

THE RELATION BETWEEN LEARNING ACTIVITY, PEER ENVIRONMENT, INTEREST TO LEARN AND MATHEMATICS LEARNING OUTCOMES

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ABSTRACT

Low students' learning outcomes are related to many factors. Learning activities, peer environment, and interest in learning are among them. This study aims to determine whether there are positive and significant relations between learning activity, peer environment, interest in learning and mathematics learning outcomes of grade X Office Administration students of Vocational High School (SMK) Muhammadiyah 2 Yogyakarta in the odd semester of the academic year of 2017/2018. This study's population were regular grade X Office Administration students of SMK Muhammadiyah 2 Yogyakarta in 2017/2018, consisting of two classes with 58 students. A random sampling technique was applied to take this research sample, a grade X Office Administration student's class 2. The data on learning activity, peer environment, and interest to learn were obtained through questionnaires. At the same time, the data of the mathematics learning outcomes were obtained through the test. The research instruments were tested using a validity test, differential test, and reliability test. Analysis prerequisite tests include normality, linearity, and independence test. Product moment and multiple linear regression analysis were used to analyze the data. The results show that there are not positive and significant relations between learning activity, peer environment, interest to learn with mathematics learning outcomes of grade X Office Administration students of SMK Muhammadiyah 2 Yogyakarta in the odd semester of the academic year of 2017/2018. The results are evident in $F_{\text{ount}} < F_{\text{table}}$ which is $0,209 > 3,100$ with $R = 0,177$ and $R^2 = 0,031$ with $\hat{Y} = 37,681 + 0,090 X_1 - 0,130 X_2 - 0,080 X_3$, with $SR X_1 = 50,080\%$, $RC X_2 = 51,654\%$ and $RC X_3 = -1,734\%$, $EC X_1 = 1,571\%$, $EC X_2 = 1,621\%$ and $EC X_3 = -0,054\%$.

Keywords: Learning activity, Peer Environment, Interest to Learn

INTRODUCTION

Education is a basic need for humans in the world that is very important in human life and is also useful in overcoming the problems humans face. Therefore, education needs to get attention and better handle various issues relating to the quantity, quality, and relevance.

Learning outcomes are the ultimate goal of a learning activity. Many things can affect learning outcomes, as well as many things that can affect learning. From the data on the learning outcomes of students of SMK Muhammadiyah 2 Yogyakarta Academic Year 2017/2018, it appears that the average grade of mathematics in class X Office Administration is still far below the Minimum Mastery Criteria set by the school. This proves that mathematics is still complicated for students to understand. The author's interview with a mathematics subject teacher states that students at SMK Muhammadiyah 2 Yogyakarta lack interest in learning mathematics. Most students do not do the assignments because they feel less interested and tend to ignore mathematics lessons.

Many other factors that influence learning outcomes are Learning activities. Learning activities are activities that occur in the classroom when the teaching-learning process takes place. Activities can be in the form of student interactions to students, students to teachers, and vice versa. When observing, most of the students do learning activities that are not compatible with learning. Peer environment is also one of the factors that influence learning outcomes. From the interviews with several students, it can be concluded that peers can negatively influence students if the environment is not good.

METHODS

This type of research used in this research is quantitative research. The interrelationship design between the independent variable and the dependent variable is arranged as follows in Figure 1.

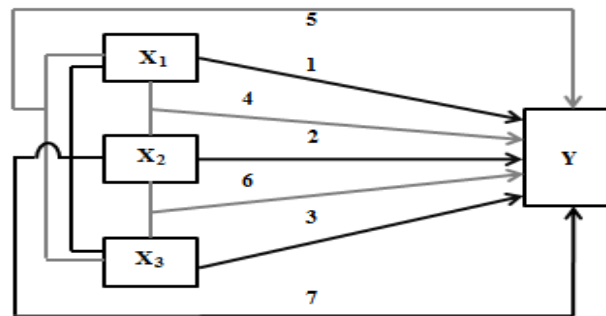


Figure I. Research Design

Information:

X_1 : Learning Activities

X_2 : Peer Environment

X_3 : Interest in Learning

Y: Mathematics Learning Outcomes.

This research was conducted at SMK Muhammadiyah 2 Yogyakarta in class X Office Administration Odd Semester 2017/2018 Academic Year. The population in this study were all students of class X Office Administration at SMK Muhammadiyah 2 Yogyakarta odd semester of the academic year 2017/2018 consisting of 2 classes with a population of 58 students. Samples were carried out using random sampling techniques. The sample of this research is class X Office Administration students with 24 students.

Data collection techniques using non-test instruments and test instruments. Non-test instruments in the form of a questionnaire are used to determine learning activities, peer environment, and interest in learning. Test instrument to find out the results of learning mathematics with the material Root Form. A validity test using item analysis is done using the product-moment formula. Reliability test using the Cronbach Alpha formula. The analysis prerequisite test with normality test and independence test use Chi-Square formula, and linearity test uses the F-Test formula. The research hypothesis testing uses a simple correlation test, multiple regression analysis tests, and multiple linear regression test with three independent variables.

RESULTS AND DISCUSSION

A normality test is used to test the distribution of data obtained on each variable that is customarily distributed. The normality test in this study uses the chi-square statistical test (χ^2). Decision-making criteria used are the distribution of data obtained on each variable normally distributed if $\chi^2_{count} \leq \chi^2_{table}$ with a significance level of 5% and degrees of freedom ($k - 1$) where k is many interval classes. The normality test results for the four variables can be seen in Table 1 as follows:

Table 1. Normality Test Results

Variable	χ^2_{count}	χ^2_{table}	df	Info.
Learning activity (X_1)	2,770	5,991	2	Normal
Peer Environment (X_2)	1,071	5,991	2	Normal
Interest to learn (X_3)	0,046	5,991	2	Normal
Mathematical Learning Outcomes (Y)	0,113	5,991	2	Normal

From Table 2, it is known that each variable is normally distributed.

The linearity test is used to determine whether the independent variable and the dependent variable have a linear relationship or not by using the linear regression formula (Test F). The decision-making criteria are the relationship between the variable X and the Y variable linearly when $F_{count} \leq F_{table}$, with a 5% significance level and numerator freedom ($v_1 = k - 2$) and the denominator degree of

freedom ($v_2 = n - k$). In this study, for X_1 concerning Y with $v_1 = 9$ and $v_2 = 13$, for X_2 concerning Y with $v_1 = 18$ and $v_2 = 4$, and X_3 concerning Y with $v_1 = 14$ and $v_2 = 8$. A summary of the results of the linearity test can be seen in Table 2.

Table 2. Summary of Linearity Test Results

Variable	F_{count}	F_{table}	Info.
X_1 with Y	0,837	2,714	Linear
X_2 with Y	1,590	5,821	Linear
X_3 with Y	0,700	5,821	Linear

The independent test is used to determine the presence or absence of a relationship between the independent variables of learning activities (X_1) and the independent variables of peer environment (X_2), the relationship between the independent variables of learning activities (X_1) with the independent variables of interest in learning (X_3), and the relationship between variables free peer environment (X_2) with a free variable of interest in learning (X_3) using the chi-square formula.

The decision making criteria is that the two variables are independent if $\chi^2_{count} \leq \chi^2_{table}$, at $\alpha = 5\%$ and degrees of freedom (df) = $(B - 1)(K - 1)$. Where B is the number of rows, and K is the number of columns. The summary of independent test results can be seen in the following Table 3.

Table 3. Summary of Independent Test Results

Variable	χ^2_{count}	χ^2_{table}	df	Info.
X_1 with X_2	13,240	37,653	25	Independent
X_1 with X_3	16,364	37,653	25	Independent
X_2 with X_3	22,847	37,653	25	Independent

From Table 3, it is known that each independent variable is mutually independent.

Hypothesis testing uses the product-moment correlation test. The results of hypothesis testing are presented as follows.

a. First Hypothesis

A simple correlation analysis obtained a simple correlation coefficient (r) between learning activities with mathematics learning outcomes of 0.133. Furthermore, in testing the significance of the correlation coefficient using t-test obtained $t_{count} = 0.628$ while $t_{table} = 1.717$ at a significant level of 5% and $v = n - 2 = 22$. Then obtained $0.628 < 1.717$, so $H_{0,1}$ is accepted, and $H_{1,1}$ is rejected. So "there is no positive and significant relationship between learning activities with mathematics learning outcomes of students of Class X Office Administration 2 SMK Muhammadiyah 2 Yogyakarta odd semester of the academic year 2017/2018." A simple regression equation of Y for X_1 is also obtained as $\hat{Y} = 59,80 + 0,104 X_1$.

b. Second Hypothesis

Simple correlation analysis shows that the simple correlation coefficient (r) between the peers' environment and the mathematics learning outcomes is -0.158. Furthermore, in testing the significance of the correlation coefficient using the t-test obtained $t_{count} = -0.749$ while $t_{table} = 1.717$ at a significant level of 5% and $v = n - 2 = 22$. Then obtained $-0,749 < 1,717$, so that $H_{0,2}$ is accepted and $H_{1,2}$ is rejected. So "there is no positive and significant relationship between peer environment and mathematics learning outcomes of students of Class X in Office Administration 2 SMK Muhammadiyah 2 Yogyakarta odd semester of the academic year 2017/2018." We also obtained a simple regression equation for Y over X_2 is $\hat{Y} = 88,93 - 0,206 X_2$.

c. Third Hypothesis

Simple correlation analysis of the simple correlation coefficient value (r) is obtained between learning interest and mathematics learning outcomes of 0.008. Furthermore, in testing the significance of the correlation coefficient using the t-test obtained $t_{count} = 0.038$ while $t_{table} = 1.717$ at a significant level of 5% and $v = n - 2 = 22$. Then obtained $0.038 < 1.717$, so that $H_{0,3}$ is accepted and $H_{1,3}$ is

rejected. So there is no positive and significant relationship between interest in learning with mathematics learning outcomes of students of Class X Office Administration 2 SMK Muhammadiyah 2 Yogyakarta odd semester of the academic year 2017/2018. We also obtained a simple regression equation for Y over X_3 is $\hat{Y} = 64,74 + 0,010 X_3$.

d. Fourth Hypothesis

The simple correlation coefficient (R) was obtained with the multiple correlation analysis between learning activities and the peer environment with mathematics learning outcomes of 0.198. Furthermore, in testing the significance of the correlation coefficient using the F-test obtained $F_{count} = 0.427$. In contrast, $F_{table} = 3.470$ at a significant level of 5% and $v_1 = 2$ and $v_2 = 21$, so that $0.427 < 3.470$ is obtained, so $H_{0,4}$ is accepted, and $H_{1,4}$ is rejected. So there is no positive and significant relationship between learning activities and peer environment with the mathematics learning outcomes of students of Class X Office Administration 2 of SMK Muhammadiyah 2 Yogyakarta odd semester of the academic year 2017/2018. We also obtained the double linear regression equation Y for X_1 and X_2 is $\hat{Y} = 81,998 + 0,094 X_1 + 0,192 X_2$.

e. Fifth Hypothesis

The simple correlation coefficient (R) was obtained with the multiple correlation analysis between learning activities and learning interests with mathematics learning outcomes of 0.136. Furthermore, in testing the significance of the correlation coefficient using the F-test obtained $F_{count} = 0.198$. In contrast, $F_{table} = 3.470$ at a significant level of 5% and $v_1 = 2$ and $v_2 = 21$, that obtained $0.198 < 3.470$ thus $H_{0,5}$ was accepted and $H_{1,5}$ rejected. So there is no positive and significant relationship between learning activities and interest in learning with mathematics learning outcomes of students of Class X Office Administration 2 SMK Muhammadiyah 2 Yogyakarta odd semester of the academic year 2017/2018. We also obtained the double linear regression equation Y over X_1 and X_3 is $\hat{Y} = 55,770 + 0,108 X_1 + 0,037 X_3$.

f. The Sixth Hypothesis

With the multiple correlation analysis, the simple correlation coefficient (R) is obtained between the peer environment and learning interest with mathematics learning outcomes of 0.230. Furthermore, in testing the significance of the correlation coefficient using the F-test obtained $F_{count} = 0.588$. In contrast, $F_{table} = 3.470$ at a significant level of 5% and $v_1 = 2$ and $v_2 = 21$, so that $0.588 < 3.470$ is obtained so $H_{0,6}$ is accepted and $H_{1,6}$ is rejected. So there is no positive and significant relationship between peer environment and interest in learning with mathematics learning outcomes of students of Class X Office Administration 2 SMK Muhammadiyah 2 Yogyakarta odd semester of the academic year 2017/2018. We also obtained the double linear regression equation Y over X_2 and X_3 is $\hat{Y} = 83,210 + 0,423 X_2 + 0,292 X_3$.

g. Seventh Hypothesis

With a double analysis obtained by the value of a simple correlation coefficient (R) between learning activities, peer environment, and learning interest with mathematics learning outcomes of 0.177. Furthermore, in testing the significance of the correlation coefficient using the F-test obtained $F_{count} = 0.209$. In contrast, $F_{table} = 3.100$ at a significant level of 5% and $v_1 = 3$ and $v_2 = n - m - 1 = 20$, so that $0.209 < 3.100$ is obtained; thus $H_{0,7}$ is accepted and $H_{1,7}$ rejected. So there is no positive and significant relationship between learning activities, peer environment, and interest in learning with mathematics learning outcomes of students of Class X Office Administration 2 of SMK Muhammadiyah 2 Yogyakarta odd semester of 2017/2018 school year. In addition, we also obtained the double linear regression equation Y over X_1 , X_2 and X_3 is $\hat{Y} = 37,681 + 0,090 X_1 - 0,130 X_2 - 0,080 X_3$.

CONCLUSION

1. The correlation coefficient between learning activity variables with learning outcomes has a relationship but is classified as weak. However, based on the hypothesis test has no relationship. So, it

can be concluded that there is no positive and significant relationship between learning activities with learning outcomes. This is indicated by the t-test $t_{count} > t_{table}$ as the rejection area, but the calculation results show $0.628 > 1.717$. The simple correlation coefficient (r) between learning activities with mathematics learning outcomes of 0.133. Moreover, the simple regression equation Y for X_1 is $\hat{Y} = 59,80 + 0,104 X_1$.

2. The correlation coefficient between peer environment variables and learning outcomes has a relationship but is classified as weak. However, based on the hypothesis test has no relationship. So, it can be concluded that there is no positive and significant relationship between peer environment and learning outcomes. This is indicated by the t-test $t_{count} > t_{table}$ as the rejection area, but the calculation results show $-0.749 < 1.717$. The simple correlation coefficient (r) between peer environment and mathematics learning outcomes of -0.158. And the simple regression equation Y for X_2 is $\hat{Y} = 88,93 - 0,206 X_2$.
3. The correlation coefficient between learning interest variables with learning outcomes has a relationship but is classified as weak. However, based on the hypothesis test has no relationship. So, it can be concluded that there is no positive and significant relationship between learning interest and learning outcomes. This is indicated by the t-test $t_{count} > t_{table}$ as the rejection area, but the calculation results show $0.038 < 1.717$. The simple correlation coefficient (r) between learning interest and mathematics learning outcomes is 0.008. And the simple regression equation Y for X_3 is $\hat{Y} = 64,74 + 0,010 X_3$.
4. The correlation coefficient between learning activity variables and peer environment with learning outcomes has a relationship but is classified as weak. However, based on the hypothesis test has no relationship. So, it can be concluded that there is no positive and significant relationship between learning activities and peer environment with learning outcomes. This is indicated by the F-test $F_{count} > F_{table}$ as the rejection area, but the calculation results show $0.427 < 3.470$. The multiple correlation coefficient (R) between learning activities and peer environment with mathematical learning outcomes is 0.198 with a linear equation $\hat{Y} = 81,998 + 0,094 X_1 + 0,192 X_2$. The relative contribution of X_1 was 40.684%, and X_2 was 59.352%, and the effective contribution of X_1 was 1.589%, and X_2 was 2.320%.
5. The correlation coefficient between the variable learning activities fan interest in learning with learning outcomes has a relationship but classified as weak. However, based on the hypothesis test has no relationship. So, it can be concluded that there is no positive and significant relationship between learning activities and learning interests with learning outcomes. This is indicated by the F-test that is $F_{count} > F_{table}$ as the rejection area, but the calculation results show $0.198 < 3.470$. The multiple correlation coefficient (R) between learning activities and learning interests with mathematics learning outcomes is 0.136 with a linear line equation $\hat{Y} = 55,770 + 0,108 X_1 + 0,037 X_3$. The relative contribution of X_1 was 98.684%, and X_3 was 1.316%, and the effective contribution of X_1 was 1.823%, and X_3 was 0.024%.
6. The correlation coefficient between peer environment variables and learning interest with learning outcomes has a relationship but is classified as weak. However, based on the hypothesis test has no relationship. So, it can be concluded that there is no positive and significant relationship between peer environment and learning interest with learning outcomes. This is indicated by the F-test that is $F_{count} > F_{table}$ as the rejection area, but the calculation results show $0.588 < 3.470$. The multiple correlation coefficient (R) between the peer and learning interest with mathematics learning outcomes is 0.230 with a linear line equation $\hat{Y} = 83,210 + 0,423 X_2 + 0,292 X_3$. The relative contribution of X_2 was 96.372% and X_3 was 3.628%, and the effective contribution of X_2 was 3.628%, and X_3 was 0.192%.
7. The correlation coefficient between learning activity variables, peer environment, and learning interest with learning outcomes has a relationship but is classified as weak. However, based on the hypothesis test has no relationship. So, it can be concluded that there is no positive and significant relationship

between learning activities, peer environment, and learning interest with learning outcomes. This is indicated by the F-test $F_{count} > F_{table}$ as the rejection area, but the calculation results show $0.209 < 3.100$. The correlation coefficient (R) between learning activities, peer environment, and learning interest with mathematics learning outcomes is 0.177. The coefficient of determination (R^2) is 0.031 with a linear line equation $\hat{Y} = 37,681 + 0,090 X_1 - 0,130 X_2 - 0,080 X_3$. The relative contribution of X_1 is 50,080%, X_2 is 51,654% and X_3 is -1,734% and the effective contribution X_1 is 1,571%, X_2 is 1,621% and X_3 is -0,054%, this shows that the peer environment variable (X_2) is more dominant compared to the learning activity variable (X_1) and the learning interest variable (X_3).

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