

## THE RELATIONSHIP BETWEEN LEARNING INDEPENDENCE AND LEARNING FACILITIES WITH STUDENT LEARNING OUTCOMES

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### ABSTRACT

The results of the student's mathematics learning associated with many factors. Learning independent and learning facilities factors that may be associated with mathematics learning outcomes of students. This study aims to determine whether or not a positive and significant relationship between learning independent and learning facilities with mathematics learning outcomes in students class VIII at State Senior High School (SMA Negeri) 3 Pandak Bantul in the odd semester of the academic year 2017/2018. The population in this study was all eighth-grade students at SMP Negeri 3 Pandak Bantul in the odd semester of the academic year 2017/2018, which consists of 4 classes with 118 students as a sample class was class VIII A, which consists of 30 students using a random sampling technique to the class. Data collection techniques used questionnaires and tests—the instruments using validity, reliability testing, and test different power. Test requirements analysis was used the normality test, the independent test, and the linearity test. Data analysis for hypothesis testing used correlation analysis and linear regression analysis. The results showed that there is a positive and significant relationship between learning independent ( $X_1$ ) and learning facilities ( $X_2$ ) with mathematics learning outcomes with  $F_{\text{count}} > F_{\text{table}}$  means  $20,1169 > 3,3541$  with  $R = 0,7735$  and  $R^2 = 0,5984$  with  $\hat{Y} = -9,0057 + 0,2782 X_1 + 0,7281 X_2$ . and  $RC (X_1) = 24,6517 \%$ ,  $RC (X_2) = 75,3483 \%$ ,  $EC (X_1) = 14,7520 \%$ ,  $EC (X_2) = 45,0896 \%$ .

**Keywords:** Learning Independent, Learning Facilities, Mathematics Learning Outcomes.

### INTRODUCTION

Education has a vital role in the continuity of human life. A nation will advance if it has a solid educational foundation that can build quality human resources. Throughout one's education can increase intelligence, skills, develop self-potential, and can form a responsible person, intelligent, and creative. For that, one way to create quality human resources is through education. The progress of a nation depends on the level of knowledge that develops in its citizens' lives. One of the sciences that is closely related to the progress of the nation in mathematics. Mathematics becomes the basis of developing science at this time. According to Suherman et al. (2003: 25), Mathematics as the queen or mother of science is intended to be a source of other sciences. In other words, many sciences whose discovery and development depend on mathematics.

However, reality shows that student mathematics learning outcomes are not as expected. Hence, mathematics learning outcomes are still low. Based on the results of data collection on May 23, 2017, at SMP Negeri 3 Pandak, the poor student learning outcomes can be seen from the value of the Even Final Semester Examination in mathematics subjects that have been achieved by students. The following are the Final Exam results obtained by students in grade VIII of SMP Negeri 3 Pandak. SMP Negeri 3 Pandak in the 2016/2017 academic year, many students get grades below the Minimum Completeness Criteria (MCC), 75. As for those who meet the standard MCC, there is only one student. This shows that the learning outcomes of grade VII students are still low or not optimal.

Based on the results of interviews with several students conducted on May 23, 2017, at SMP Negeri 3 Pandak, most students considered mathematics a complicated subject, and many students complained about mathematics because mathematics was too much formula and challenging to understand.

Internal factors that are thought to influence mathematics learning outcomes are learning independence. Someone who has the desire to learn independently means already aware of the

importance of improving learning outcomes. According to Nurhayati (2011: 132), the term independence indicates the belief in self's ability to solve the problem without special assistance from others and a reluctance to be controlled by others. Internal factors, external factors that are thought to influence learning outcomes in mathematics are learning facilities. The completeness of learning facilities at school and home greatly influences student learning activities. However, in this case, the discussion will be more focused on learning facilities at home. According to Slameto (2010: 63), children learning, besides fulfilling their basic needs, also need learning facilities such as study rooms, tables, chairs, lighting, stationery - books, books, and others. Adequate learning facilities at home, so learning cannot run properly.

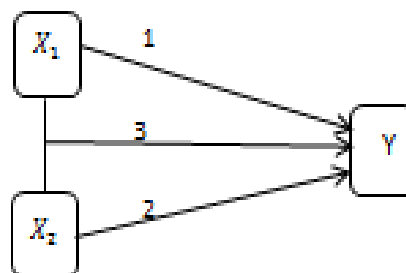
Based on the background of the problem can be formulated problems that can be taken in this study are: 1) Is there a positive and significant relationship between learning independence and mathematics learning outcomes of Grade VIII students of SMP Negeri 3 Pandak, Bantul Regency, the odd semester of the academic year 2017/2018? 2) Is there a positive and significant relationship between learning facilities and mathematics learning outcomes for students of class VIII of SMP Negeri 3 Pandak, Bantul Regency, the odd semester of the academic year 2017/2018? 3) Is there a positive and significant relationship between learning independence and learning facilities with mathematics learning outcomes of Grade VIII students of SMP Negeri 3 Pandak, Bantul Regency, and the odd semester of 2017/2018?

In the first research is quantitative research. This study has one independent variable (X) relevant to researchers: learning independence and has one dependent variable (Y) relevant to researchers, namely mathematics learning outcomes. Furthermore, the second research is quantitative. This study has one independent variable (X) relevant to researchers, namely learning facilities, and has one dependent variable (Y) relevant to researchers, namely mathematics learning outcomes.

Based on the problem formulation, the objectives of this study are to: 1) Whether there is a positive and significant relationship between learning independence and mathematics learning outcomes of Grade VIII students of SMP Negeri 3 Pandak, Bantul Regency, the odd semester of the academic year 2017/2018. 2) Whether or not there is a positive and significant relationship between learning facilities and mathematics learning outcomes of VIII grade students of SMP Negeri 3 Pandak, Bantul Regency, the odd semester of the academic year 2017/2018. 3) Whether there is a positive and significant relationship between learning independence and learning facilities with mathematics learning outcomes of Grade VIII students of SMP Negeri 3 Pandak, Bantul Regency, the odd semester of the academic year 2017/2018.

## METHODS

This type of research is quantitative research. The research aims to determine the presence or absence of a relationship between independence of learning and learning facilities with mathematics learning outcomes of eighth-grade students of SMP Negeri 3 Pandak, Bantul Regency odd semester of the academic year 2017 / 2018. Then the research design is as follows:



**Figure 1.** (Research Design)

Information:

$X_1$  = Independence Learning

$X_2$  = Learning Facilities

Y = Mathematical Learning Outcomes

This research was conducted at SMP Negeri 3 Pandak, Bantul Regency, in the odd semester of the academic year 2017/2018. The time of this research was in the Semester Year 2017/2018 Academic Year. This study's population were all eighth-grade students of SMP Negeri 3 Pandak odd semester 2017/2018 Academic Year totaling 118 students. The sampling technique uses simple random sampling, taking class samples obtained by lottery after the draw was selected for the sample class that is class VIII with 30 students.

This research variable has three variables consisting of two independent variables and one dependent variable. The independent variable is learning independence ( $X_1$ ) and learning facilities ( $X_2$ ) for the dependent variable, namely mathematics learning outcomes (Y). Data collection methods are needed in researching so that the data obtained is relevant to the objectives and subject matter. The data collection methods used are questionnaires and tests. The questionnaire was used to obtain data on learning independence and learning facilities of VIII SMP Negeri students 3 Pandak Bantul Regency of odd Semester Academic Year 2017/2018. At the same time, the test is used to obtain and learning outcomes in mathematics. The test used is in the form of multiple-choice with four alternative answers, namely a, b, c, or d, and if the correct answer is one and one is 0.

Analysis of questionnaire instrument trials and tests using content validity tests by reviewers and product-moment correlation techniques (Sugiyono, 2015: 255) with the results of the validity of the items and distinguishing features on the mathematics learning achievement test. While the reliability test of the learning independence questionnaire and learning facilities use the Cronbach Alpha formula (Arikunto, 2013: 239), and the reliability test of the mathematics learning outcomes test using the KR-20 formula (Arikunto, 2012: 115). After the collected data is then analyzed, descriptive data, hypothesis testing. After the collected data is then carried out, descriptive data analysis, hypothesis testing. The prerequisite test analysis that must be met includes the normality test using Chikueadrat (Khasanah, 2016: 8-9). Independent test and linearity test. The hypothesis test used t-test and F-test for t-test (Khasanah, 2016: 60) using the formula:

$$t_{count} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

With:

t: T-test

r: Correlation coefficient

n: Number of Samples

## RESULTS AND DISCUSSION

### 1. Description of Research Results

- a. Learning Independence of VIII A student in semester 3 of SMP Negeri 3 Pandak, Bantul Regency in the academic year of 2017/2018, has a learning independence level at intervals of  $69.4578 \leq X \leq 93.9422$  with the medium category of 15 students or 50%.
- b. Class VIII A Learning Facilities in the odd semester of SMP Negeri 3 Pandak, Bantul Regency in the academic year of 2017/2018, has a level of learning facilities at intervals of  $69.2321 \leq X \leq 95.6345$  with the moderate category of 20 students or 66.6667%.
- c. Mathematics Learning Outcomes Grade VIII A odd semester of SMP Negeri 3 Pandak, Bantul Regency in the academic year 2017/2018 has mathematics learning outcomes at intervals  $61.4528 \leq X \leq 89.9972$  with medium categories of 18 students or 60%.

### 2. Normality Test Results

Based on the normality test, it was found that the variables of learning independence, learning facilities, and mathematics learning outcomes variables were normally distributed. The results of the three-variable normality test can be seen in Table 1.

**Table 1.** Normality Test Results

No.	Research variable	$\chi^2_{count}$	$\chi^2_{table}$	df	Info.
1	Independence Learning ( $X_1$ )	7.1616	7.8147	3	Normal
2	Learning Facilities ( $X_2$ )	4.2284	7.8147	3	Normal
3	Result of Learning Mathematics (Y)	2.2107	5.9915	2	Normal

## 3. Linearity Test Results

Based on the linearity test, it was found that the variables of learning independence, learning facilities, and the variables of linear mathematics learning outcomes.

**Table 2.** Linearity Test Results

No.	Variable	$F_{count}$	$F_{table}$	Df( $v_1, v_2$ )	Info.
1	( $X_1$ ) and (Y)	1.0198	2.7980	(18,10)	Linier
2	( $X_2$ ) and (Y)	2.4527	2.6851	(17,11)	Linier

## 4. Independent Test Results

Based on the independent test results, it was found that the learning independence variable and the learning facility variable were independent. The independent test results can be seen in table 3.

**Table 3.** Independent Test Results

No.	Research variable	$\chi^2_{count}$	$\chi^2_{table}$	df	Info.
1	( $X_1$ ) with ( $X_2$ )	35.2500	37.6525	25	Independent

## 5. Hypothesis Testing

- Testing the first hypothesis: In testing the significance of the correlation coefficient using t-test results obtained  $t_{count} = 4.1178$  and  $t_{table}$  at a significant level of 5% with (df =  $n - 2 = 30 - 2 = 28$ ) that is equal to 2.0484. So that  $t_{count} > t_{table}$  or  $4.1178 > 2.0484$ . Then the first hypothesis has been tested with  $H_{0,1}$  rejected, and  $H_{1,1}$  is accepted. So there is a positive and significant relationship between learning independence with mathematics learning outcomes for students of class VIII of SMP Negeri 3 Pandak, Bantul Regency in the odd semester of the academic year 2017/2018. Also, a simple regression equation Y for  $X_1$  is obtained  $\hat{Y} = 14,9827 + 0,7114X_1$ .
- Testing the second hypothesis: In testing the significance of the correlation coefficient by using t-test results obtained  $t_{count} = 6.0069$  and  $t_{table}$  at a significant level of 5% with (df =  $n - 2 = 30 - 2 = 28$ ) that is equal to 2.0484. So  $t_{count} > t_{table}$  or  $6.0069 > 2.0484$ , the second hypothesis has been tested with  $H_{0,2}$  rejected and  $H_{1,2}$  accepted. So there is a positive and significant relationship between learning facilities with mathematics learning outcomes for students of class VIII of SMP Negeri 3 Pandak, Bantul Regency, the odd semester of the academic year 2017/2018. Also, a simple regression equation of Y over  $X_2$  is obtained  $\hat{Y} = -1,0956 + 0,9093X_2$ .
- Third hypothesis testing: In testing the significance of the correlation coefficient by using the F-test obtained  $F_{count} = 20.1169$  and  $F_{table} = 3.3541$  at a significant level of 5%, with degrees of freedom (dk) numerator ( $v_1 = k = 2$ ) and degrees of freedom of the denominator ( $v_2 = nk - 1 = 30 - 2 - 1 = 27$ ). In order to obtain  $F_{count} > F_{table}$  or  $20.1169 > 3.3541$ , then the third hypothesis has been tested, so  $H_{0,3}$  is rejected, and  $H_{1,3}$  is accepted. So there is a positive and significant relationship between learning independence and learning facilities with mathematics learning outcomes of VIII grade students of SMP Negeri 3 Pandak in the odd semester for the academic year 2017 / 2018. In addition, the double linear regression equation  $X_1$  and  $X_2$  is also obtained  $\hat{Y} = -9,0057 + 0,2782X_1 + 0,7281X_2$ .

The results obtained are a relationship between learning independence and learning facilities on the mathematics learning outcomes of VIII SMP Negeri 3 Pandak Bantul Regency students in the odd semester in the academic year of 2017/2018. Following a discussion of the results of the study:

1. The results of the first hypothesis test are that there is a positive and significant relationship between independence of learning with mathematics learning outcomes for students of VIII SMP Negeri 3 Pandak In The odd semester Bantul Regency in the academic year of 2017/2018 in other words, if the independence of student learning in learning mathematics is high, then mathematics learning outcomes will increase. The simple correlation coefficient ( $r$ ) between learning independence and mathematics learning outcomes of 0.6141 with the linear regression equation  $Y$  over  $X_1$  is  $\hat{Y} = 14,9827 + 0,7114X_1$ . As a result, each increase in  $X_1$  results in an increase in  $\hat{Y}$ .
2. The second hypothesis test results are that there is a positive and significant relationship between learning facilities and mathematics student learning outcomes of VIII SMP Negeri 3 Pandak Bantul Regency odd semester academic year 2017/2018. In other words, if the learning facilities of students in learning are increasingly adequate, then mathematics learning outcomes will increase. The simple correlation coefficient ( $r$ ) between learning facilities and mathematics learning outcomes of 0.7504 with the linear regression equation  $Y$  of  $X_2$  is  $\hat{Y} = -1,0956 + 0,9093X_2$ ; consequently, every increase in  $X_2$  results in an increase in  $\hat{Y}$ .
3. The results of the third hypothesis test are that there is a positive and significant relationship between learning independence and learning facilities with mathematics learning outcomes of VIII SMP Negeri 3 Pandak Bantul Regency in the odd semester in the academic year 2017/2018, in other words, if learning independence and high learning facilities will improve mathematics learning outcomes The multiple correlation coefficient ( $R$ ) between learning independence and learning facilities for mathematics learning outcomes is 0.7735 with the linear regression equation  $Y$  for  $X_1$  and  $X_2$  is  $\hat{Y} = -9,0057 + 0,2782 X_1 + 0,7281X_2$ . With a relative contribution of  $X_1$ , namely 24.6517%, and a relative contribution of  $X_2$  amounting to 75.33483%. Practical contribution  $X_1$  is 14.7520%, and effective contribution  $X_2$  is 45.0896%.

**Table 4.** Relative Contributions and Effective Contributions between independent variables

No.	Variable	Relative Contribution (RC%)	Effective Contribution (EC%)
1	( $X_1$ )	24.6517%	14.7520%
2	( $X_2$ )	75.348312%	45.0896%
	Total	100%	59.85%

This shows that learning facilities provide the most significant relationship to mathematics learning outcomes compared to learning independence. Once it is known that learning independence and learning facilities have significant and significant effects on student mathematics learning outcomes, this means the increase and decrease in student mathematics learning outcomes related to learning independence high and adequate learning facilities.

It can be seen that the relative contribution generated by the independent variable of learning independence ( $X_1$ ) is 24.6517%, as well as previous research conducted by Diansyah (2013), which shows that the relative contribution generated by learning independence is 52.67%. This means that learning independence has a more significant influence compared to other factors. Simultaneously, the relative contribution generated by the independent variable of learning facilities ( $X_2$ ) was 75.3343%. Previous research conducted by Madyuni (2015) showed that the relative contribution generated by learning facilities was 24.06%. This means that learning facilities have a smaller influence on learning outcomes, and other factors influence the rest.

## CONCLUSION

Based on the results of the study, several research conclusions can be drawn as follows:

1. There is a positive and significant relationship between learning independence and mathematics learning outcomes of Grade VIII students of SMP Negeri 3 Pandak Bantul Regency of the odd

- semester school year 2017/2018. This is indicated by the test (t),  $t_{\text{count}} > t_{\text{table}}$ , or  $4.1178 > 2.0484$ . The simple correlation coefficient (R) between learning independence ( $X_1$ ) with mathematics learning outcomes (Y) of 0.6141 with a linear regression equation  $\hat{Y} = 14,9827 + 0,7114 X_1$ .
2. There is a positive and significant relationship between learning facilities and mathematics learning outcomes of VIII grade students of SMP Negeri 3 Pandak, Bantul Regency, the odd semester of the academic year 2017/2018. This is indicated by the test (t), which is  $t_{\text{count}} > t_{\text{table}}$  or  $6.0069 > 2.0484$ . The simple correlation coefficient (R) between learning facilities ( $X_2$ ) with mathematics learning outcomes (Y) of 0.7504 with a linear regression equation  $\hat{Y} = -1,0956 + 0,9093X_2$ .
  3. There is a positive and significant relationship between learning independence and learning facilities with the mathematics learning outcomes of Grade VIII students of SMP Negeri 3 Pandak Bantul in the odd semester in the academic year 2017/2018. The F test indicates this, i.e.,  $F_{\text{count}} > F_{\text{table}}$  or  $20.1169 > 3.3541$ . The correlation coefficient of  $R = 0.7735$  and  $R^2 = 0.5984$  with a linear regression equation  $\hat{Y} = -9,0057 + 0,2782 X_1 + 0,7281X_2$ . The relative contribution of  $X_1$  is 24.6517%, and  $X_2$  is 75.33483%, and the effective contribution  $X_1$  is 14.7520% and the effective contribution.

## REFERENCES

- Arikunto, Suharsimi. 2012. *Dasar-dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara
- Arikunto, Suharsimi. 2013. *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta
- Khasanah, Uswatun. 2016. *Analisis Regresi*. Yogyakarta : UAD
- Nurhayati, Eti. 2011. *Psikologi Pendidikan Inovatif*. Yogyakarta: Pustaka Pelajar
- Slameto. 2010. *Belajar dan Faktor-Faktor yang Mempengaruhinya*. Jakarta: Rineka Cipta.
- Sugiyono. 2015. *Metode Penelitian Pendidikan*. Bandung: Alfabeta.
- Suherman, Erman. Turmudi, Suryadi, Didi. Herman, Tatang. Suhendra, Prabawanto, Sufyani. Nurjanah, dan Rohayati, Ade. 2003. *Strategi Pembelajaran Matematika Kontemporer*. Bandung: UPI.