THE EFFECT OF PROBLEM BASED LEARNING MODELS ON STUDENTS' CRITICAL THINKING SKILL IN GEOGRAPHY CLASS XI IPS SMAN 1 PRINGSEWU

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ABSTRACT

This study aims to determine the effect of the problem based learning model on students' critical thinking skills in the geography subject of class XI IPS at SMA Negeri 1 Pringsewu. This study uses the correlational method. The population in this study were all students of class XI IPS SMA Negeri 1 Pringsewu with a research sample of class XI IPS 2 which was determined through simple random sampling technique. Data collection techniques in this study were carried out by tests, questionnaires and documentation. The data analysis technique used in this research is simple linear regression analysis to determine the effect of the problem based learning model on students' critical thinking skills in geography subjects. The results of the study show that the the problem based learning model has an effect on students' critical thinking skills in the geography subject of class XI IPS at SMA Negeri 1 Pringsewu with a significance value of 0.003<0.05.

Penelitian ini bertujuan untuk mengetahui pengaruh model pembelajaran problem based learning terhadap kemampuan berpikir kritis siswa pada mata pelajaran geografi kelas XI IPS di SMA Negeri 1 Pringsewu. Penelitian ini menggunakan metode korelasional. Populasi dalam penelitian ini adalah seluruh peserta didik kelas XI IPS SMA Negeri 1 Pringsewu dengan sampel penelitian yaitu kelas XI IPS 2 yang ditentukan melalui teknik simple random sampling. Teknik pengumpulan data dalam penelitian ini dilakukan dengan tes, kuesioner dan dokumentasi. Teknik analisis data yang digunakan dalam penelitian ini adalah analisis regresi linier sederhana untuk mengetahui pengaruh model pembelajaran problem based learning terhadap kemampuan berpikir kritis siswa pada mata pelajaran geografi. Hasil penelitian menunjukkan bahwa model pembelajaran problem based learning berpengaruh terhadap kemampuan berpikir kritis siswa pada mata pelajaran geografi kelas XI IPS di SMA Negeri 1 Pringsewu dengan nilai signifikasi sebesar 0,003<0,05.

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Introduction

The rapid development of science and technology in the current era of globalization demands an increase in human resources who are intellectual, have creative thinking skills, critical thinking and problem solving skills, communication skills, and collaborate (collaboration). To give birth to this generation, it is necessary to improve the quality of education. Therefore, the involvement of the school as an educational institution is needed in preparing students from an early age so that they have a number of skills needed in 21st century life, one of which is the ability to think critically. This is in line with what was stated by Nantara (2021: 27) that schools have a number of roles as educational institutions, especially in providing knowledge or experience to students according to the demands of the 21st century, where schools are required to be able to develop critical thinking skills in students. through various activities.

According to Nawawi (Wulandari et al., 2020: 46), the 2013 curriculum focuses more on students being able to think critically in identifying, understanding, studying problems, and applying learning material obtained during the learning process with the real world, so that the end result is expected to increase. and the balance between the ability to become a good human being (soft skills) and the ability to become a human being who has the skills and knowledge to live a decent life (hard skills) includes the competency aspects of good attitudes, knowledge and skills.

The implementation of learning in the 2013 curriculum ideally uses varied, creative and innovative learning models to improve students' abilities in learning. According to Isriani (2012: 18), that the role of the teacher as an educator is required not only to provide learning material in the form of memorization, but how the teacher can manage the environment and learning strategies that enable students to learn optimally. So therefore, the teacher has a role and plays an important role in the learning process. As a learning agent, teachers are expected to be able to create meaningful experiences for students through learning activities. Thus, the accuracy of the selection of learning models carried out by the teacher will certainly determine the success of learning objectives.

However, the reality that occurs in the field is that there are still many teachers' teaching methods that are less varied, most teachers still use learning models that are not appropriate for the learning material to be delivered and have not led to improving students' critical thinking skills. This is supported by the opinion of Astuti and Setiawan (Al-Fikry et al., 2018: 17) that the teacher's role in learning activities is currently still quite dominant due to the lack of variation in the learning model used. In addition, the lack of involvement of students in learning activities and teachers as educators have not developed the potential of students to the fullest resulting in students tending to be passive because students feel less interested and have no interest and motivation in learning activities. This condition has an impact on the underdevelopment of students' thinking skills, especially critical thinking skills.

The effort needed to improve students' critical thinking skills is to apply an effective and appropriate learning model, namely a learning model that can increase student activity, encourage students to build their own knowledge, one of which is by applying problem-based learning models. This is supported by the opinion of Larasati (2014: 33) that the problem-based learning model emphasizes students as learning centers (student centered learning) and motivates students to develop higher-order thinking skills, such as problem solving skills, critical thinking, and creative.

Based on the results of pre-research conducted at SMA Negeri 1 Pringsewu, it can be seen that teachers still use learning models that are less varied in learning geography. So far, geography subject teachers at SMA Negeri 1 Pringsewu have only used two learning models, namely the mind mapping learning model and the conventional learning model. Therefore, during the learning process the teacher plays an active role compared to students. Of course, this causes students to feel bored quickly and results in a decrease in students' interest and motivation to learn. Meanwhile, it is known that problem-based learning models such as the problem-based learning model have not been implemented in SMA Negeri 1 Pringsewu in geography learning.

The ability to think critically is an important competency in the 2013 curriculum, because this skill is one of the life skills that needs to be developed through the educational process. Therefore, students' critical thinking skills are actually very much needed in geography learning, the aim is to stimulate and familiarize students with sensitivity to problems that occur in the surrounding environment, moreover we know that learning geography is closely related to problems that occur in everyday life. -day. But the reality that occurs in schools, students' critical thinking skills in geography subjects are still relatively low. This can be proven from the results of students' answers in working on odd semester final exam questions (UAS) for the

2021/2022 academic year based on the level of critical thinking skills in the analysis stage (C4) the result is that only 41.2% of 97 students or around 40 students who can answer questions correctly at the level of thinking ability C4.

One of the factors causing the low critical thinking skills of students is thought to be caused by the learning model that is used inappropriately so that it has not led to an increase in students' critical thinking skills. Then the learning activities are still centered on educators so that students do not participate actively to think critically during the learning process in class. This condition ultimately resulted in not creating a conducive and enjoyable learning climate. Geography learning cannot be taught only by using conventional learning models, but we need a learning model that can increase student activity during the learning process such as a learning model that can display real problems that occur in students' daily lives, this method can later stimulate students to develop thinking skills, especially critical thinking skills.

Therefore, to overcome these problems, improvements are needed in the use of learning models that are used, such as applying this problem-based learning model, so that later it can create a fun and memorable learning process for students. Then to train students' critical thinking skills the researcher will later provide a subject matter that refers to basic competence (KD) 3.4 "analyzing national food security, supply of industrial materials, and the potential for new and renewable energy in Indonesia" which will later become material for participant discussion students during the learning process. The purpose of this study is to determine the effect of the problem-based learning model on students' critical thinking skills in geography class XI IPS at SMA Negeri 1 Pringsewu.

Method

The method used in this study is the correlational method. The population in this study were all students of class XI IPS at SMA Negeri 1 Pringsewu, totaling 101 students. The sample in this study was XI IPS 2 with a total of 33 students who were taken using simple random sampling technique. The independent variable in this study is the problem-based learning model (X). While the dependent variable in this study is critical thinking ability (Y). Data collection techniques in this study used test instruments that refer to cognitive domains C4 (analyze) and C5 (evaluate) to measure students' critical thinking skills in geography subjects, especially material in KD 3.4 "analyze national food security, supply of industrial materials, and potential new and renewable energy in Indonesia" that had been previously studied and a questionnaire about student responses to the implementation of the problem-based learning model. Documentation in this study is used to obtain a number of classes, data on student learning outcomes, class schedules for the 2022/2023 school year which are sourced from the administrative department and teachers geography subject at SMA Negeri 1 Pringsewu.

The instrument requirement test in this study consisted of a validity test used to show the validity or validity of an instrument, then a reliability test was used to show a data that could be trusted or reliable. Furthermore, the difficulty level test is used to examine test questions in terms of difficulty and a discriminating power test to determine the ability of an item in order to be able to distinguish between students who have high abilities and students who have low abilities. Based on the results of the research that has been carried out, the following results of the calculation of the instrument requirements test have been obtained:

1. Validity Test

The validity test was carried out on students' critical thinking skills questions as well as questionnaires on student responses to the implementation of the problem-based learning model which was tested on samples outside the study, namely in class XI IPS 3, totaling 28 students. Based on the results of the questionnaire validity test, it was obtained $r_{table} = 0.374$ so that from the 20 statements that had been tested for validity, it could be concluded that 10 statements were declared valid while the other 10 statements were declared invalid. Meanwhile, based on the results of the validity, it can be concluded that 15 questions are declared valid, while the other 5 questions are declared invalid.

2. Reliability Test

Reliability tests were also carried out on questions of students' critical thinking skills as well as questionnaires on students' responses to the implementation of the problem-based learning model which was tested on samples outside the study, namely in class XI IPS 3, totaling 28 students. Based on the results of the instrument reliability test on the variable learning model problem based learning (X) obtained $r_{table} = 0.374$ so that the 20 statements tested for reliability showed a reliable number of 0.704 or included in the high classification based on reliability interpretation criteria. Meanwhile, based on the results of the instrument reliability test on the variable students' critical thinking skills (Y), $r_{table} = 0.374$ so that the 20 questions tested for reliability showed a reliable number of 0.768 or included in the high classification based on reliability interpretation criteria.

3. Difficulty Level Test

The difficulty level test was carried out in class XI IPS 3, which consisted of 28 students with 20 essay questions. Based on the results of the calculation of the item difficulty test, it was found that 2 questions were in the difficult category, 16 questions were in the moderate category and 2 questions were in the easy category.

4. Difference Analysis

Analysis of the differential power of the questions was also carried out in class XI IPS 3, which consisted of 28 students with a total of 20 essay questions. Based on the results of the calculation of the test for discriminating power of questions, it was found that 1 item was in the very low category, 12 questions were in the low category and 7 questions were in the moderate category.

The data analysis requirements test in this study consisted of a normality test which was carried out to find out whether or not a data distribution was normal, the normality test would later use the Kolmogorov-Smirnov method with the help of SPSS version 25 software. Then a linearity test was also carried out which aimed to find out the relationship between variables independent and dependent variable whether linear or not. This linearity test is used as an analysis requirement because the research data will be analyzed using regression. The linearity test in this study will use the ANOVA table assisted by SPSS software version 25. Meanwhile, the data analysis technique used in this study is simple linear regression analysis which is used to determine the influence of the independent variables (problem based learning model) on the dependent variable (students' critical thinking skills). which was carried out using the help of SPSS software version 25.

Results and Discussion

Pringsewu 1 Public High School is one of the schools located at Sports Street No. 01 Pringsewu Barat Village, Pringsewu District, Pringsewu Regency, Lampung Province. Based on its astronomical location, Pringsewu 1 Public High School is located between 5°20'30"S-5°21'0"S and 104°58'0"E-104°58'30"E. Pringsewu 1 Public High School was built in a strategic location so that access to the location is easy to reach by public transportation and private vehicles with paved roads. The following are the boundaries of the area of SMA Negeri 1 Pringsewu:

- a. To the north it is bordered by Rejosari Village
- b. To the south it is bordered by Pringsewu Selatan Village
- c. To the west it is bordered by Pajaresuk Village
- d. To the east it is bordered by North Pringsewu

SMA Negeri 1 Pringsewu is a state school with local government ownership status which was established on July 29, 1966 which was stipulated by Decree of the Minister of Education and Culture of the Republic of Indonesia No. 106/SK/B/III. This school has an area of 6,570 m². For more details about the location of Pringsewu 1 Public High School, it can be seen in Figure 1 below:



Figure 1. Map of the Research Locations of SMA Negeri 1 Pringsewu

This research was conducted in class XI IPS 2 SMA Negeri 1 Pringsewu with a total of 33 students from 15 September 2022 to 23 September 2022 for 4 meetings. This learning activity lasts for 2 hours of lessons with a duration of 90 minutes using the problem based learning model. The first meeting was held on Thursday 15 September 2022 starting at 07.00-08.45 WIB with the subject matter of "the notion of food security, industry and energy". Then the second meeting continued on Friday 16 September 2022 starting at 09.30-11-15 WIB with the subject matter "potential and distribution of agricultural resources, fishery plantations and livestock for national food security". Furthermore, the third meeting was continued on Thursday 22 September 2022 starting at 07.00-08.45 WIB with the subject matter "the potential and distribution of renewable energy sources". The fourth meeting was held on Friday 23 September 2022 starting at 09.30-11-15 WIB with the subject matter of "resources, as well as the potential and distribution of renewable energy sources". The fourth meeting was held on Friday 23 September 2022 starting at 09.30-11-15 WIB with the subject matter of "resources, as well as the potential and distribution of renewable energy sources". The fourth meeting was held on Friday 23 September 2022 starting at 09.30-11-15 WIB with the subject matter of "resource management in the supply of food, industrial materials, and new and renewable energy in Indonesia". At this fourth meeting a test of students' critical thinking skills was carried out and filled out a questionnaire on student responses to the implementation of the problem-based learning model in the class.

Data Analysis Requirements Test Results

1. Normality Test

The normality test in this study was conducted to find out whether the research data were normally distributed or not normally distributed. The normality test in this study was carried out using the Kolmogorov-Smirnov method with the help of SPSS version 25 software. Following are the normality test results in this study which are presented in Table 1:

Tests of Normality								
	Kolmogorov-Smirnov ^a			Shapiro-Wilk				
	Statistic	Df	Sig.	Statistic	Df	Sig.		
Model Pembelajaran Problem Based Learning	.149	33	.061	.944	33	.089		
Kemampuan Berpikir Kritis Siswa	.119	33	$.200^{*}$.964	33	.342		
*. This is a lower bound of the true significance.								
a. Lilliefors Significance Correction								

 Table 1. Data Normality Test Results for Problem Based Learning Model Variables (X) and Students' Critical Thinking Ability Variables (Y)

Source: Results of Data Processing by Researchers in 2022

Based on the results of the normality test in table 1 above, it can be seen that the problem based learning variable (X) shows a significance value of 0.061>0.05, so H₀ is accepted so that the data is declared normally distributed. The normality test was also carried out on the student's critical thinking ability variable (Y) and a significance value of 0.200>0.05 was obtained, so H₀ was accepted so that it could be concluded that the data was declared normally distributed.

2. Linierity Test

The linearity test in this study was conducted to determine whether the X and Y variables have a linear relationship or not. The linearity test is of course important to do as a condition for analysis if the research data is to be analyzed using regression. In this study the linearity test was carried out using an ANOVA table assisted by SPSS software version 25. The following results of the linearity test in this study are presented in Table 2:

Table 2. Linearity Test Results for Problem Based Learning (X) Variable Data on Students' Critical Thinking Ability Variables (Y)

ANOVA Table										
			Sum of Squares	Df	Mean Square	F	Sig.			
Kemampuan	Between	(Combined)	726.041	7	103.720	2.234	.066			
Berpikir Kritis *	Groups	Linearity	474.965	1	474.965	10.228	.004			
Model		Deviation	251.076	6	41.846	.901	.510			
Pembelajaran		from Linearity								
Problem Based	Within Grou	ups	1160.929	25	46.437					
Learning	Total		1886.970	32						

Source: Results of Data Processing by Researchers in 2022

Based on the results of the calculation of the linearity test related to the problem based learning (X) learning model on critical thinking skills (Y) as in table 2 above, the significance value is obtained in the Deviation from Linearity line of 0.510> 0.05, so H_0 is accepted, meaning that there is a linear relationship between the two variable.

3. Hypothesis testing

Hypothesis testing in this study was carried out using simple linear regression analysis. Simple linear regression analysis in this study was used to determine the influence of the problem-based learning model (X) on students' critical thinking skills (Y). The hypotheses to be tested in this study are as follows:

H₀: The problem-based learning model has no effect on students' critical thinking skills in geography class XI IPS at SMA Negeri 1 Pringsewu.

H₁: The problem-based learning model has an effect on students' critical thinking skills in geography class XI IPS at SMA Negeri 1 Pringsewu.

The following is the data from the results of a simple linear regression analysis which will be presented in Table 3:

 Table 3. Simple Linear Regression Analysis Test Results Problem Based Learning Model Variables (X)

 Against Students' Critical Thinking Ability Variables (Y)

Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate			
1	.502ª	.252	.228	6.74896			
a. Predictors: (Constant), Problem Based Learning							

Source: Results of Data Processing by Researchers in 2022

Based on the calculation results of the simple linear regression analysis test in the summary model table above, the correlation value or relationship (R) is 0.502. From these results a coefficient of determination (R Square) of 0.252 is obtained, which implies that the influence of the independent variable (Problem Based Learning Model) on the dependent variable (Students' Critical Thinking Ability) is 25.2% and the remaining 74.8% is influenced by other factors not explained in this study.

ANOVA ^a							
Mode	1	Sum of Squares	Df	Mean Square	F	Sig.	
1	Regression	474.965	1	474.965	10.428	.003 ^b	
	Residual	1412.004	31	45.549			
	Total	1886.970	32				
a. Dep	oendent Variable: K	emampuan Berpikir Krtit	is				
b. Pre	edictors: (Constant),	Problem Based Learning	Z				

Source: Results of Data Processing by Researchers in 2022

Negeri 1 Pringsewu.

Based on the results of simple linear regression analysis test calculations in the ANOVA table above, it is known that the significance value is 0.003 < 0.05, then H₁ is accepted meaning that the problem-based learning model has an effect on students' critical thinking skills in geography subject class XI IPS in SMA

Coefficients ^a							
		Unstandardized Coefficient.		efficients	Standardized Coefficients		
				Std.			
Mo	del	В		Error	Beta	Т	Sig.
1	(Constant)		11.331	19.761		.573	.571
	Problem Based Learning		.809	.250	.502	3.229	.003
a. <i>L</i>	a. Dependent Variable: Kemampuan Berpikir Krtitis						

Source: Results of Data Processing by Researchers in 2022

Based on the results of simple linear regression analysis test calculations in the coefficient table above, a constant value (a) of 11.331 can be obtained while the value of the problem-based learning model (b/regression coefficient) is 0.809 so that the regression equation can be written Y = 11.331 + 0.809X.

Problem Based Learning Learning Model Influences Students' Critical Thinking Ability in Geography Class XI IPS at SMA Negeri 1 Pringsewu

Based on the results of the hypothesis testing that has been carried out, it shows that there is a significant effect of 0.003 < 0.05 so it can be concluded that the problem-based learning model has an effect on students' critical thinking skills in geography class XI IPS at SMA Negeri 1 Pringsewu. Then based on the calculation results of the simple linear regression test that has been done, the regression equation is Y = 11.331 + 0.809X and shows a positive correlation of 0.502. This regression equation shows that if the problem-based learning model is implemented optimally, it will improve students' critical thinking skills and vice versa.

The coefficient of determination (R Square) shows a number of 0.252 which implies that the magnitude of the influence of the independent variable (Problem Based Learning Model) on the dependent variable (Students' Critical Thinking Ability) is 25.2%. That is, 25.2% of students' critical thinking skills in Geography class XI IPS 2 semester I of the 2022/2023 school year, as much as 25.2% is determined by the application of the problem-based learning model and the remaining 74.8% is influenced by other variables outside of research. The magnitude of the influence of the problem-based learning model on students' critical thinking skills only shows a figure of 25.2%, this could happen because apart from the problem-based learning model, there are other factors of 74.8% which can influence thinking skills. critical students.

The influence of the problem based learning learning model on critical thinking skills is because during the learning process students are encouraged to be actively involved in the problem solving process by learning to construct their own knowledge so that it will train their critical thinking skills. The learning process like this will certainly be more meaningful because students can build their own knowledge based on their own experiences with the environment, so the teacher's role here is only a facilitator in learning. This is of course in line with Slavin's opinion (Trianto, 2012: 74) regarding constructivism theory which explains that teachers do not just provide knowledge to students, where students must build their own knowledge in their minds.

Critical thinking skills can certainly be formed when the learning process takes place in class, where the focus of learning is centered on students. This is in line with the opinion of Fajrilia (2019: 1279) which explains that students who usually play a role in the learning process have high-level thinking skills. Playing a role means that it is not just an opinion in general or that is rote, but the ability of students to think deeply and meaningfully so that it can be understood. Thus the ability to think critically has concrete benefits in honing thinking skills and increasing student understanding. The following will present a diagram of the category of critical thinking skills for Class XI IPS 2 SMA Negeri 1 Pringsewu after implementing the problem-based learning model for that class:



Figure 2. Categories of Critical Thinking Ability of Class XI IPS 2 Students of SMA Negeri 1 Pringsewu

Based on the picture above, information is obtained that the critical thinking skills of class XI IPS 2 students in the material on food security, industry and energy found 6 students included in the category of having very high critical thinking skills, then 17 students were included in the high category, then 9 students entered in the medium category, and 1 student is included in the low category. So it can be concluded that the average critical thinking ability of students on the subject matter of food security, industry and energy for class XI IPS 2 SMA Negeri 1 Pringsewu is included in the high category. This is because during class learning students are encouraged to be active in the process of solving problems by learning to construct their own knowledge so that it will train their critical thinking skills. This is in line with the opinion put forward by Amin (2017: 32) that high critical thinking skills are due to students being active during class learning by using the problem-based learning model. Students are active in constructing their knowledge through discussions and questions based on real problems. This can encourage the ability to think critically to the fullest.

There were 33 students in class XI IPS 2 SMA Negeri 1 Pringsewu where 27 of them said that the implementation of the problem-based learning model was included in the good category when applied in geography learning with a percentage of 75.8%. This is because the problem-based learning model is a learning that requires students to construct their own knowledge through problems. Then learning using the problem-based learning model is certainly able to train students' activeness, increase self-confidence, learn to express opinions, develop team collaboration skills and be able to develop critical thinking skills during the learning process in class.

So therefore, the results of this study indicate the fact that the problem-based learning model with a contextual approach is able to provide new experiences for students as well as train students to learn to analyze a problem, develop thinking skills especially critical thinking, learn to formulate hypotheses and conclude the final results independently, so that students will be accustomed to dealing with a problem. This is in line with the opinion of Fajrilia (2019: 1279) that contextual learning is believed to be able to improve students' ability to think, where students get new ideas and knowledge, with this indirectly students' higher order thinking skills emerge and are trained.

Conclusion

The problem-based learning learning model has an effect on students' critical thinking skills in geography subject class XI IPS at SMA Negeri 1 Pringsewu, this can be proven based on the results of simple linear regression test calculations where a significance value of 0.003 < 0.05 is obtained, which means that H₁ is accepted and H₀ is rejected. Then the results obtained are the magnitude of the influence of the problem-based learning model on students' critical thinking skills of 25.2%. This means that 25.2% of students' critical thinking skills in Geography class XI IPS 2 semester I of the 2022/2023 school year, as much as 25.2% is determined by the application of the problem-based learning model and the remaining 74.8% is influenced by other variables outside of research.

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