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THE EFFECT OF PROBLEM-BASED LEARNING (PBL) ON THE CRITICAL THINKING OF STUDENTS IN ECONOMICS CLASS XI AT MA AS SALAMAH IN THE 2024-2025 ACADEMIC YEAR

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ABSTRACT

Education plays a very important role in improving the quality of human resources. One of the main problems in education in Indonesia is the low learning outcomes of students, partly due to the use of inappropriate learning methods. The problem-based learning (PBL) model is one approach that can improve students' critical thinking skills because it emphasizes active and independent solving of real problems. This study aims to determine the effect of the problem-based learning (PBL) model on students' critical thinking skills in Economics class XI at MA As Salamah in the 2024/2025 academic year. The background of this study is the low critical thinking skills of students due to conventional learning methods. The approach used was quantitative with simple linear regression analysis. The research instruments were tested for validity and reliability, with all items declared valid ($r > 0.306$) and reliable ($a = 0.802$ for X and 0.797 for Y). The normality test showed that the residual data were normally distributed ($p = 0.200$; Monte Carlo Sig. = 0.841). The regression analysis results showed an R value of 0.965 and an R^2 value of 0.932, and the t-test showed a significant effect of variable X on Y ($p < 0.001$). Thus, PBL has a positive and significant effect on students' critical thinking skills.

Keywords: problem-based learning, critical thinking, students

INTRODUCTION

Education plays a crucial role because without it, society will face difficulties in progressing and will fall behind. Education is a means of improving the quality of the workforce, both physically, mentally, and spiritually. Developing countries are known by their citizens for their high level of knowledge. (Rusmawati et al., 2021). Based on this explanation, teaching methods that can improve students' critical thinking skills are needed. One effective way to train students' thinking skills is by using problem-based learning (PBL). (Fitriyyah & Wulandari, 2019). In Indonesia, students' academic achievement is still relatively low in the learning process at school. This can be seen from the data on initial assignment scores and daily tests, which are still below the minimum passing grade. (Muhzemmil et al., 2021).

There are various elements that can influence learning outcomes, namely the type of learning model applied. Problem-based learning models require students to be actively involved in addressing questions in the teaching material, while teachers function as supporters in the teaching and learning process. The PBL model is a variation of the problem-based approach that emphasizes student participation in finding solutions to challenges in the learning material. (Evi & Indarini, 2021). Independent learners will be able to master the material and solve the problems they encounter in the material. Independent learning requires learners to be active and not dependent on teachers. This problem-based learning model is an approach in which students are presented with challenges that encourage them to think critically. The main focus is on issues that arise in everyday life, with the hope that students can become independent learners and be confident in their abilities. (Safitri, 2023).

Problem-based learning models are presented as an effort to train and develop problem-solving skills oriented toward authentic problems related to students' lives, in order to encourage critical thinking. (Prihono & Khasanah, 2020). On the other hand, Rahmaningrum & Isnarto (2024) also explain that problem-based learning is a model created to provide opportunities for students to gain learning experiences when organizing, researching, and solving complex everyday problems.

Critical thinking skills are very important for students today and in the future. The habit of critical thinking needs to be cultivated from an early age so that students are able to deal with changing situations and the challenges of life that continue to evolve. Critical thinking skills also train students to develop ideas and decisions from various perspectives in a detailed, careful, thorough, and logical manner. School learning should enable and train students to explore critical thinking skills and abilities (Prihono & Khasanah, 2020). Critical thinkers find information, analyze and evaluate it based on factual conclusions, and then make decisions. Critical thinkers will always find and explain the relationship between problems and other related issues and experiences (Saputra, 2020).

Critical thinking is a skill that is essential for students in today's information age. Critical thinking skills enable individuals to evaluate information, consider arguments, and make logical decisions. In the context of education, critical thinking is not limited to memorizing facts, but also involves a deeper understanding of a concept. As a result, students are expected to be able to solve problems creatively.

Based on the results of observations conducted at MA As Salamah Cora Saleh Kapongan Situbondo, it is known that when students work on their assignments, they tend to complete them by working together on the tasks given by their teachers, so that their independent critical thinking skills are very minimal, which makes them dependent on other students in completing the assignment. Furthermore, because the learning methods used tend to be traditional, such as lectures and memorization, they are not effective enough to improve critical thinking and problem-solving skills.

In addition, Wahyuni, S., & Anugraheni (2020) explain that the main objective of problem-based learning methods is to encourage students to be more courageous and creative in their imagination. With their imagination, students are guided to generate new discoveries, whether in the form of improvements to existing ideas or the creation of new ideas. This problem-based learning model is expected to bring about developments in students' thinking patterns, enabling them to critically solve problem-based tasks.

Based on the background of this issue, the author wishes to conduct research related to this issue with the title “The Effect of the Problem-Based Learning (PBL) Model on the Critical Thinking of Students in Economics Class XI at MA As Salamah in the 2024-2025 Academic Year.”

RESEARCH METHODS

This quantitative study used a pre-experimental design with a single case study. This study involved only one group without a control group. According to Yurni & Hariati (2022), in a pre-experimental design, observations are made twice, before and after the experiment is conducted. The test was conducted by administering a questionnaire. The pre-experimental design was used to test the impact of the PBL learning model on students' critical thinking skills.

Sample determination using purposive sampling is a sampling method that is not carried out randomly, where the researcher selects samples based on certain identities relevant to the research objectives, so that it is expected to provide solutions to the problems being studied (Lenaini, 2021), namely 30 grade XI students at MA As Salamah. Data in this study were collected using questionnaires.

RESULTS AND DISCUSSION

To determine the effect of the problem-based learning (PBL) model, several statistical tests were conducted first. The tests conducted were as follows:

Validity test

The validity of a measurement instrument is demonstrated by its ability to accurately measure the questionnaire given to respondents. The validity test criterion is that if the calculated r value is greater than the table r, then the statements in the questionnaire are declared valid. In this study, the number of samples used was 30 respondents, so the degree of freedom (df) was calculated using the formula n - 2 = 30 - 2 = 28. With df = 28 and a significance level of alpha = 0.1, the table r value obtained was 0.306. The results of the validity test are shown in the following table:

Table 1. Validity test of problem-based learning (PBL) (X)

Question Item	Item Correlation	R-Table	Description
X-1	0,894	0,306	Valid
X-2	0,713	0,306	Valid
X-3	0,955	0,306	Valid
X-4	0,888	0,306	Valid
X-5	0,947	0,306	Valid
X-6	0,735	0,306	Valid
X-7	0,921	0,306	Valid

From the table above, it can be seen that for problem-based learning (PBL), the calculated r value for each item is greater than the table r value, or rhitung > rtabel, so it can be concluded that each data item is valid.

Table 2. Critical thinking validity test (Y)

Question Item	Item Correlation	R-Table	Description
Y-1	0,931	0,306	Valid
Y-2	0,897	0,306	Valid
Y-3	0,953	0,306	Valid
Y-4	0,917	0,306	Valid
Y-5	0,873	0,306	Valid
Y-6	0,943	0,306	Valid
Y-7	0,741	0,306	Valid
Y-8	0,656	0,306	Valid

From the table above, it can be seen that critical thinking has a calculated r value for each item that is greater than the table r value, or rhitung > rtabel, so it can be concluded that each data item is valid.

Reliability Test

In the reliability test, decisions are based on a value limit of 0.70, which means that a variable is considered reliable if its Cronbach's Alpha value is greater than 0.70. Based on the SPSS output in the Reliability Statistics table, a Cronbach's Alpha value of 0.797 was obtained with a total of 9 items. This value is close to 0.8, which indicates that the instrument is in the reliable category or has

a good level of consistency. Generally, an instrument is considered reliable if the Cronbach's Alpha value is above 0.70. Thus, it can be concluded that all items in this instrument are suitable for measuring the variables under study because they meet the reliability standards.

Normality Test

Based on the results of the One-Sample Kolmogorov-Smirnov test on the unstandardized residual values displayed by SPSS, the number of observations (N) = 30 was obtained. The mean residual = 0.000 (indicating a distribution center at zero). The standard deviation of the residual = 2.219. The K-S (D) statistical value = 0.084, with a maximum positive difference of 0.082 and a negative difference of –0.084. Asymp. Sig. (2-tailed) or p-value = 0.200 (with Lilliefors correction), which is the lower limit of the actual significance value.

Given that the p-value is greater than α = 0.05, there is insufficient evidence to reject the null hypothesis, which states that the residuals are normally distributed. Additional support is also seen from the results of the Monte Carlo test conducted on 10,000 simulations, producing a p-value of 0.841 with a 99% confidence interval between 0.832 and 0.850. This further strengthens the conclusion that the distribution of residuals does not deviate from normality. Therefore, the unstandardized residuals in this model can be considered normally distributed and have met the normality assumption in regression analysis.

Hypothesis Testing

Simple Linear Regression Test

The use of simple linear regression analysis aims to measure how significant the impact of problem-based learning models (X) is on students' critical thinking skills (Y). The following are the results of the analysis:

Table 3. Hypothesis test results using SPSS

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.965[a]	.932	.929	2.25850

a. Predictors: (Constant), X
b. Dependent Variable: Y

Referring to the regression analysis results contained in the Model Summary table, it is known that the correlation coefficient (R) value reaches 0.965, which indicates a very strong relationship between the independent variable (X) and the dependent variable (Y). Furthermore, the R Square value of 0.932 shows that 93.2% of the variation in variable Y can be explained by the presence of variable X, while the remaining 6.8% is influenced by other factors outside the model.

Meanwhile, the Adjusted R Square value of 0.929 confirms that even after adjusting for the number of samples and variables in the model, the ability of variable X to explain the variation in Y remains high, at 92.9%. The Standard Error of the Estimate value obtained is 2.25850, reflecting the average error rate in predicting the value of Y. This figure is relatively small, so it can be said that the regression model has good prediction accuracy. The regression model used shows a very high level of accuracy and predictive power in describing the effect of variable X on variable Y.

Significance test

This test will determine the conclusions of the research results. The t-test is a statistical test that will be used in determining this significance test. The t-test or partial test is a test to determine the effect of each independent variable (X) on the dependent variable (Y). The analysis results are as follows:

Table 4. Significant test results using SPSS

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.517	1.307		1.160	.256
	X	1.094	.056	.965	19.545	<.001

a. Dependent Variable: Y

Referring to the simple linear regression results shown in the Coefficients table, the regression equation is obtained as follows: Y = 1.517 + 1.094X The constant (intercept) value of 1.517 indicates that when the X variable is zero, the estimated value of Y is 1.517. However, statistically this value is not significant because it has a significance value (Sig.) of 0.256, which exceeds the threshold of 0.05.

Meanwhile, the regression coefficient of variable X is recorded at 1.094 and shows a significance value of < 0.001, which means that variable X has a statistically significant effect on Y. In other words, every one-unit increase in variable X will cause an increase of 1.094 in variable Y. The standardized coefficient value of 0.965 indicates a very strong influence of variable X on variable Y when compared relatively with other variables in the model (even though this is a simple regression). Variable X has a positive and significant influence on variable Y.

Discussion

Education is a basic need for every human being. Over time, education has continued to undergo changes, developments, and improvements in line with progress in various aspects of life. Changes in the world of education cover various components, such as the performance of educators in the field (teacher competence and educator quality), education quality, curriculum, supporting facilities and infrastructure, and education management quality. This includes updates in learning methods and strategies that are increasingly innovative and relevant to the needs of the times. (Jihan et al., 2023)

In Indonesia, various challenges in the world of education are still often encountered, particularly those related to low student learning outcomes. This problem is not solely caused by internal factors such as student motivation or interest in learning, but is also closely related to thinking and knowledge exploration. As a result, students tend to be passive, lack critical thinking skills, and experience difficulties in dealing with learning problems independently.

As an alternative solution, the problem-based learning (PBL) model offers an approach that focuses on developing critical thinking skills. PBL is a learning model that places students as the main subjects in learning activities by providing contextual problems as stimuli for learning. Through authentic problem scenarios, students are trained to analyze problems, seek relevant information, collaborate with peers, and formulate solutions independently. The Problem Based Learning (PBL) model is designed to give students the freedom to think, explore, discover concepts, and solve problems related to the subject matter presented by the teacher. (Sutarsa & Puspitasari, 2021).

This study was conducted with the aim of determining the extent of the influence of the problem-based learning model on students' critical thinking skills, particularly in the context of learning Economics in grade XI at MA As Salamah in the 2024/2025 academic year. Based on the initial observation results, it was found that many students showed a tendency to complete tasks in groups without adequate individual understanding and still relied on the teacher's lecture method. This indicates a lack of independence and involvement of students in the deep thinking process.

The research method used was a quantitative approach with simple linear regression analysis. The research instruments were first tested for validity and reliability. The validity test was conducted using Pearson's correlation, and the results showed that all items in variable X (PBL) and variable Y (critical thinking) had an r-count value greater than r-table (0.306), so they were declared valid. Meanwhile, the reliability test using Cronbach's Alpha showed a value of 0.802 for variable X and 0.797 for variable Y, both of which exceeded the minimum threshold of 0.70, indicating that the instruments were reliable. Furthermore, the residual normality test using the One-Sample Kolmogorov-Smirnov method showed that the residual data was normally distributed, with a p-value of 0.200 and a Monte Carlo Significance of 0.841.

This fulfilled the basic assumptions of regression, so that the model could be used for further analysis. The results of simple linear regression show a correlation coefficient (R) value of 0.965, indicating a very strong relationship between the PBL model and students' critical thinking skills. The R Square value of 0.932 indicates that 93.2% of the variation in students' critical thinking skills can be explained by the application of the PBL model. The remaining 6.8% is influenced by other factors outside the model. The significance test using the t-test produced a significance value of < 0.001, which means that there is a positive and significant effect of variable X on Y.

CONCLUSIONS

Based on the findings of this study, researchers concluded that problem-based learning (PBL) has a positive and significant impact on students' critical thinking skills. The implementation of PBL, which focuses on actively solving real problems, working together, and independently, has been proven to encourage students' higher-order thinking skills. The high correlation coefficient and statistical significance indicate that the more effective the application of PBL in the learning process, the better the critical thinking skills of students. Thus, the PBL approach is highly relevant for improving the quality of the learning process, especially in the context of economics education.

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