The Use of Problem Based Learning Learning Models to Improve Critical Thinking Skills and Engagement and Student Learning Outcomes

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Abstrak

Problem Based Learning (PBL) ialah metode bimbingan yang berfokus dalam peserta didik dengan memakai metode objektif, membongkar permasalahan yang menarik dengan menggunakan sumber berlatih yang berkarakter kooperatif serta kolaboratif serta guru selaku penyedia. Berpikir kritis adalah berpikir yang mempunyai karakteristik. Keterlibatan siswa adalah partisipasi siswa dalam kegiatan pembelajaran. Hasil belajar menunjukan kemampuan siswa dalam menangkap, mamahami materi pelajaran yang di berikan oleh guru. Diharapkan PBL dapat meningkatkan kemampuan berfikir kritis, keterlibatan siswa dan hasil belajar siswa. Tujuan penelitian ini adalah: (1) mengetahui pengaruh model PBL terhadap kemampuan berfikir kritis siswa (2) mengetahui pengaruh model PBL terhadap keterlibatan siswa; dan (3) mengetahui pengaruh model PBL terhadap hasil belajar siswa Sekolah Dasar Negeri di Kecamatan Pamulang. Penelitian ini dilaksanakan dengan pendekatan survey. Pengujian dilakukan dengan menggunakan SPSS 22.0. Sampel penelitian ini berjumlah 60 siswa yang terdiri atas 30 siswa kelas kontrol dan 30 siswa kelas eksperimen dengan metode random sampling. Berdasarkan hasil uji Sig untuk pengaruh PBL terhadap kemampuan berfikir kritis adalah sebesar nilai t hitung 9,591 > t tabel 2,001 artinya penerapan Model PBL berpengaruh terhadap kemampuan berpikir kritis. Hasil uji Sig untuk pengaruh X sebesar 0,000 < 0,005 dan nilai t hitung 13,443 > t tabel 2,001 artinya penerapan model PBL berpengaruh terhadap kemampuan berpikir kritis. Hasil Uji N-Gain score untuk kelas eksperimen (Model PBL) adalah sebesar 56,424 atau 56,4 % termasuk dalam kategori cukup efektif. Dengan nilai NGain score minimal 20% dan maksimal 74,42 %. Sementara itu NGain Score untuk kelas Kontrol (metode Konvensional) adalah sebesar 33,855 atau 33,8 % termasuk dalam kategori tidak efektif. Dengan NGain Score minimal 6,30% dan maksimal 62,5 %. Penggunaan Model PBL cukup efektif untuk meningkatkan hasil belajar Siswa kelas V Sekolah Dasar Negeri di Kecamatan Pamulang.

Kata Kunci: *Problem Based Learning*, Kemampuan Berfikir Kritis, Keterlibatan Siswa, Hasil Belajar Siswa

Abstract

Problem Based Learning (PBL) is a guidance method that focuses on students using objective methods, dismantling interesting problems using cooperative and collaborative learning resources and teachers as providers. Critical thinking is thinking that has characteristics. Student engagement is student participation in learning activities. Learning outcomes show the ability of students to capture, understand the subject matter given by the teacher. It is hoped that PBL can improve critical thinking skills, student involvement and student learning outcomes. The aims of this study were: (1) to determine the effect of the PBL model on students' critical thinking skills (2) to determine the effect of the PBL model on student engagement; and (3) to determine the effect of the PBL model on the learning outcomes of state elementary school students in Pamulang District. This research was conducted with a survey approach. Testing was carried out using SPSS 22.0. The sample of this research was 60 students consisting of 30 control class students and 30 experimental class students using random sampling method. Based on the results of the Sig test for the effect of PBL on critical thinking skills, the value of t count is 9.591 > t table 2.001, meaning that the application of the PBL model has an effect on critical thinking skills. The Sig test results for the effect of X is 0.000 <0.005 and the t-value is 13.443 > t-table 2.001 meaning that the application of the PBL model has an effect on critical thinking skills. The N-Gain test results for the experimental class (PBL model) were 56.424 or 56.4% which were included in the moderately effective category. With a minimum NGain score of 20% and a maximum of 74.42%. Meanwhile the NGain Score for the Control class (Conventional method) was 33.855 or 33.8% included in the ineffective category. With a minimum NGain Score of 6.30% and a maximum of 62.5%. The use of the PBL model is quite effective in improving the learning outcomes of fifth grade students of public elementary schools in Pamulang sub-district.

Keywords: Problem Based Learning, Critical Thinking Ability, Student Involvement, Student Learning Outcomes

Introduction

Education is a form of conscious effort to develop human abilities and personality so that humans become learners in order to achieve the goals they want. Education is an effort towards improving life towards a better life. Success in education is a key factor in a country's development. The fundamental tenet of 21st century learning is that education must be student-centered, collaborative, contextual, and integrated. The presence of information technology goods is required in education, especially in learning about the present and the future, and a variety of technology products can be used in the learning process (Fahrurrozi et al., 2022).

According to (Almutairi et al., 2020) in this cognitive domain includes students' ability to express concepts that have been learned regarding thinking skills, acquiring knowledge, recognition, understanding, conceptualization of determination and reasoning. Based on the results of the interviews, it is necessary to have actions or efforts that can be taken to find out how the level of understanding of students in accepting classroom learning, so this study tries to raise Bloom's cognitive taxonomy through the realm of C4 abilities (analyzing) in which students can solve learning problems at school (Sani et al., 2020).

Science subject is one of the subjects that is of great interest to students in elementary schools, because in this subject students have an interest and encouragement to further explore the extent to which facts in science learning can be expressed. Learning Science in Elementary Schools is a vehicle for equipping students to think critically and be directly involved in the material presented. The importance of learning Science is to develop knowledge and understanding of Science concepts for students to apply in everyday life (Dewi, 2020).

In practice, based on findings from preliminary observations in the science learning process, many problems were found that made student learning outcomes less than optimal. There are several findings besides student learning outcomes, namely, students lack critical thinking about the problems encountered in learning activities where it is found that students only follow the instructions that the teacher gives and follow them. This causes students to have difficulty understanding the material provided and results in a decrease in learning outcomes. In the learning process in schools, especially elementary schools, every teacher hopes that his students will gain knowledge according to their abilities and achieve good learning outcomes (Nafiah & Suyanto, 2014).

Based on observations of the fifth-grade pupils' learning outcomes at SDN Kampung Bulak 01 and SDN Bambu Apus 02 in Cluster IX, Pamulang District, South Tangerang City. At that school most of the students experienced a decrease in learning outcomes in science subjects with the fact that fifth grade students had difficulties with the material clean air for health which in the material discussed the respiratory system in living things and the respiratory system in humans. The process of learning activities is carried out by how students perform in groups and present them in front of the class.

According to the findings of teacher interviews, the aforementioned activities have a significant impact on students' critical thinking abilities and student engagement in science learning activities, which has an impact on student learning outcomes. The underdeveloped degree of students' capacity for critical thought in learning activities shows that students are less enthusiastic about asking and answering what the teacher has explained about the material presented and through group discussion activities on science subjects, students tend to dare to mention answers but don't dare to present them in front of the class (Hotimah, 2020).

In the activities that the instructor engages in during the teaching process are presenting real world problems related to science subject matter, learning activities can take place in the classroom or outside the classroom which of course is related to material or indicators. But in fact many students think that science is a difficult lesson. Considering the findings of the data acquisition, the researchers found that there were still teachers who used the lecture, question and answer and assignment methods as well as presenting conventional learning models. in order for students to engage in fewer learning activities, where learning activities are still focused on teachers and books. In addition, teachers rarely use concrete learning media. The following table shows the results of class V students in science subjects.

One of the causes of low student learning outcomes in science lessons at SDN Kampung Bulak 01 and SDN Bambu Apus 02 is the learning method which is still conventional so it does not stimulate student activity. students in receiving lessons in class. Besides that, in the use of learning media provided by the teacher in the form of posters or pictures or in the form of digital media. Science learning will not get maximum results if the teacher only provides material in the form of lectures and lacks learning media devices. The right method is needed to make it easier for students to understand science subject matter. In response to this, the teacher realized the need to use innovative learning models to improve student learning outcomes in grade V Elementary School Science subjects.

Learning activities carried out by students will train students to think critically so as to produce knowledge for the students themselves. Therefore, an educator is required to have creativity and innovation to create fun learning situations and to have memorable teaching methods and models for students so that it will increase abilities in terms of knowledge and student involvement in teaching and learning activities in class which can affect learning outcomes based on experience at school (Asriningtyas et al., 2018).

The learning process is not only to increase knowledge but in it students must be able to think critically about the material you are given. When higher order thinking skills, such as critical thinking, are incorporated, and are very much needed and owned by every student, students can think critically not only in teaching and learning activities but as provisions in facing various kinds of challenges in the era of globalization. This will familiarize students to be able to

make judgments, solve difficulties, and make decisions they face later (Simanjuntak & Sudibjo, 2019).

The most effective way to develop critical thinking skills and student involvement in science subjects is to display students' abilities in performance on the material provided, namely in groups students can work together to present material by utilizing technology and presenting the findings they get from group discussion results. Student centers will be realized when students carry out experiments directly (Agustin & Pratama, 2021).

According to (Sujana, 2020), the important reason for using a the problem-based learning approach in instruction is that it helps students develop and strengthen their critical thinking abilities and problem-solving abilities. Students can benefit from using learning models for problem-based learning solve problems they face in any condition (school or environment) properly and wisely.

PBL (Problem Based Learning) takes Its theoretical foundation is cognitive psychology. Although presenting and explaining information to students is occasionally a part of the teacher's responsibility in problem-based learning, the teacher must frequently act as a facilitator and guide so that students can develop their own independent thinking and problem-solving skills. implementation of the problem-based learning approach for instruction requires careful preparation of the material to be discussed in class. The teacher's readiness in providing material will be able to encourage pupils to approach problems critically solving in class and student independence in class (Herliati, 2022).

In learning activities or instructional activities a teacher in providing subject matter will set learning goals, so that students who succeed in achieving learning goals will get results from the material they learn in class. Learning outcomes play a significant part in the educational process and can also give teachers information about students' development of students' achievement of the subject matter they receive at school so that efforts to achieve their learning goals can be achieved properly. Based on the background above, the purpose of this study was to analyze the use of the Problem Based Learning learning model to improve critical thinking skills and student involvement as well as learning outcomes in class V Science subject, Clean Air for Health.

Method

The study's methodology, a quantitative method and a quasi-experimental design will be used. The experimental group and the control group made up the two groups in the quasi-experimental study. In order to determine the impact of applying the problem-based learning paradigm in class V scientific courses on critical thinking skills, researchers attempted to evaluate public elementary schools in cluster IX, Pamulang sub-district., student involvement in learning and learning outcomes. The form of a quasi-experimental design based on this research is by using the Pretests are administered to both the experimental and control groups prior to treatment in the nonequivalent control group design model in order to determine each group's state prior to treatment. The posttest was administered to the experimental and control groups after they had received therapy to determine how they had fared.

The research was carried out in the odd semester of the 2022/2023 school year, the locations used in this study were SD Negeri Kampung Bulak 01 and SD Negeri Bambu Apus 02 Gugus XI Pamulang District. On 5 and 8 September 2022 at SDN Kampung Bulak 01. The next research was carried out on 12 and 15 September 2022 at SDN Bambu Apus 02. On 5 September pre-tests were for control and experimental classes. On September 8, 2022, the post-test was for the control and experimental class at SD Negeri Kampung Bulak 01. On September 12, 2022, the pre-test for the control and experiment class, on September 15, 2022, for the control and experiment class at SD Negeri Bambu Apus 02.

Table 1. Research Subjects

NO	SCHOOL NAME	GROUP	POPULATION
1.	SDN. Kampung Bulak 01	Class V A (experimental group) Class V B (control group)	29 student 31 student
2.	SDN. Bambu Apus 02	Class V A (experimental group) Class V B (control group)	30 student 30 student

Analysis of the data used is in the form of scores from knowledge tests for statistical tests, but first tested for normality and homogeneity of variance. This research uses probability sampling technique. There are several reasons for using the random sampling technique, including the State Elementary School in Cluster IX, Pamulang District, which uses the problem-based learning model.

Table 2. Random Sampling Results of Cluster IX Public Elementary Schools, Pamulang District, South Tangerang City

No	School Name	Address	Class	The number of students	Total number of teachers
1.	SDN. Kampung Bulak 01	Jalan Aria Putra No. 162 Kedauang Village, Pamulang District, South Tangerang City	V AB	60	2
2.	SDN. Bambu Apus 02	Jalan Arwana Rt.04/02 Complex of the Department of Religion. Bambu Apus, Pamulang District, South Tangerang City	V AB	60	2
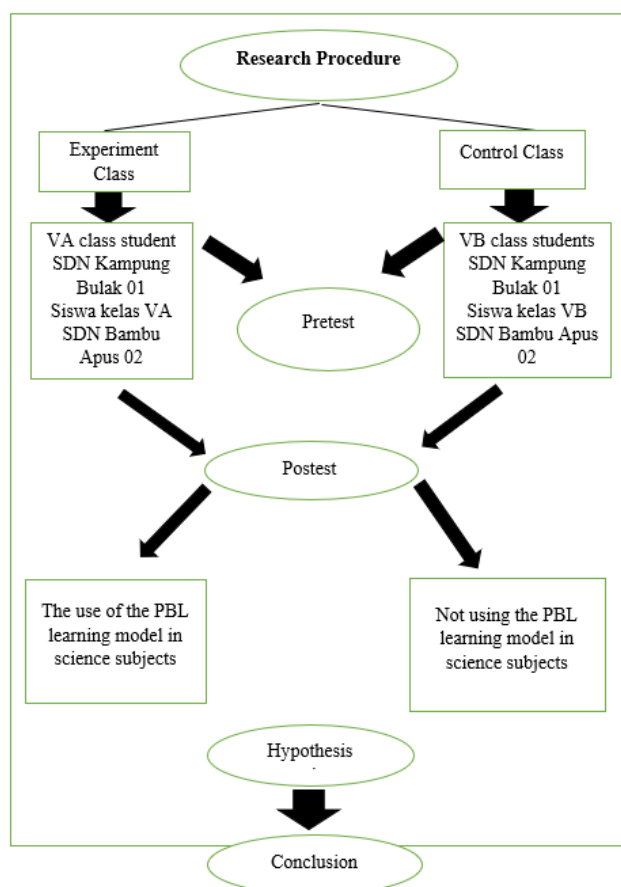
Figure 1. Flow of Research Procedures

Results

Characteristics of Respondents by Age

Table 3. Age of Respondents

Respondent Age	Frequency	Percentage %
< 9 years	0	0
10 years	3	5
11 years	45	75
> 11 years	12	20
Not Include	0	0

Based on the table, it shows that there are no respondents aged <9 years (0%). There were 3 respondents aged 10 years (5%). There were 45 respondents aged 11 years (75%) and this was the age of the respondent with the highest percentage. Meanwhile, there were 12 respondents aged over 11 years (20%).

Characteristics of Respondents Based on Parents' Education Level

Table 4. Respondents' Education Level

Respondents Education Level	Frequency	Percentage %
No school	4	6
SD	8	14
SMP	11	18
SMA	17	28
S1	15	25
S2	5	9

Based on the table above, it is obtained that the frequency distribution of respondents in this study with the category of parents of students with non-school education level is 4 people (6%). For elementary school (SD) education level, there are 8 parents (14%). For the education level of Junior High School (SMP) there are 11 parents (18%). For parents with a high school level of education, there were 17 parents (28%). For parents of students with an undergraduate level of education (S1), there are 15 people (25%). Meanwhile, for students with a Level 2 (S2) education level, there were 5 people (9%). Based on these data it can be understood that the majority of education levels at SDN Kampung Bulak 01 and SDN Bambu Apus 02 are at the High School (SMA) level.

Characteristics of Respondents Based on Gender

Table 5. Gender of Respondents

Gender of Respondents	Frequency	Percentage %
Man	23	38
Woman	37	62
Not Include	0	0
Amount	60	100

Based on the table above, it can be seen that the frequency distribution of respondents in this study with the most gender classifications was female as many as 37 students (62%) and the rest were male respondents as many as 23 students (38%).

Descriptive Analysis

In this study, the researcher conducted a descriptive analysis of 60 respondents who were at Kampung Bulak 01 Elementary School and Bambu Apus 02 Elementary School in Pamulang District, obtained from the study results and questionnaires given to class V students. The implementation of this research was carried out by dividing the class into control and experimental classes and both were given pretest and posttest questions to find out the difference before and after the treatment was given which in this study the treatment was the Problem Based Learning (PBL) Learning Model. The study results and questionnaires obtained were then tabulated and processed by researchers using the SPSS program. The answers obtained varied based on what was experienced, done, heard and understood by the respondents after and before getting the problem-based learning instructional strategy. An overview of the frequency distribution of student learning outcomes for the experimental class and the control class at the pre- and post-tests for the Problem Based Learning learning paradigm is shown below:

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Eksperimen	60	50	80	65.00	7.506
Post-Test Eksperimen	60	78	92	84.60	3.697
Pre-Test Kontrol	60	53	84	66.68	7.751
Post-Test Kontrol	60	67	91	78.32	5.429
Valid N (listwise)	60				

Based on the table it can be seen that from the 60 students who became the research sample, the following data were obtained:
1. In the experimental pretest the minimum score obtained by students is 50 and the maximum is 80 with an average value of the experimental pretest results being 65.00 with a standard deviation of 7.506.
2. In the experimental posttest the minimum score obtained by students is 78 and the maximum is 92 with the average value of the experimental pretest results being 84.60 with a standard deviation of 3.697.

3. In the pre-test control, the minimum score obtained by students is 53 and the maximum is 84, with the average value of the experimental pre-test being 66.68 with a standard deviation of 7.751.
4. In the post-test control the minimum score obtained by students is 67 and the maximum is 91 with the average value of the experimental pretest results being 78.32 with a standard deviation of 5.429.

Test the Third Hypothesis Variable X against Y3
Independent T Test Test

The Independent t test in this study was conducted to find out whether there is a difference in the average report cards for the experimental class and the control class in the science learning outcomes variable for fifth grade students at SDN Kampung Bulak 01 and SDN Bambu Apus 02. The results of the Independent t test in this study can be observed in the following table:

Group Statistics

	Class	N	Means	std. Deviation	std. Error Means
Student learning outcomes	Experimental Class Post Test (PBL)	60	84.60	3,697	.477
	Post test Control class (Conventional)	60	78.32	5,429	.701

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means
		F	Sig.	t
Student learning	Equal variances assumed	3,301	072	7,410
outcomes	Equal variances not assumed			7,410

Independent Samples Test

		t-test for Equality of Means		
		df	Sig. (2-tailed)	Mean Differences
Student learning outcomes	Equal variances assumed	118	.000	6,283
	Equal variances not assumed	104035	.000	6,283

Independent Samples Test

		t-test for Equality of Means		
		std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
Student learning outcomes	Equal variances assumed	.848	4,604	7,963
	Equal variances not assumed	.848	4,602	7,965

Based on the Independent T Test table, it can be observed in the Equal variances assumed the Significance value (2-tailed) is 0.000 so that it can be said that there is a significant difference between the learning outcomes of the experimental class, namely the class with the Problem Based Learning learning

model and the control class, namely the class with conventional learning models.

Test Paired Samples t Test

The results of the paired sample t test can be observed in the following table:

Paired Samples Test

	Paired Differences			
	Means	std. Deviation	std. Error Means	95% Confidence Interval of the Difference
				Lower
Experimental Pre-Test - Experimental Post-Test	-19,600	7,605	.982	-21,565
Pre-Test Control - Post-Test Control	-11,633	5,949	.768	-13,170

Paired Samples Test

		Paired Differences			
		95% Confidence Interval of the Difference			Sig. (2-tailed)
		Upper	t	df	
Pair 1	Experimental Pre-Test - Experimental Post-Test	-17,635	-19,963	59	.000
Pair 2	Pre-Test Control - Post-Test Control	-10,097	-15,148	59	.000

Based on the table it can be understood that:

1. In pair 1, the Sig value is obtained. (2-tailed) of 0.000 <0.05, it can be concluded that there is a difference in the average student learning outcomes for the pretest experimental class and the posttest experimental class, namely the class that uses the Problem Based Learning (PBL) learning model.
2. In pair 2, the value of Sig. (2-tailed) of 0.000 <0.05, it can be concluded that there is a difference in the average student learning outcomes for the control class pretest and the control class posttest, namely the class that uses the conventional learning model.

Based on the discussion of the results of the output of Pair 1, Conclusion: The Problem Based Learning (PBL) learning approach has an impact on students' scientific learning results. The magnitude of the impact of the PBL paradigm on academic results can be identified by observing the results of the descriptive analysis, namely:

1. In the experimental pretest, the minimum score obtained by students is 50 and the maximum is 80, with the average value of the experimental pretest being 65.00.
2. In the experimental post test the minimum score obtained by students is 78 and the maximum is 92 with the average value of the experimental pretest results being 84.60.

According to the findings of the descriptive analysis, it is clear that students in the experimental class—that is, the class that employs the PBL model—are learning more science on average. Hence, it can be stated that using the Problem Based Learning instructional strategy will help students acquire natural scientific concepts.

Test the N-Gain Score

The normalized gain (N-gain score) was carried out by researchers in order to assess the efficacy of the problem-based learning (PBL) model in the experimental class and to contrast it with the traditional learning model in the control class. The gain score represents the variation between the posttest and pretest results. Test for Gain Score results in this study can be observed in the following table:

Descriptives

	class			Statistics	std. Error
NGain_percent	Experiment class	Means		56.4244	1.747 31
		95% Confidence Interval for Mean	LowerBound	50.9281	
			Upperbound	57.9208	
		5% Trimmed Mean		55.2256	
		Median		56.6964	
		Variances		183,185	
		std. Deviation		13.53460	
		Minimum		20.00	
		Maximum		74.42	
		Range		54.42	
		Interquartile Range		18.94	
		Skewness		-.326	.661
		kurtosis		.020	.608
	control class	Means		33.8555	1.789 77
		95% Confidence Interval for Mean	LowerBound	30.2742	
			Upperbound	37.4368	
		5% Trimmed Mean		34.1655	
		Median		35.9238	
		Variances		192,197	
		std. Deviation		13.86353	
		Minimum		6.30	
		Maximum		62.50	
		Range		62.50	
		Interquartile Range		19.42	
		Skewness		-.184	.752
		kurtosis		-.1,754	1,608

According to the N-Gain score calculation results, the experimental class (PBL Model) falls into the fairly effective group with an average N-Gain score of 56.424 (or 56.4%). with an NGain score range between 20% and 74.42%. The Control class (Conventional approach) had an NGain Score of 33.855, placing 33.8% of it in the ineffective area. With an NGain Score ranging from 6.30 percent to 62.5%.

In light of this, it can be said that the PBL model is highly efficient at enhancing the academic performance of fifth-graders enrolled in public primary schools in the Pamulang District. Meanwhile, the fifth grade pupils in the public elementary schools in the Pamulang District did not improve their learning results

with the adoption of conventional learning models.

Discussion
The Influence of the Problem Based Learning (PBL) Learning Model on the Critical Thinking Ability of Public Elementary Schools in the Pamulang District area

*Problem Based Learning*is a learning modelstudent-centered by using scientific procedures, solving interesting and important problems by utilizing learning resources and being cooperative and collaborative and the teacher as a facilitatorwith indicators include:(1) Providing problem orientation to students (2) Organizing students for independent learning (3) Identifying student independence in independent or group learning (4) Creating and presenting outcomes (5) Evaluating and assessing the problem-solving process problems.

This research is in accordance with the theory presented by Subekti (2018), adding that the problem-based learning model is a collaborative, communicative learning method that allows students to take initiative and interact with each other and make problems the beginning of the learning process. There are several characteristics of the PBL Model including student-centered learning, the teacher as a facilitator or mentor, the problems encountered are used as a tool to gain knowledge by starting each experience of each learning experience by confronting complex real-life problems and students learn to analyze and representative problem solving

The findings of this study are consistent with those of studies done by Husna (2021), entitled "The Influence of Problem Based Learning (PBL) and Contextual Teaching and Learning (CTL) Models on Mathematical Critical Thinking Ability and Learning Independence of Students of SMPN 7 Tanjung Balai". This study's data were subjected to inferential analysis using annova and analysis of covariance. The study's findings indicate that (1) the contextual teaching and learning model and the problem-based learning model have a considerable impact on students' mathematical critical thinking abilities. (2) The contextual teaching and learning model and the problem-based learning model have a substantial impact on students' ability to learn independently. (3) The PBL paradigm has no initial contact with students' capacity for mathematical critical thinking. The researchers discovered through

their observations that the Problem Based Learning (PBL) Learning Model had an impact on students' Critical Thinking Skills in Class V Science subjects at SDN Kampung Bulak 01 and Bambu Apus 02, Pamulang District because through this learning model students had space and opportunity to share information, knowledge and discussion of problems encountered in learning.

The Influence of the Problem Based Learning (PBL) Learning Model on the Involvement of Class V Elementary School Students in the Pamulang District area

The term "student involvement" refers to students actively participating in the teaching and learning process assisted by the role of the teacher who functions as a facilitator and mediator in teaching and learning activities. Learning experience conveyed in the form of behavior in listening, speaking, conveying ideas and discussing which is developed in learning activities in classMajids (2014), student involvement in learning activities requires a good strategy, namely how the teacher starts learning planning by preparing learning plans and the learning media they use. The purpose of this planning is that students are expected to play an active role and be directly taking part in educational activities.

The findings of this study are consistent with studies done by Bergdahl et al (2020), conducted a study entitled Disengagement. Participation and technical proficiency in learning. Using a purposive sampling technique, explaining that student involvement includes three aspects, namely, behavioral, emotional and cognitive. The use of digital technology to assist and manage learning can be seen as behavioral engagement, as can the unlawful and/or passive use of technology as a result of the limited access to (functional) technology. The findings indicate that achieving digital balance is a key to student engagement and success, and as a result, it may be advantageous for students now and in the future, both inside and outside of the classroom.

The existence of the application of the PBL model is able to facilitate each student in building their mindset based on the orientation of the problem given so that it has the potential to explore everything that has been experienced by students before learning which then has an impact on increasing student involvement in learning, including students who classified as introverted or introverted. These students will

indirectly be provoked to take part in learning through triggering questions given by the teacher at the student orientation stage in the syntax of the PBL model.

The Effect of the Teacher's Problem Based Learning (PBL) Learning Model on Science Learning Outcomes of Class V Elementary Schools in the Pamulang District area

Learning Outcomes according to the synthesis islearning outcomes are the results after engaging in learning activities, students can as well as evidence of the success they have achieved by involving cognitive and psychomotor aspects expressed in symbols, letters and sentences. This research is supported by the theory presented Yuliyanti (2019),conducted a study entitled "The Effect of Problem Based Learning in the Form of Information Technology on Critical Thinking Ability and Student Learning Outcomes." The study used a pre-experimental design method with a one group pretest – posttest design model with purposive sampling.

This result is in line with the research results obtained by Yuliyanti (2019), conducted a study entitled "The Effect of Problem Based Learning Learning Models on Critical Thinking Ability and Student Learning Outcomes." The study used a pre-experimental design method with a one group pretest – posttest design model with purposive sampling. In this study the instruments used were tests of critical thinking skills, tests of cognitive learning outcomes, observation sheets of student activities and observation sheets of learning management.

Conclusion

The use of the Problem Based Learning (PBL) Learning Model has an impact on critical thinking abilities, according to the research findings and is a driving factor for teachers to be even more innovative in classroom learning. The PBL Model's use directly contributes to raising student achievement involvement in learning because at this stage students are asked to be active in responding to the problem orientation given and dare to give the outcomes of the group conversations. The Problem Based Learning (PBL) learning approach has an impact on students' learning results in science subjects by utilizing technology. The magnitude of the effect of the PBL model on learning outcomes can be determined by observing the results of the descriptive analysis, namely in the experimental

pretest the minimum score obtained by students is 50 and the maximum is 80 with the average experimental pretest result being 65.00. In the experimental posttest the minimum score obtained by students is 78 and the maximum is 92 with the average value of the experimental pretest results being 84.60. Based on these results, it can be understood that positive and significant correlation between the Problem Based Learning (PBL) Learning Model on the Science Learning Outcomes of Class V Students at Public Elementary Schools in Pamulang District.

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