment

Treatment in the form of teaching in the experimental class after *the pretest was carried out*. The initial activity carried out in the experimental class was to give greetings and invite students to pray. Conduct attendance or attendance checks of students. Seeing the readiness of students in participating in learning. Then give an appension and give a triggering question while students listen to the teacher's perception and answer the questions that the teacher gives. Then conveyed the subject of discussion, namely "What was the area where I lived before?" and the learning objectives of that day.

Kegiatan inti yang dilakukan di kelas eksperimen sesuai dengan sintaks model pembelajaran *Problem Based Learning* (PBL) yaitu sebagai berikut. Peserta didik diarahkan membaca dan menganalisis teks tentang "Masalah Pelestarian Situs Kerajaan di Nusantara" yang disajikan oleh guru. Kemudian peneliti mengajukan pertanyaan mengenai pentingnya pelestarian peninggalan kerajaan dan manfaat yang diperoleh dari sejarah tersebut. Peserta didik diberi kesempatan untuk mengemukakan analisis dan pendapat, diikuti dengan sesi tanya jawab untuk memperdalam pemahaman. Peneliti membimbing peserta didik dalam memberikan pendapat berdasarkan teks, serta memberikan bimbingan individu bagi yang belum paham. Kemudian peserta didik diminta untuk memberikan contoh kerajaan di Nusantara beserta tokoh-tokohnya sebagai penutup diskusi. Peserta didik diarahkan dan dibagi menjadi tiga kelompok secara heterogen untuk mendorong keragaman dalam diskusi. Setelah pembagian kelompok, peneliti memberikan penjelasan mengenai kegiatan yang akan dilakukan. Selanjutnya, peneliti membagikan Lembar Kerja Peserta Didik (LKPD) kepada masing-masing kelompok. Setiap kelompok diberikan tugas untuk mempelajari kerajaan-kerajaan di Indonesia yang bercorak Hindu, Budha, dan Islam. Peserta didik kemudian mempersiapkan diri untuk belajar secara berkelompok, dengan fokus pada eksplorasi dan diskusi mengenai topik yang telah ditentukan. Setelah pembagian LKPD, guru memberikan contoh pengerjaan LKPD secara berkelompok untuk memandu peserta didik. Peserta didik kemudian mendiskusikan tugas yang terdapat dalam LKPD, mencari jawaban melalui buku siswa atau bahan ajar, dan melakukan diskusi dengan teman-teman kelompoknya sesuai dengan tugas yang diberikan. Selama proses ini, peneliti hadir untuk membimbing dan membantu peserta didik, memberikan arahan dalam pengerjaan LKPD jika diperlukan. Peserta didik bekerja sama dalam menyelesaikan tugas kelompok berdasarkan petunjuk yang terdapat dalam LKPD. Setelah menyelesaikan tugas, setiap kelompok diminta untuk mempresentasikan hasil pengerjaan mereka di depan kelas. Setelah presentasi, peserta didik lain dan guru memberikan tanggapan serta penguatan terhadap hasil presentasi secara bergantian. Peneliti memberikan apresiasi kepada peserta didik atau kelompok yang berhasil menyampaikan informasi dengan benar, serta memberikan konfirmasi jika ada kesalahan. Di akhir sesi, peserta didik bersama-sama dengan peneliti membuat simpulan mengenai poin-poin penting yang muncul selama pembelajaran.

At the end of the learning activity, students and teachers reflect to evaluate the learning process and results that have taken place. Students conclude important points from the material that has been studied, so that they can strengthen the understanding obtained. After that, the teacher conveys the material and activities that will be studied at the next meeting. The learning activity ended with a joint prayer led by a student, as a form of respect and a good closing to the session.

3. Posttest

Posttest is the final test to find out the learning outcomes and the influence of the application of *the Problem Based Learning* (PBL) learning model of students in social studies subjects, especially in the material chapter 5 of the story about my area topic A "What was the area where I lived before?", *the posttest* was carried out after being given treatment in the experimental class. The implementation of *the posttest* in the experimental class was carried out in grade IV with a total of 19 students. In the implementation of *the posttest*, a written test sheet was given with a total of 10 questions.

4. Data Analysis

The next stage of this study is to analyze pretest and posttest data in the experimental class. This data analysis was carried out to obtain a conclusion from the results of the research. Data analysis in this study was carried out by analyzing learning outcome data and analyzing statistical data. Based on the research that has been carried out, data on student learning outcomes in the learning of social studies for grade IV students at SDN 6 Sindue were obtained. The data obtained is then analyzed to get a conclusion from the research results. The data on student learning outcomes in the pretest and posttest in the experimental class are as follows. Based on the research that has been carried out, data on student learning outcomes in the learning of social studies for grade IV students at SDN 6 Sindue were obtained. The data obtained is then analyzed to get a conclusion from the research results. The data recapitulated the results of the pretest and posttest in the experimental class.

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Table of Pretest and Posttest Results Data for Grade IV Students

Criterion	Pretest	Posttest
Highest Score	80	100
Lowest Score	20	40
Sum	880	1.470
Average	46,32	77,37

Based on the data in the Data Table of the recapitulation of the results of the pretest and posttest of Grade IV students, it can be seen that the initial ability of student learning outcomes in the experimental class, can be seen from the average score of grade IV students as an experimental class of 46.32, the results of the pretest of the experimental class obtained the highest score of 80 and the lowest score of 20. After being given treatment, it can be seen that the final ability of student learning outcomes in the experimental class, can be seen from the average score of grade IV students as an experimental class of 77.37, the results of the posttest of the experimental class obtained the highest score of 100 and the lowest score of 40. Based on the results of the above analysis, it can be concluded that the Problem Based Learning (PBL) learning model can affect student learning outcomes in the fourth grade of science learning at SDN 6 Sindue. The difference in the increase in average scores in the pretest and posttest in the experimental class shows that the Problem Based Learning (PBL) learning model has an influence on students' science subjects to improve student learning outcomes.

Results of Statistical Data Analysis

1. Normality Test

The normality test is carried out with the aim of assessing whether the data obtained is normally distributed or not. The normality test was carried out on the pretest and posttest data of students in the experimental gfs. The normality test in this study used the help of the IBM SPSS Statistic 25 program from a sample of 19 students. The criteria for normality testing are: 1) If the sig > 0.05 then the data is normally distributed, 2) If the sig is < 0.05 then the data is abnormally distributed, the results of the normality test of the pretest and posttest data of class IV in this study can be seen in the Table of Normality Test Results of the Pretest and Posttest Data of the Experimental Class.

Table of Normality Test Results of Pretest and Posttest Data for Experimental Class

Data	Shapiro-Wilk		
	Statistic	Df	Sig.
Pre-Test Experiment	0,920	19	0,115
Post-Test Experiment	0,129	19	0,122

The data in the table of Normality Test Results Table of Pretest and Posttest Experiment Class data results of normality tests using lilliefors (Shapiro-Wilk) with the help of the IBM SPSS Statistic 25 program show that the pretest and posttest data in this study have a sig value of > 0.05. The Sig value of the experimental pretest was (0.115 > 0.05). And the Sig value of the experimental posttest was (0.122 > 0.05). Thus, it can be concluded that the pretest and posttest data are distributed normally.

2. Hypothesis Testing

Hypothesis testing is used to test the statistical correctness of a statement and can draw conclusions about whether to accept or reject the statement. Testing the influence of the Problem Based Learning (PBL) learning model to improve student learning outcomes in grade IV science subjects at SDN 6 Sindue using T Paired Sample T-Test analysis. The analysis of the Paired Sample T-Test was carried out with the help of the IBM SPSS Statistic 25 program. The hypothesis of the T Paired Sample T-Test is as follows. Ho: The Problem Based Learning (PBL) learning model has no effect on improving student learning outcomes in Science Class IV subjects at SDN 6 Sindue. Ha: The Problem Based Learning (PBL) learning model has an effect on improving student learning outcomes in the Science Class IV subject at SDN 6 Sindue. Hypothesis testing was carried out at a significant level of 5% (0.05). The criteria for deciding whether to accept or reject Ho on this test is that if the significant value ≥ 0.05 then Ha is rejected or Ho is accepted, on the other hand, if the significant value is < 0.05 then Ha is accepted or Ho is rejected. The results of the analysis of the T Paired Sample T-Test Hypothesis with calculations assisted by the IBM SPSS Statistic 25 program can be seen in the following Table of Results of the T Paired Sample T-Test.

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T Paired Sample T-Test Test Results Table

Paired Samples Test

	Paired Differences		Std. Error Difference	95% Confidence Interval of the		t	df	Sig. (2-tailed)
	Mean	Std. Deviation		Lower	Upper			
Pair 1 Pretest Posttest	-31,05263	15,59727	3,57826	-38,57028	-23,53499	-8,678	18	,000

Test Results on T Paired Sample T-Test Test Results Table It is known that the significant value of the T *Paired Sample T-Test* is 0.000. Because the significant value (2-Tailed) < 0.005 (0.000 < 0.05) was accepted and H_0 was rejected. So it can be concluded that the *Problem Based Learning* (PBL) learning model has an effect on improving student learning outcomes in the Science Class IV subject at SDN 6 Sindue.

3. Normalized Gain Test.

In this study, the N-Gain test was carried out to see the high and low increase that occurred between before and after being given treatment in the experimental class. This study uses the help of SPSS version 25 with guidelines for the distribution of N-gain scores, namely if the n-gain score value is $g < 0.7$, then it is included in the high category, $0.3 \leq g \leq 0.7$ is included in the medium category and $g < 0.3$ is included in the low category. The following are the results of data analysis carried out with the help of SPSS version 25.

Table of N-Gain Test Results

	N	Minimum	Maksimum	Mean	Std. Deviation
N-Gain score	19	,00	1,00	,6189	,32560

Based on the results of the data analysis above, it can be seen that the average N-Gain score obtained is 0.6189 so that the influence of the Problem Based Learning (PBL) Learning Model to Improve Student Learning Outcomes in Science Subjects Class IV SDN 6 Sindue is in the medium classification, with the Problem Based Learning (PBL) Learning Model providing opportunities for students to seek their own knowledge through the experiments they conduct and actively participate so that it can affect student learning outcomes.

DISCUSSION

This research was carried out at SDN 6 Sindue with the aim of finding out the learning outcomes and influence of the *Problem Based Learning* (PBL) learning model on science subjects in grade IV at SDN 6 Sindue. The researcher conducted a *pretest* and *posttest* on students to test the level of student learning outcomes before and after being treated in the experimental class. The results of the *pretest* showed an average score of 46.32. Based on this data, it can be concluded that the average score of this *pretest* has not reached the KKTP. So action is needed to improve the learning outcomes of fourth grade students of SDN 6 Sindue. In this study, the researcher used the *Problem Based Learning* (PBL) learning model to improve student learning outcomes.

The implementation of the *Problem Based Learning* (PBL) learning model will be carried out on May 14, 2025 after the *pretest* is held. The implementation of the learning process carried out in the experimental classroom has been carried out in accordance with the activities that must be carried out by following the syntax in the teaching module. The first syntax learning process of *Problem Based Learning* (PBL) is student orientation to problems. The text of the story was presented about "The Problem of Preservation of Kingdom Sites in the Archipelago", containing problems that must be solved by students. This makes students think more critically and creatively in solving problems in the learning process. According to (shlahul'Adiilah & Haryanti (2023), the use of the *Problem Based Learning* (PBL) learning model has been proven to be influential in developing students' critical thinking skills in learning in science subjects. In the next stage, students are directed to form a discussion group. Next, teachers began to distribute group LKPD and organized groups to fill out group LKPD. The LKPD contains an order to answer the description question and match the image of the king with the correct royal name. Each group seeks answers through student books/teaching materials. Teachers guide and provide direction in the work of LKPD. After completing the LKPD, then each group made a presentation from the results of the group discussion. During the group presentation process, it can be seen that the answers delivered by each group are correct and correct. Based on the answers from each group, this indicates that students' thinking and problem-solving skills in finding answers have increased.

The Effect of the Problem Based Learning (PBL) Model on Improving Student Learning Outcomes in IPAS Subject of Fourth Grade at SDN 6 Sindue

The learning process can run smoothly and has an effect on improving student learning outcomes, this can be seen from changes in students. Students become critical in thinking and can solve a problem. Improving student learning outcomes in social studies subjects in experimental classes using *the Problem Based Learning* (PBL) learning model can strengthen students' critical thinking. Learning using *the Problem Based Learning* (PBL) learning model can make students critical in thinking in order to solve problems in learning, find solutions to learning, be active in group discussion activities, be able to present assignments or the results of group discussions and be able to conclude with their own concepts. In the results of *the pretest* and *posttest*, normality tests are carried out, as shown in table 4.2, the results are obtained that *the pretest* data is distributed normally, while *the posttest* data is not distributed normally. Then because the normality test of *posttest* data is not distributed normally, the test carried out using the Non-parametric *Wilcoxon* Statistics test does not use a *paired t-test* (parametric). This is in accordance with the research of Nuryanto et al. (2014), that *the paired t-test* (parametric) test is carried out when the data is distributed normally. Otherwise, non-parametric statistical methods, one of which is the *Wilcoxon* test, can be carried out as an alternative analysis method. The analysis of *the wilcoxon* test was carried out with the help of the IBM SPSS *Statistic* 25 program obtained a value of 0.000 (sig < 0.05) which means rejecting H_0 , showing that *the Problem Based Learning* learning model has an effect on improving student learning outcomes in science subjects grade IV at SDN 6 Sindue.

Then the N-Gain test shows that the results with the help of SPSS 25 can be seen in table 4.4 hahwa, the average N-Gain score is 0.61 in the medium category so that the influence of *the Problem Based Learning* (PBL) learning model to improve student learning outcomes in Science Subjects Class IV SDN 6 Sindue is in the medium classification so that the Problem Based Learning learning model is in the medium classification so that *the Problem Based Learning* learning model is in the medium classification (PBL) has the effect of improving student learning outcomes even though it has not reached the high category. Based on the results of the research carried out, *the Problem Based Learning* (PBL) learning model has an effect on improving student learning outcomes, so it can be chosen as an alternative learning model to improve student learning outcomes, especially at the elementary school level.

REFERENCES

- 1) Akhmad, M. A., Mustari, M., Putra, M. A., Arif, T. A., Fadollah, I., & Sila, A. (2023). The application of the problem-based learning model in improving mathematics learning outcomes of elementary school students. *Scientific Journal of Citra Bakti Education*, 10(2), 341–355.
- 2) Dewi, S. S., Chasanatun, F., & Pradana, L. N. (2022). Problem-based learning (PBL) assisted by video learning can improve students' ability to solve problems. *Proceedings of the Basic Scientific Conference*, 3, 978–984.
- 3) Gulo, A. (2022). The application of the discovery learning model to student learning outcomes in ecosystem materials. *Education: Journal of Education*, 1(1), 307–313.
- 4) Irawati, I., Ilhamdi, M. L., & Nasruddin, N. (2021). The influence of learning style on science learning outcomes. *Journal of Radiant Radiation*, 16(1), 44–48.
- 5) Ishlahul'Adiilah, I., & Haryanti, Y. D. (2023). The influence of the problem-based learning model on students' creative thinking skills in science learning. *Papanda Journal of Mathematics and Science Research*, 2(1), 49–56.
- 6) Quantitative, P. P. (2016). Qualitative Quantitative Research Methods and R&D. *Alfabeta, Bandung*.
- 7) Magdalena, I., Prasasti, D., Nurrohmah, N., & Awalina, F. M. (2021). Improving Learning Outcomes in Mathematics Lessons through the Application of the Problem Based Learning Model in SDN Pinang 2 Students. *Ed.*, 3(1), 106–119.
- 8) Nasution, S. W. (2022). Assessment of the independent curriculum for learning in elementary schools. *Proceedings of Basic Education*, 1(1), 135–142.
- 9) Nuryanto, N., Pramono, A., Puruhita, N., & Muis, S. F. (2014). The effect of nutrition education on knowledge and attitudes about nutrition in elementary school children. *The Indonesian Journal of Nutrition*, 3(1), 32–36.
- 10) Odeh, O. (2021). The Effect of the Use of the Problem Based Learning Model on the Learning Interest of Students in Grades VII-B of SMPN 1 Karangjaya. *J-KIP (Journal of Teacher Training and Education)*, 2(2), 9. <https://doi.org/10.25157/j-kip.v2i2.5204>
- 11) Rahmayati, G. T., & Prastowo, A. (2023). Natural and Social Sciences Learning in Grade IV of Elementary School in the Independent Curriculum. *Elementary School Journal Pgsd Fip Unimed*, 13(1), 16–25.
- 12) Siswanti, R. (2019). The application of the discovery learning model to increase learning interest and learning outcomes in elementary science learning. *Indonesian Journal of Education and Learning*, 2(2), 226.
- 13) Somayana, W. (2020). Improving student learning outcomes through the pakem method. *Indonesian Journal of Education*, 1(3), 350–361.