



THE INFLUENCE OF PROBLEM BASED LEARNING (PBL) MODEL AND LEARNING MOTIVATION ON CRITICAL THINKING ABILITY IN GRADE 6 SDN 14 TANJUNG MEDAN

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Abstract

This study aims to determine: (1) The effect of the Problem Based Learning (PBL) learning model on the critical thinking skills of Class VI students of SD Negeri 14 Tanjung Medan in the 2021/2022 academic year; (2) The effect of learning motivation on students' critical thinking skills; (3) The interaction effect of Problem Based Learning (PBL) learning model and learning motivation on students' critical thinking skills. The sampling technique in this study was carried out in two classes, 36 students in class VI1 as an experimental class with Problem Based Learning (PBL) learning model and class VI2 as a control class with 32 students taught using the Direct Instruction learning model. Data collection instruments using: (1) motivation questionnaire in the form of a statement as many as 30 items; (2) Critical thinking test in the form of multiple choice as many as 15 items. This research method is quasi-experimental with data analysis techniques using the 2-way Anova test with a significant level of $\alpha = 0.05$. The results of this study showed that: (1) There is an influence of learning motivation on students' critical thinking; ($\alpha=0.05$, $p=0.000$); (2) There is an effect of learning model on students' critical thinking; ($\alpha=0.05$, $p=0.008$); (3) There is an interaction between the learning model and learning motivation towards critical thinking; ($\alpha=0.05$, $p=0.012$).

Keywords: *Problem Based Learning Model, Direct Instruction Model, Motivation, and Critical*

Thinking.

A. Introduction

Thinking skills are competencies that are always needed in today's learning. In the opinion of Ariyana, et al. (2018:2) The government expects students to achieve various competencies by applying HOTS or Higher-Level Thinking Skills. These competencies are critical thinking, creative and innovative, communication skills, collaboration and confidence. This is reinforced by the dimensions of the Pancasila student profile launched by the government today. The Pancasila student profile consists of six dimensions, namely: 1) faith, fear of God Almighty, and noble character, 2) independent, 3) mutual cooperation, 4) global diversity, 5) critical reasoning, and 6) creative.

According to Surya, (2016:123) Critical thinking is one of the cognitive strategies in solving more complex problems and demands a higher pattern. Critical thinking essentially develops elements of rational and empirical thinking based on scientific knowledge (Winarno, 2013:97-98).

In eliciting a response to increase critical thinking skills in students, it must be encouraged by a stimulus. This is in line with the behavioristic learning theory. Behaviorists argue that learning is a change in behavior as a result of experience. Learning is the result of the interaction between the stimulus (S) and the response (R). According to this theory, what is important in learning is the input in the form of a stimulus and output in the form of a response (Suryono and Hariyanto, 2012:59).

The critical thinking ability of Class VI students of SD Negeri 14 Tanjung Medan in Civics is still considered very low. This is evidenced by

the results of interviews with Class VI teachers at SD Negeri 14 Tanjung Medan stating that there are still many students who do not show satisfactory results on questions related to interpretation, analysis, evaluation, and inference. It is known that the average value of students in 2021 has not reached the classical completeness value in PPKn lessons. Furthermore, in the table above, it is stated that the four aspects, namely interpretation, analysis, evaluation, and inference, the percentage of mastery learning at least is relatively low. For the low value mentioned above, it is important to find out the cause.

According to Azmi Rizky Anisa, et al (2021:1) There is a low level of critical thinking skills in students usually occurs because during the process of carrying out a daily learning process it is considered less effective in developing an interest, talent, and potential that is in it. students themselves. Furthermore, Nur Fitri Amalia, et al., (2020:97) stated, "One of the obstacles experienced by teachers in developing students' critical thinking skills is that some students are still not used to thinking systematically, students are not used to giving reasons.

Problem Based Learning according to Tan (Rusman, 2011:229) Problem-Based Learning is an innovation in learning because in PBL students' thinking abilities are really optimized through a systematic group or team work process, so that students can empower, hone, test, and develop their thinking skills on an ongoing basis. The steps of this PBL model are: 1. Formulate the problem. 2. Analyze the problem. 3. Formulate the hypothesis. 4. Collect data. 5. Hypothesis testing. 6. Formulate problem solving recommendations.

In this case, PBL is directed so that students are able to solve problems systematically. Student development does not only occur in

cognitive aspects, but also affective and psychomotor aspects through internal appreciation of the problems they face (Sanjaya, 2009:214)

The achievement of learning objectives is influenced by many factors. One of them is student learning motivation. According to Tadjab (1994: 102) learning motivation is the overall psychic driving force in students that causes teaching and learning activities, ensures continuity of learning, and provides direction to learning activities in order to achieve a goal. Then, Uno (2014: 23) explained that learning motivation is an internal and external encouragement for students who are learning to make changes in behavior, generally with several indicators or supporting elements.

These two opinions explain that learning motivation is an encouragement or stimulus that exists in students to carry out learning activities in order to achieve the expected learning competencies or realize learning goals that have been formulated previously by creating a conducive learning environment.

Learning motivation is a very important component in determining student learning success. The low motivation of students is caused by several factors, including the lack of students' understanding of a concept, lack of active students' attitudes towards the subjects being studied, and lack of interpretation of the tasks of each subject being studied.

The low motivation of students to learn is one of the factors causing the less successful learning process in students. This ultimately has an impact on the low critical thinking ability of students. Learning motivation is a very important component in determining student learning success.

B. Method

This research was conducted with a quasi-experimental type. Quasi-experimental research was conducted to determine the effect of a treatment on the character of the subject under study. There are two learning models, namely the PBL model and the direct instruction model in terms of learning motivation towards critical thinking skills. This research was conducted at SD Negeri 14 Tanjung Medan Jl. Banyan Tanjung Medan Village, Kampung Rakyat District, South Labuhanbatu Regency, Postal Code 21463, North Sumatra. The time of the research was carried out in the implementation of the learning process or in the process of teaching and learning activities in the even semester of the 2021/2022 academic year, namely April to May 2022.

The population in this study were 69 students of class VI SD Negeri 14 Tanjung Medan, Kampung Rakyat sub-district. Class VI-A and class VI-B, which are 36 and 33 respectively, so that the research population is 69 people. From the two sixth grades in the school, two research samples were taken, namely class VI-A and class VI-B. Class VI-A as an experimental class taught with a Problem Based Learning model with a total of 36 students. Meanwhile, the control class was taught using a direct learning model, class VI-B was selected with a total of 33 students.

Research Procedure and Design

In order for the research to be carried out properly, the following research procedures are arranged: Preparation Phase and Implementation Phase.

Research Instruments and Data Collection Techniques

The instruments used in this research are;

1. Critical thinking skills

In critical thinking skills, the test is structured and modified according to the material content of Theme 7 Leadership. This test refers to five aspects, namely (1) Interpretation (2) Analysis; (3) Evaluation; (4) Inference.

2. Motivation to learn

The motivation questionnaire given to students has two types of statements, namely positive statements and negative statements, if the statement is positive, the score is from high to low, for example 5, 4, 3, 2, 1, while for negative statements the score is from low to high. height, for example 1, 2, 3, 4, 5

Data analysis technique

There are several data analysis techniques as follows: Data Description, Normality Test, Homogeneity Test, and Hypothesis Testing

C. Finding and Discussion

1. Result

a. Data Analysis Prerequisite Test

The prerequisite test for data analysis consists of a data normality test and a data homogeneity test. Furthermore, the difference in the value of learning outcomes and the value of students' critical thinking is seen by looking at the standard deviation and average value between the Problem Based Learning (PBL) class and the Direct Introduction (control) class with different motivation values.

Critical Thinking Pretest

The average pretest critical thinking of students taught using the PBL learning model is 42 and those taught using the Direct Introduction learning model is 35. From this average, it can be said that the two classes have a difference in initial critical thinking skills of 8.

These results were obtained using the Kolmogorov-Smirnov test with the help of SPSS 26.

- Normality test

Table 1. Normality Test Results of Students' Critical Thinking Values

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	df	Significant	Statistics	df	Significant
BK PBL	.115	36	.200	.973	36	.503
BK CONTROL	.132	32	.167	.949	32	.134

- Data Homogeneity Test

Table 2. Test the Homogeneity of Student Learning Outcomes and Critical Thinking

No.	Value Data	Significant Value	Information
1	Critical thinking	0.162	Homogeneous

Motivation Questionnaire Results

Table 3. Motivation Questionnaire Results Data

PBL class			Direct Introduction Class		
Score	f	Percentage	Score	f	Percentage
64-68	6	17%	53-57	1	3%
69-74	10	28%	58-62	4	13%
75-79	13	36%	63-67	7	22%

80-84	5	14%	68-72	13	41%
85-89	1	3%	73-77	5	16%
90-94	1	3%	78-82	2	6%
Total	36		Total	32	
Average	75	100	Average	68	100

Critical Thinking Posttest

The summary of post-test data on students' critical thinking in both classes can be seen in Table below.

Table 4. Student Critical Thinking Posttest Data

PBL class			Direct Introduction Class		
Score	f	Percentage	Score	f	Percentage
53-61	1	3%	27-38	2	6%
62-70	2	7%	39-50	6	19%
71-79	9	30%	51-62	8	25%
80-88	11	37%	63-74	8	25%
89-97	6	17%	75-86	5	17%
98-106	1	3%	87-98	3	9%
Total	36		Total	32	
Average	77	100	Average	63	100

- Normality test

Table 5. Normality Test Results of Students' Critical Thinking Values

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	df	Significant	Statistics	df	Significant
BK PBL	.115	36	.200	.973	36	.503
BK CONTROL	.119	32	.200	.958	32	.239

- Data Homogeneity Test

Table 6. Test the Homogeneity of Student Learning Outcomes and Critical Thinking

No.	Value Data	Significant Value	Information
1	Critical thinking	0.329	Homogeneous

b. Research Results Analysis

Student Critical Thinking Data Analysis

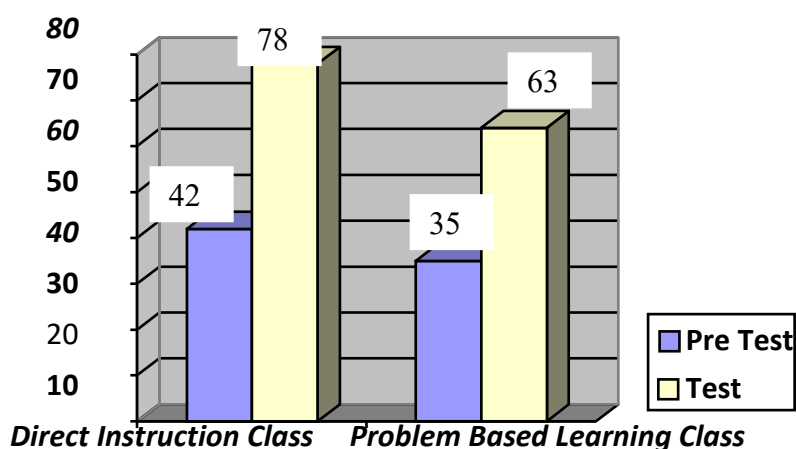


Figure 1. Pretest-Post Diagram of Critical Thinking Class Problem Based Learning and Direct Introduction

From these data it can be concluded that the improvement of students' critical thinking taught by learning Problem Based Learning is better than learning Direct Introduction.

Analysis of Posttest Results Based on Motivation

- Analysis of Students' Critical Thinking Based on Motivation

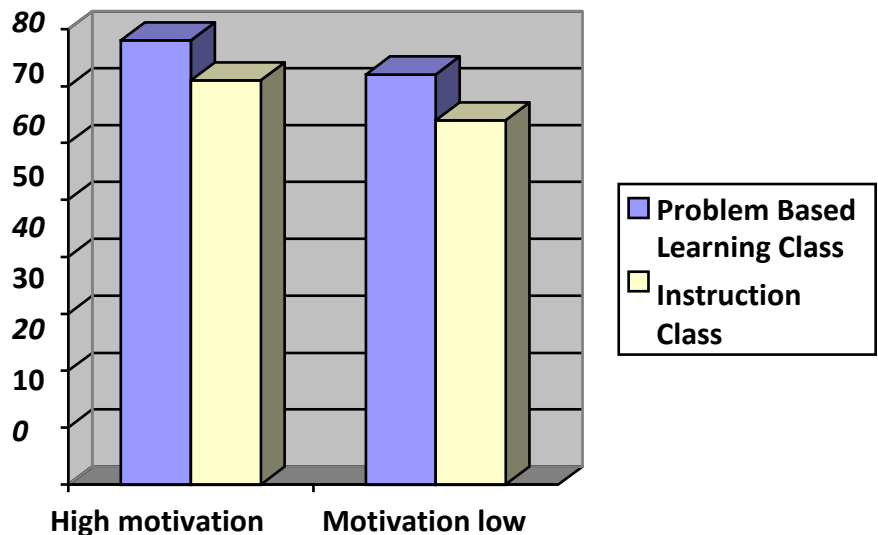


Figure 2. Comparison Diagram of Students' Critical Thinking Based on Motivation

c. Hypothesis test

Table 7. SPSS Output ANOVA Calculation Results

- Tests of Between-Subjects Effects

Dependent Variable: Critical Thinking Ability

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2176160a	3	725,387	42,967	.000
Intercept	349904.432	1	349904.432	20726.015	.000
Learning model	912,785	1	912,785	54,067	.000
Motivation to learn	1254.184	1	1254.184	74.290	.000
Learning model * Motivation to learn	.890	1	.890	.053	.819
Error	1080,472	64	16,882		
Total	356489000	68			

Corrected Total	3256,632	67
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a. R Squared = .668 (Adjusted R Squared = .653)

Table 8. Comparison of Critical Thinking Ability Based on Learning Model

- Learning model

Dependent Variable: Critical Thinking Ability

Learning model	mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Problem Based Learning	75.528	.685	74,160	76,896
Direct Instruction	68.188	.726	66,736	69,639

Table 9. Comparison of Critical Thinking Ability Based on Learning Motivation

- Motivation to learn

Dependent Variable: Critical Thinking Ability

Motivation to learn	mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Tall	76,160	.706	74,750	77,570
Low	67,556	.706	66,145	68,966

Table 10. Comparison of Critical Thinking Ability Based on the Interaction of Learning Models with Learning Motivation

- Model_Learning * Motivation_Learning

Dependent Variable: Critical Thinking Ability

Learning model	Motivation Study	mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Problem Based Learning	Tall	79,944	.968	78.010	81.879
	Low	71.111	.968	69.176	73.046
Direct Instruction	Tall	72.375	1.027	70,323	74,427
	Low	64,000	1.027	61,948	66.052

d. Tukey's Test**Table 11.** SPSS Output Tukey Test Results

- Multiple Comparison

Dependent Variable: Tukey HSD Learning Outcomes

(I) Motivation Study	(J) Learning Motivation	Mean Difference (IJ)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High Motivation PBL Model	Low Motivation PBL Model	9,167*	1.37 0	.000	5.55	12.78
	Model IN Motivation Tall	7,576*	1.41 2	.000	3.85	11.30
	Model IN Low Motivation	16,156*	1,43 7	.000	12.36	19.95
Low Motivation PBL Model	Motivational PBL Model Tall	-9,167*	1.37 0	.000	-12.78	-5.55
	Model IN High Motivation	-1,590	1.41 2	.675	-5.32	2.14
	Model IN Motivation Low	6,989*	1,43 7	.000	3.20	10.78
Model IN High Motivation	High Motivation PBL Model	-7,576*	1.41 2	.000	-11.30	-3.85
	Low Motivation PBL Model	1,590	1.41 2	.675	-2.14	5.32
	Model IN Motivation Low	8,579*	1,47 7	.000	4.68	12.48

*. The mean difference is significant at the 0.05 level.

2. Discussion

a. **Critical Thinking Ability in PPKn Students Taught Using Problem Based Learning (PBL) is Better Than the Direct Introduction Model at SD Negeri 14 Tanjung Medan TP 2021/2022**

Critical thinking is essentially someone who analyzes and evaluates activities from the start of learning that is carried out and one's involvement in carrying out roles as individuals and as students in groups. In other words, the higher the involvement of students in learning activities, the better the learning outcomes will be. Furthermore, learning outcomes based on critical thinking skills will provide better results.

The above statement is supported by research results which show that students who are taught by the Problem Based Learning model get a better average score than students who are taught by the Direct Introduction learning model. In addition, the results of the analysis of variance show that the significance value of the learning model is 0.000. Because $\text{Sig. } 0.000 < 0.05$ then the results of the hypothesis test reject H_0 or accept H_a at an alpha level of 0.05. This shows that there are differences in students' critical thinking skills in Civics with the PBL model. This is in accordance with the results of Agnes Andani's research (2017:1043). The results of the study show that the problem-based learning model is superior to direct instruction on certain materials, such as network addressing protocols and network hardware.

Apart from the results of the analysis of variance, the results of the study can also be seen from the difference in the posttest mean in the two classes. The average post-test of students in the Problem Based Learning class is 77 while in the Direct Introduction class it is 63. From these data, it appears that the average student learning outcomes taught

using problem-based learning are higher than the average student learning outcomes taught using Direct Introduction learning.

The difference in average that became the strength of this study was due to several things, namely: (1) The study was conducted in the upper class, namely the sixth grade of elementary school, which means that the students' thinking ability is higher than that of the lower class; (2) often arranged with various activities such as experiments, data processing and presentations to make learning more creative and fun; and (3) learning takes place in groups, allowing students to gain insight from the opinions of their friends.

In classes taught with problem-based learning, students also have the opportunity to investigate and solve problems on their own or in groups to draw conclusions that can be presented to others. In the process of doing this, the learning outcomes of critical thinking skills are at a higher level. This is because the strength of this model is directed at stimulating students' curiosity and in learning to provide space for interaction.

b. Critical Thinking Ability of Students with High Learning Motivation is Better than Students with Low Learning Motivation at SD Negeri 14 Tanjung Medan TP 2021/2022

The results of this study indicate that the average critical thinking ability of students who have high learning motivation (80) is higher than the critical thinking ability of students who have low learning motivation (71). It can be understood that students with high learning motivation will naturally work harder in doing homework and practicing Civics than at home, and in addition, they feel that their general subject knowledge is necessary, not mandatory, while students with low learning motivation

are lacking. enthusiasm for learning, less willing to ask questions and less active in learning.

Learning motivation has a strong influence on improving student learning outcomes in Civics subjects. This can be seen from the results of research which confirms that students with high learning motivation are more motivated to do things related to Civics. In addition, students who have high motivation to learn participate actively in class. At the same time, students with low learning motivation tend to be more likely to wait, be passive and lack innovation. Based on the research results obtained indicate that in the learning process Civics really need to pay attention to the level of student learning motivation.

c. The Interaction between Learning Models and Learning Motivation on Critical Thinking Ability of SD Negeri 14 Tanjung Medan Students TP 2021/2022

The research findings indicate that there is an interaction between the learning model and motivation on students' critical thinking skills. Students who have high learning motivation who are taught by learning Problem Based Learning have higher critical thinking skills than students who have high learning motivation who are taught by learning Direct Introduction. Likewise, students who have low learning motivation who are taught by learning Problem Based Learning have higher critical thinking skills when compared to students who have low learning motivation who are taught by learning Direct Introduction. This indicates an interaction between the learning model and learning motivation on students' critical thinking skills.

Through the problem-based learning model, students are directed to actively think from problem orientation to finally the best solution to

overcome the problems they face. Therefore, problem-based learning requires students to develop their thinking skills. Students with high learning motivation are students with high learning psychological conditions who will further improve their critical thinking skills if taught using a problem-based learning model.

The results of this study also found the contribution of the influence of learning motivation which was not much different (8%) when compared to the contribution of the learning model variable (7%) to students' critical thinking skills. This is because students with high learning motivation are more creative and motivated in their learning. Students with high motivation are more enthusiastic to learn and like challenges and are able to learn things well, so students with high motivation tend to be better at problem solving, through problem solving students can develop their critical thinking skills. In accordance with Sardiman's opinion (2016: 75) that in learning activities, motivation can be said as the overall driving force in students that causes learning activities,

Problem Based Learning learning model used for students who have low learning motivation by having the opportunity to further develop their thinking skills so that their critical thinking skills are higher than those using the Direct Introduction model with students who have low learning motivation.

D. Conclusion

Based on the results of research and discussion that have been stated previously, several conclusions can be drawn according to the problems that have been formulated, namely:

1. The critical thinking ability of students who have high learning

motivation (80) is better than students who have low learning motivation (71) at SD Negeri 14 Tanjung Medan TP 2021/2022.

2. There is a significant effect on the Problem Based Learning (PBL) learning model on students' critical thinking skills (77) compared to the Direct Introduction model (63) at SD Negeri 14 Tanjung Medan TP 2021/2022.
3. There is an interaction between the learning model (8%) and learning motivation (7%) on the critical thinking skills of the students of SD Negeri 14 Tanjung Medan TP 2021/2022. The interaction can be seen from the significant difference between the average critical thinking skills of students who are taught the Problem Based Learning model with low motivation and the Direct Introduction learning model with high motivation; Problem Based Learning model with low motivation and Direct Introduction learning model with high motivation.

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