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The Relationship Between Students' Asking Activity and Critical Thinking Ability in Class VIII for Science Learning

Wahyu Laila Agustina^{1*}, Widra Dwi Anggraini², Reni Roudhotul Khasanah³,
Aristiawan⁴

¹Institut Agama Islam Negeri Ponorogo, Indonesia

²Institut Agama Islam Negeri Ponorogo, Indonesia

³Institut Agama Islam Negeri Ponorogo, Indonesia

⁴Institut Agama Islam Negeri Ponorogo, Indonesia

*Correspondence: E-mail: wahyulailaagustina@gmail.com

Abstract: One of the factors in students' actions that affects their level of critical thinking skills is their activeness in asking questions as a student's perspective to find answers to facts and certainty about some things that are not yet understood. This study aims to determine the relationship between the activeness of asking questions of class VIII students and the ability to think critically in science learning at Junior High School YP. KH. Syamsuddin Ponorogo. This research is quantitative and uses quantitative data analysis methods. Data collection techniques were carried out using questionnaires. The results of the study show that the significance value according to the test results is equal to 0.004, which indicates that the significance value is less than 0.05, so it can be concluded that there is a positive relationship or correlation; the more students are active in learning, the higher the critical thinking skills possessed by students. Vice versa, the lower the activity of students during learning, the lower their critical thinking skills will be.

Keywords: Activeness of Asking, Critical Thinking, Science

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INTRODUCTION

Education is a process of interaction between students and teachers which has been designed to help students explore their potential in teaching and learning activities. In essence, learning and teaching activities are two that cannot be separated and are closely related to each other (Mutia et al., 2018). The educational process in teaching and learning activities can be successful because it is influenced by several factors, including students, teachers, subjects, the surrounding environment and the learning resources used. The learning process in teaching and learning activities is a complete system and cannot be separated from the learning components, namely input (in the form of students, curriculum and infrastructure), process (in the form of materials, methods, media, evaluation), output and feedback. So it can be said, learning is an interaction activity in the form of feedback and reciprocity between students and teachers, this interaction can be achieved in an educational environment to achieve learning goals (Panggabean et al., 2021). One of the secondary schools in Ponorogo Regency has implemented teaching and learning well. However, it was still found that student learning outcomes were less than optimal, one of which was at Junior High School YP. KH. Syamsyuddin Ponorogo. Based on initial observations made by researchers, low learning outcomes were found in science subjects.

Learning subjects are a component that cannot be separated from the learning process. The subjects taught at each level of education are different. There are many subjects that students must take and master, one of which is science subjects. Science is one of the learning content in schools that equips students with knowledge, ideas and concepts about the natural environment, which are obtained from experience through a series of scientific processes, including investigation, preparation and ideation (Panggabean et al., 2021)

Science subjects are known as complex and difficult subjects by students. Therefore, abilities and skills are needed to support studying these subjects. To study sciences subjects not only requires skills, but also the ability to think critically (Febrianti, 2021). The teaching of science subjects aims to: (1) optimize the quality of science learning starting from learning effectiveness, interest and motivation of students, knowledge of nature, science skills and scientific attitudes (2) enlarge the content of science material in learning and science skills. Contents of science material such as biology, physics, chemistry, earth and astronomy. Meanwhile, science skills include the skills of observing, researching, analyzing, classifying and concluding (Sulthon, 2016).

Based on this, critical thinking skills and abilities are needed to study science subjects (Febrianti & Utomo, 2021). Student learning outcomes are also influenced by critical thinking

skills (Jumrodah et al., 2023). The higher the critical thinking ability, the higher the student learning outcomes. Critical thinking is a stage of higher-order thinking that encourages students to think about things in depth, ask questions, and find relevant information (Yuli Astuti & Tarto, 2020). Thus, students who are at the critical thinking stage will conduct in-depth studies and feel curious about new things.

Students who have the ability to think critically will be required to use their reasoning and make decisions about what actions to take. Critical thinking skills can increase if supported by several interrelated factors, both internal and external to lure students to be active in learning activities. Forms of student activity include listening, paying attention, taking notes, asking questions, reading, and making summaries or summarizing (Savriani, 2020). One form of active learning activities is in terms of asking questions made by students. The active learning process is characterized by students who often ask questions and express ideas (Rahmayani et al., 2022).

There are four stages that students must carry out to reach the level of critical thinking, such as analyzing, synthesizing, recognizing and solving problems, and concluding results (Agustina, 2017). Apart from these four stages, students' abilities also have their own characteristics as stated by Sumarno (2011) who explains that the ability to think critically has the characteristics of asking questions about important problems, explaining clearly, collecting and assessing appropriate information through abstract ideas to draw conclusions in determining strong solutions to overcome problems (Agustina & Kamid, 2017). The level of critical thinking ability in students can be measured through four indicators such as providing simple explanations, providing further explanations, determining appropriate strategies and solutions, and drawing conclusions. (Widana et al., 2023).

Teachers have a role in improving students' critical thinking skills by providing learning facilities that can encourage curiosity (Agustina & Kamid., 2017). Teachers can activate student learning by providing stimulation in the form of giving assignments, written and oral tests, challenges, solving problems by developing habits in students to raise awareness in students and training students' memory so that it works and develops optimally (Astuti, 2020). The ability to ask questions is the first step in improving students' critical thinking skills. This is also supported by Sigh (2018) who explains that the ability to ask questions is the first step in acquiring 21st century skills, including the ability to think critically to face future challenges and problems (Septaria, 2022).

Other research also explains that one of the factors in students' actions that influences the level of students' critical thinking skills is activeness in asking questions as a way of looking at students to find answers to reality and certainty regarding things that are not yet understood.

Previous research stated that there was a positive relationship between active questioning and critical thinking tendencies with the contribution of active questioning to critical thinking tendencies of 11.43% (Zahranie et al., 2020). There are several benefits that can arise from the ability to ask students, such as increasing curiosity, encouraging students to carry out more effective learning, encouraging motivation in increasing the courage to ask questions, being able to train their abilities independently in solving problems (Waruwu & Almsy., 2023). From this explanation, the author is interested in conducting research which aims to determine the relationship between active questioning in class VIII students and critical thinking skills in science learning at Junior High School YP. KH. Syamsuddin Ponorogo.

METHOD

This research is a quantitative, non-experimental correlational type of research, which was carried out at Junior High School YP. KH. Syamsuddin Ponorogo whose population is class VIII students. Sampling was carried out using the Proportional Random Sampling technique by first conducting a homogeneity test on the population. The research samples were all students in class VIII A girls and VIII A boys. The method of data analysis is quantitative which is carried out using SPSS to test simple linear regression. The independent variable in this study was the activeness of class VIII students in science learning, while the dependent variable was the critical thinking skills of class VIII students. The data collection technique was carried out by observation using a four-scale questionnaire questionnaire by giving a set of statements to respondents. Prerequisite analysis includes normality and multicollinearity tests carried out before the data analysis test. The data analysis tests performed included the Pearson moment validation test and a simple linear regression test. The results of the analysis test were then reviewed and set forth in an article.

FINDING AND DISCUSSION

The research was conducted using 60 respondents from Junior High School YP. KH. Syamsuddin Ponorogo. The research data included questionnaire data on critical thinking skills as many as 15 statement items while on activeness there were 10 statement items. Before carrying out the analysis, the researcher will test the analysis prerequisites as in **Table 1**.

Table 1. Results of the analysis of the one sample Kolmogorov-Smirnov test for normality

		Unstandardized Residual
N		61
Normal Parameters ^{a,b}	Mean	,0000000
	Std. Deviation	8,09896529
Most Extreme Differences	Absolute	,112
	Positive	,071
	Negative	-,112
Test Statistic		,112
Asymp. Sig. (2-tailed)		,054 ^c

There are several prerequisites that must be met prior to testing the hypothesis, namely by conducting a normality test, multicollinearity test, and validity test (Sutrisno, 2019). The normality test was carried out to find out whether the data used was normally distributed or not (Fahmeyzan et al., 2018). The normality test was performed using the Kolmogorov Smirnov (Quraisy, 2020). Based on the results of the analysis in **Table 1**, it is known that the Asymp. Sig. (2-tailed) is 0.054. Because $0.054 > 0.05$, it can be concluded that the residual values are normally distributed.

The next prerequisite test is a multicollinearity test based on tolerance and VIF values. The multicollinearity test serves to determine whether there is intercorrelation (a strong relationship) between variables or not (Azizah et al., 2020). The results of the multicollinearity test as in **Table 2**.

Table 2. Results of multicollinearity test analysis

Model	t	Sig.	Collinearity Statistics	
			Tolerance	VIF
1 (Constant)	3,903	,000		
liveliness	3,014	,004	1,000	1,000

a. Dependent Variable: critical thinking

The results of the multicollinearity test analysis can be seen in the table above, where the tolerance and VIF values for the active independent variables are 1.000. In the table it is known that the tolerance value is greater than 0.1 and the VIF value is less than 10. In addition, the number of independent variables in this study is only one (student activity only), so it can be concluded that there is no multicollinearity validity test, namely through a comparison of the r count value with r table, the second is by looking at the significance value (Sig.) (Puspasari & Puspita, 2022). The researcher uses the second way to test the validity, namely through the significance value, the data is said to be valid if it has a significance value < 0.05 , if the

significance value is > 0.05 then the data is said to be invalid. The validity test results are in the validity test results table using the pearson moments as in **Table 3**.

Table 3. The results of the validity test using the pearson moment

		critical thinking	liveliness
critical thinking	Pearson Correlation	1	,365**
	Sig. (2-tailed)		,004
	N	61	61
liveliness	Pearson Correlation	,365**	1
	Sig. (2-tailed)	,004	
	N	61	61

** . Correlation is significant at the 0.01 level (2-tailed).

From the table it is obtained that the two variables have a significance value of 0.004 < 0.05 , this indicates that the questionnaire used in the study is valid to obtain data on the dependent variable (critical thinking ability), and the independent variable (activeness of asking students).

Table 4. Simple linear regression test results

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	606,045	1	606,045	9,085	,004 ^b
Residual	3935,594	59	66,705		
Total	4541,639	60			

a. Dependent Variable: critical thinking

b. Predictors: (Constant), liveliness

Activeness of asking questions in class VIII science learning at MTs YP. KH. Syamsyuddin Ponorogo. Hypothesis testing was carried out using a simple linear regression test on SPSS. The simple linear regression test results as in **Table 4** explains that the regression model can be used to see the influence of the independent variable on the dependent variable. The Regression Model is declared FIT if the value is sig, ($< 0,05$). From the resulting output, it is known that the calculated F value is 9.085 which has a significant level of 0.004 < 0.05 , so that the regression model can be used to determine the effect and relationship of student activeness variables on critical thinking variables.

Activeness of asking class VIII students and the ability to think critically. If there is such a correlation, the more active students are in learning, the higher their critical thinking skills will be. Vice versa, the lower the activity of students during learning, the lower their critical thinking skills will be. So based on the results of the analysis H_0 is rejected and H_a is accepted. Therefore, the hypothesis states that there is a partial relationship between the activeness of

asking questions in class VIII science learning at Junior High School YP. KH. Syamsuddin Ponorogo was accepted.

However, if seen from the percentage of the coefficient of determination, the effect of the activeness of asking students at Junior High School Y.P. KH. Syamsuddin is classified as low, namely 11.9%. This means the activeness of asking students in science learning at Junior High School YP. KH. Syamsuddin contributed only 11.9% to students' critical thinking skills. While the remaining 88.1% is determined by other variables that also affect critical thinking skills. The coefficient of determination can be seen from the output results in the Adjusted R Square section. The result of calculating the coefficient of determination as in **Table 5**.

Table 5. The results of the coefficient of determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,365 ^a	,133	,119	8,16731

a. Predictors: (Constant), liveliness

b. Dependent Variable: critical thinking

The test results of the coefficient of determination are almost the same as the results of the previous research analysis. In previous studies, it was stated that there was a positive relationship between activeness in asking and the tendency to think critically with the contribution of activeness in asking questions to the tendency to think critically by 11.43% (Zahranie et al., 2020). So that the activeness of asking class VIII students at Junior High School YP. KH. Syamsyuddin Ponorogo can influence and there is a positive relationship to critical thinking skills with a contribution of 11.9%.

CONCLUSION

Based on the results of the research and discussion that has been described, it can be concluded that there is influence and a positive relationship between the activeness of asking class VIII students on the level of critical thinking skills in science learning at Junior High School YP. KH. Syamsuddin Ponorogo. This is shown in the results of hypothesis testing through a simple linear regression test, obtained a significance value of 0.004 less than 0.05, so that it is stated that there is a strong positive relationship or correlation between the activeness of asking class VIII students and students' critical thinking skills. If there is a positive correlation, it means that the more active students are in learning, the higher the critical thinking skills possessed by students. Vice versa, the lower the activeness of asking students during learning, the lower the ability to think critically. The activeness of asking students in science

learning at Junior High School YP. KH. Syamsuddin contributed 11.9% to students' critical thinking skills.

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