THE RELATIONSHIP BETWEEN LEARNING INTEREST AND LEARNING INDEPENDENCE TOWARD MATHEMATICS LEARNING OUTCOMES

Yayan Ananda Dwijuniar[1], Rostien Puput Anggoro[2]
Program Studi Pendidikan Matematika Universitas Ahmad Dahlan
Jalan Ring Road Selatan, Tamanan, Banguntapan, Bantul Yogyakarta
[1]yayan.ananda27@gmail.com, [2]rostien.anggoro@pmat.uad.ac.id

ABSTRACT

Student learning outcomes are influenced by several factors, both internal and external factors. Interest in learning and learning independence are several factors that may be related to learning outcomes. This study aims to determine whether there is a positive and significant relationship between learning interest and learning independence with class X students' learning outcomes in the even semester of Vocational High School (SMK) Muhammadiyah in the academic year 2018/2019. This research aims to determine whether there is a positive and significant relationship between learning interest and learning independence with mathematics learning outcomes of class X students of SMK Muhammadiyah Mlati Even Semester of the 2018/2019 school year. This study's population was class X SMK Muhammadiyah Mlati 2018/2019 school year, consisting of 3 classes. Samples were taken in class X Pharmacy with random sampling techniques to the class. Data collection techniques are done using a questionnaire method to obtain data on learning interest and learning independence and documentation methods to obtain learning outcome data. Research instrument test: reliability test. Analysis prerequisite test: normality test, linearity test, and independence test. Data analysis uses product moment analysis and multiple linear regression analysis. The results showed no positive and significant relationship between learning interest and learning independence with the learning outcomes of class X Even Semester Students of SMK Muhammadiyah Mlati Academic Year 2018/2019. This is indicated by F_{count} = -73.25 and F_{table} = 3.80 $F_{count} < F_{table}$ with R = 0.25966 $\hat{Y} = 29.889 - 0.6608X_1 - 0.0850X_2$. Large RC X_1 = 92.72%,RC X_2= 7.27%, EC X_1= 6.25%, and EC X_2= 0.490%.

Keywords: Interest in Learning, Learning Independence, and Learning Outcomes.

INTRODUCTION

Quality human resources are important assets in the development of the Indonesian people to survive in complicated times. One way to improve the quality of human resources is through education. Education is the main thing and especially in today's life. As far as we look, that is how far we have to equip ourselves with education. Education is an important tool in developing human resources. Through education, we will be able to produce quality human resources and be able to compete.

Based on RI Law No. 20 of 2003 article 13 paragraph 1 concerning the National Education System, three educational paths can be taken to achieve national education goals: formal, non-formal, and informal education that can complement and enrich each other. One form of formal education is an education in schools. Education in this school is organized through continuous and tiered teaching and learning process. The levels of education included in this school are primary education, secondary education, higher education. Secondary education is a continuation of primary education. Secondary education is carried out to develop students' socialization abilities and competencies in work or higher education. One form of secondary education is the Vocational High School. Vocational High School is a school designed to produce quality and humane graduates to survive in the existing competition.

Every person who learns will look at the results after doing the learning process. Learning outcomes are something that is obtained after the learning process is complete. If the maximum absorption of information during the learning process, then the learning process results will also be maximized. According to Sudjana (2014: 22), Learning outcomes are abilities students have after receiving their learning experience. Learning outcomes have an essential role in the learning process because it will provide information to the teacher about student progress to achieve learning goals.

Based on researchers' information from class X students of SMK Muhammadiyah Mlati, assume that mathematics is a problematic subject compared to other subjects. Indicators of mathematics learning difficulties can be seen from the grade XTS grades of SMK Muhammadiyah Mlati in the 2018/2019 Academic Year shown in Table 1.

Table 1. Midterm Grades in Class X SMK Muhammadiyah Mlati Even Semester Academic Year 2018/2019

Value	X Pharmacy	X TKR	X TBSM	Value	Percent (%)
≤ MCC	11	26	15	52	83,87
≥ MCC	5	2	3	10	16,13
Total	16	28	18	62	100

(Source: SMK Muhammadiyah Mlati)

Table 1 above shows that the average grade of Midterm mathematics grade X in SMK Muhammdiyah Mlati is still less than optimal. MCC value that must be achieved is 75. The low average value of Midterm mathematics indicates the difficulty of learning mathematics caused by various factors. Therefore, to improve students' level of success in mathematics lessons need to be considered factors that influence mathematics learning.

Several factors can affect the learning process, including factors originating from within (internal factors) and factors originating from outside students (external factors). Factors originating from within students include (1) physiological factors such as experiencing pain, disability, imperfect development, and (2) psychological factors such as intelligence, motivation, perception, attitude, InterestInterest, talent, independence, etc. At the same time, factors originate from outside students, such as curriculum, teacher professional competence, learning facilities, school environment, family environment, and learning environment (Slameto, 2010: 54-60).

Slameto (2010: 180) says that InterestInterest is a feeling of preference and a sense of InterestInterest in a thing or activity, without anyone asking. According to Slameto (2003: 57), One of the internal factors that have a great influence on the learning process of students in the InterestInterest of the students themselves, because if the learning material that is learned does not match the interests of students, then students will not learn as well as possible, because there is no the attraction for him. Conversely, if the learning material is students' interests, it will be easier to learn because InterestInterest increases are learning activities. Interest can affect the quality of student achievement in certain fields of study. For example, a student who has a great interest in mathematics will focus more attention than other students. It is then because of the intense concentration of attention on the material that enables the student to study harder and finally achieve the desired learning outcome (Shah, 2010: 152).

According to Mujiman, Haris (2007: 1), Learning Independence can be interpreted as nature and ability possessed by students to carry out active learning activities driven by a motive for mastering a competency. A student is said to have Learning Independence if he has his own will to learn. Students can solve problems in the learning process, students have responsibilities in the learning process, and students have confidence in each learning process. In general, students are not independent in learning seen when students do the test, and there are still students who lack confidence in their abilities. Independence Learning can be seen in student learning's daily habits as the way students plan and do learning.

Based on the description above, learning Interest and learning independence can have a relationship to learning outcomes. The higher the Interest in learning and learning independence, the higher the learning outcomes achieved by students. To prove that, researchers are interested in taking the title of research on the relationship of learning InterestInterest and learning independence towards mathematics learning outcomes.

METHODS

This type of research is correlation research with a quantitative approach. This study's population was class X students, even semester 2018/2019 academic year totaling 62 children. Consists of 16 students of class X pharmacy, 18 students of class X TBSM, and 28 students of class X TKR. Simultaneously, this study's sample was obtained through the Random Sampling technique and obtained a sample of 16 Pharmacy Grade X students. This study's research variables are (1) the independent variable, and (2) the dependent variable. The independent variable consists of (a) learning interest X_1 and (b) learning independence X_2.

In contrast, the dependent variable is the result of learning mathematics Y. Data collection techniques used in this study are (1) questionnaire and (2) documentation. In the questionnaire used, two questionnaire instruments consisted of (1) learning interest questionnaire instrument aimed at expressing requests for learning to students, and (2) learning independence questionnaire instrument, which aims to strengthen the independence of learning conducted by students.

RESEARCH RESULTS AND DISCUSSION

This research was conducted in class X SMK Muhammadiyah Mlati in the even semester of the 2018/2019 school year on 10-17 May 2019 with sample classes at Pharmacy X and trial classes at X TKR each class consisting of 16 students. This study involving two independent variables, namely learning Interest (X_1) and learning independence (X_2), and one dependent variable, namely learning outcomes (Y). Following the results of the study of the independent variables and related variables.

Learning interest data is taken from instruments given to students in the form of 25 items. Then obtained the highest score of 74 and the lowest score of 46. The distribution of the frequency of InterestInterest can be seen in Table 2.

Table 2. Interest Frequency Distribution List (X_1)

Interval Class	fi	Xi	fi.Xi	Xi^2	fi. Xi^2
40 – 42	5	41	205	1681	8405
43 – 45	4	44	176	1936	7744
46 – 48	5	47	235	2209	11045
Interval Class	**fi**	**Xi**	**fi.Xi**	**Xi^2**	**fi. Xi^2**
49 – 51	1	50	50	2500	2500
51 – 53	1	52	52	2704	2704
	16		718	11030	32398
X	44,88				
SD	3,33				

From Table 2, the average value of 44.88 is obtained, and the standard deviation is 3.33. To interpret the scores obtained, students are divided into three groups: high, medium, and low, with the criteria in Table 3.

Table 3. Distribution of Number of Students by Learning Interest Score-Category(X_1)

Category	Score	F	Percent (%)
Height	$X \geq 65{,}00$	3	18.75
Medium	$47{,}26 \leq X < 65{,}00$	11	68.75
Low	$X < 47{,}26$	2	12.50
Total		16	100.00

Learning independence data taken from the instrument given to students some 22 statement items. Then obtained the highest score of 77 and the lowest score of 27. The frequency distribution of independence can be seen in Table 4.

Table 4. Learning Independence Frequency Distribution List (X_2)

Class intervals	Fi	Xi	fi. Xi	Xi^2	fi. Xi^2
41 – 43	2	42	84	1764	3528
44 – 46	3	45	135	2025	6075
47 – 49	7	48	336	2304	16128
50 – 52	3	51	153	2601	7803
53 – 55	1	54	54	2916	2916
Total	16		762	11610	36450
X	47.63				
SD	3.16				

From Table 4, the average value of 47.63 is obtained, and the standard deviation is 3.16. To interpret the scores obtained, students are divided into three groups, namely low, medium, and with the criteria in Table 5.

Table 5. Distribution of Number of Students by Category Learning Independence Score (X_2)

Category	Score	F	Percent (%)
Height	$X \geq 62,06$	3	18,75
Medium	$37,19 \leq X < 62,06$	11	68,75
Low	$X < 37,19$	2	12,5
Total		16	100

Learning outcome data is taken using final exam results data documentation in the even semester of SMK Muhammadiyah Mlati. Then the highest score is 64, and the lowest score is 34. The distribution of learning outcomes can be seen in Table 6.

Table 6. List of Frequencies of Learning Outcomes (Y)

Interval Class	fi	Xi	fi.Xi	Xi^2	fi. Xi^2
34 – 40	2	37	74	1369	2738
41 – 47	0	44	0	1936	0
48 -54	5	51	255	2601	13005
55 – 61	3	58	174	3364	10092
62 – 68	6	65	390	4225	25350
Total	16		893	13495	51185
X	55,81				
SD	9,17				

From Table 6, an average value of 55.81 and a standard deviation of 9.17 are obtained. To interpret the scores obtained, students are divided into three groups, namely low, medium, and with the criteria in Table 7.

Table 7. Distribution of Number of Students by Category of Learning Outcomes (Y)

Categorization	Value	Total	Percent (%)
Good	$X \geq 64,98$	1	6,25
Medium	$64,96 \leq X < 46,64$	13	81,25
Low	$X < 46,64$	2	12,50
Total		16	100,00

The analysis prerequisite tests are carried out to provide an overview of how the data's planned technical analysis can meet the prerequisites' assumptions. In this study's analysis prerequisite test, the tests conducted were normality test, independent test, and linearity test.

This test is conducted to determine whether the learning interest (X_1), learning independence (X_2), and learning outcomes (Y) are normally distributed or not. This study's normality test uses the chi-square statistical test (χ^3), with a significant rate of 5% ($\alpha = 0.05$). Degrees of freedom (df) = k-1 and the decision criteria used are $\chi^2_{\text{count}} \leq \chi^2_{\text{table}}$ then the data is usually distributed. Chi-square values of each variable can be seen in Table 8.

Table 8. Summary of Instrument Normality Test Result

No	Variable	χ^2_{count}	χ^2_{table}	Df	Remarks
1	Interest in learning	-88,6752	7,8147	3	Normal
2	Learning independence	4,033	5,9915	2	Normal
3	Learning outcomes	−10.51	3,8415	1	Normal

In table 8, you can see $\chi^2_{count} \leq \chi^2_{table}$. It can be seen that the distribution of data obtained on each variable is normally distributed.

An Independent test is used to determine whether there is a relationship between the independent variables, namely learning Interest (X_1) with learning independence (X_2). So it looks like the relationship between these variables is independent or dependent. To determine the independent or dependent variable decision criteria used $\chi^2_{calculate} \leq \chi^2_{table}$, at $\alpha = 5\%$ and df = (B-1) (K-1). Where B is the number of rows and K is the number of columns. After an independent test calculation is obtained $\chi^2_{count} = 34{,}813$ and $\chi^2_{table} = 37.6525$ so that $\chi^2_{calculate} \leq \chi^2_{table}$, this shows that the relationship between learning interest and learning independence is independent.

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 (F-test). The decision-making criteria are the relationship between variables X and Y linear if the $F_{count} \leq F_{table}$ is at a significant level of 5%. The numerator df = k-2 and the denominator df = n-k. In studies for X_1 with Y, the numerator df = 8, the denominator df = 6, for X_2 and Y, the numerator df = 8, the denominator df = 6. A summary of the results of the linearity test can be seen in Table 9.

Table 9. Summary of Linearity Test Result

No	Variable	F_{count}	F_{table}	Remarks
1	X_1 against Y	0,89	2,49	Linear
2	X_2 against Y	0,81	2,49	Linear

In Table 9, you can see $F_{count} \leq F_{table}$. This means that the InterestInterest in learning with linear learning outcomes, learning independence with linear learning outcomes.

a. First Hypothesis

$H_{0,1}$: $\rho = 0$

$H_{1,1}$: $\rho > 0$

In other words:

$H_{0,1}$: There is no positive and significant relationship between learning and mathematics learning outcomes of class X students in the even semester of SMK Muhammadiyah Mlati in the 2018/2019 school year.

$H_{1,1}$: There is a positive and significant relationship between learning interest and mathematics learning outcomes of class X students in the even semester of SMK Muhammadiyah Mlati in the 2018/2019 school year.

By using simple correlation analysis obtained a simple correlation coefficient (r) between learning interest (X_1) with learning outcomes (Y) of -0.2579. In addition, the simple regression equation Y for X_1 is $Y = 56.286 - 0.173\ X_1$ and its determinant coefficient (r^2) is 0.06655. Thus the first hypothesis

has been tested by rejecting $H_{1,1}$ and accepting $H_{0,1}$. So there is no positive and significant relationship between learning interest with the learning outcomes of class X students of SMK Muhammadiyah Mlati Even Semester Academic Year 2018/2019.

b. Second Hypothesis

$H_{0,2}$: $\rho = 0$

$H_{1,2}$: $\rho > 0$

In other words :

$H_{0,2}$: There is no positive and significant relationship between learning independence with class X students' learning outcomes in the even semester of SMK Muhammadiyah Mlati in the 2018/2019 school year.

$H_{1.2}$: There is a positive and significant relationship between learning independence with class X students' learning outcomes in the even semester of SMK Muhammadiyah Mlati in the 2018/2019 school year.

By using simple correlation analysis obtained a simple correlation coefficient (r) between learning independence (X_2) with learning outcomes (Y) of -0.1469. In addition, the simple regression equation Y for X2 is Y = -10361.4 + (- 0.3748) X_1 and the determinant coefficient (r^2) is 0.0216. Thus the second hypothesis has been tested by rejecting $H_{1,2}$ and accepting $H_{0,2}$. So there is no positive and significant relationship between learning independence with the learning outcomes of class X students of SMK Muhammadiyah Mlati Even Semester Academic Year 2018/2019.

c. Third Hypothesis

$H_{0,3}$: $\rho = 0$

$H_{1,3}$: $\rho > 0$

In other words :

$H_{0,3}$: There is no positive and significant relationship between learning interest and learning independence with class X students' learning outcomes in the even semester of SMK Muhammadiyah Mlati in the 2018/2019 school year.

$H_{1,3}$: There is a positive and significant relationship between learning interest and learning independence with class X students' learning outcomes in the even semester of SMK Muhammadiyah Mlati in the 2018/2019 school year.

By using simple correlation analysis, obtained a multiple correlation coefficient (R) between learning Interest (X_1) and learning independence (X_2) with mathematics learning outcomes (Y) of 0.25966. In addition, the double regression equation for X_1 and X_2 is Y = 29,893-0,6608X_1-0.0850X_2. Furthermore, testing the correlation coefficient's significance using the $F_{test} \leq F_{calculate}$ = -73.2500 while F_{table} = 3.80. At a significant level of 5%, the numerator df = 2 and the denominator df = 13, so $F_{count} \leq F_{table}$. Thus the third hypothesis has been tested by rejecting $H_{1,3}$ and accepting $H_{0,3}$. So there is no positive and significant relationship between learning interest and learning independence with the learning outcomes of class X students of SMK Muhammadiyah Mlati Even Semester Academic Year 2018/2019.

The relative contribution (RC) and effective contribution (EC) obtained, respectively, X_1 and X_2, can be seen in Table 10.

Table 10. The calculation result Relative and Effective Donations (X_1 dan X_2)

Variable	**SR**%	**SE**%
Interest Learning	92,72	6,2521
Independence Learning	7,27	0,49025
Total	99,99	6,74235

The first hypothesis test results obtained a simple correlation (r) of -0.25798. To get the determinant coefficient (r^2) of 0.0665560, which can be explained, 6.66% of learning outcomes are influenced by interests while other factors influence the rest. There is a variation in mathematics learning outcomes (Y) explained by InterestInterest in learning (X_1) through a linear line Y = 56.286-0.1730 X_1

with a regression direction coefficient -0.1730. This means that every increase of one unit X_1 results in -0,1730, a decrease in Y. The first hypothesis test results showed no positive and significant relationship between learning interest and learning outcomes. This study's results differ from a comparative study by Nurul Istiqomah Fajriani (2017) entitled Relationship between Learning Interest and Mathematical Learning Outcomes (Correlative Research in Class VIII C Students Odd Semester 3 Middle School 2016/2017 Academic Year. Nurul Istiqomah said if there is a variable interest in learning that increases by one point, it can positively contribute to learning mathematics.

The second hypothesis test results obtained a simple correlation (r) of 0.14697. To get the determinant coefficient (r^2) of 0.021600, which can be explained, 2.16% of learning outcomes are influenced by independence, while other factors influence the rest. There is a variation in mathematics learning outcomes (Y) explained by learning independence (X_2) through a linear line Y = 4-10361.4-$0.3748X_2$ with a regression direction coefficient -0.3748. This means that every increase of one unit X_2 results in -0.3748 a decrease in Y. The second hypothesis test results obtained are that there is no positive and significant relationship between learning independence with learning outcomes. This study's results are different from the comparative research by Rosyidah (2010) entitled "The Relationship between Learning Independence and Mathematics Learning Outcomes in Students of Parung-Bogor State MTs. Rosyidah showed in her research that there was a positive and significant relationship between variable X and variable Y. If the higher the level of independence, the higher the student learning outcomes.

From the multiple correlation analysis, the double coefficient (R) value is 0.25966, meaning that 25.966% is influenced by learning InterestInterest and learning stagnation while the rest are other factors. The variance of learning outcomes in mathematics (Y) can be explained by the ability to solve InterestInterest in learning (X_1) and learning independence (X_2) through a linear line Y = 29,893-$0,6608X_1$-$0,0850X_2$. The relative contribution of X_1 by 92.72, X_2 by 7.27%, and the effective contribution of X_1 by 6.2521%, X_2 by 0.49025%. The third hypothesis test results obtained there is no positive and significant relationship between learning interest and independence of learning with learning outcomes. Value (R^2) of 0.06742 it can be concluded that 6.74% of mathematics learning outcomes are influenced jointly by learning InterestInterest and learning independence. In comparison, the remaining 93.26% is influenced by other factors not examined in this study.

The reason for the unsuccessful refuse of H_0 in this study was due to student learning outcomes data that were the object of research obtained from the results of the final exams, where it was known that the final exams questions used were questions originating from the Vocational School Principal Work (MKKS) Conference in Sleman Regency. This condition causes students to be less able to solve final exam questions; the final exam questions' material is not studied thoroughly during teaching and learning activities. Another factor that causes the failure to reject H_0 is the time factor. Distribution of questionnaires to obtain data on learning interest and learning independence was carried out on Friday before school. This condition causes students to be unable to concentrate because they are influenced by students in other classes who sometimes go home early. As a result, students in the class are also motivated to go home immediately and ignore the questionnaire's statement. Another factor that is also the cause of the failure to receive H_1 is the invalid final exam results. The researcher observes that the scoring for all students' essay questions is the same and is not based on student answers. So it can be concluded that several factors cause the difference in this study with other studies. Among others: Questions on final exams, time, and final exam results.

CONCLUSION

Based on the results of research and discussion as described above, the following conclusions can be drawn: (1) There is no positive and significant relationship between learning interest in mathematics learning with learning outcomes of class X students of SMK Muhammadiyah Mlati Even Semester Academic Year 2018/2019, (2) There is no positive and significant relationship between learning independence in mathematics learning with the learning outcomes of class X students of SMK Muhammadiyah Mlati Even Semester Academic Year 2018/2019. (3) There is no positive and significant

relationship between learning InterestInterest and learning independence in mathematics learning with the learning outcomes of class X students of SMK Muhammadiyah Mlati Even Semester Academic Year 2018/2019.

REFERENCES

Fajriani, Nurul Istiqomah. (2017). Hubungan Minat Belajar dengan Hasil Belajar Matematika (Penelitian Korelatif pada Siswa Kelas VIIIC Semester Ganjil SMP Negeri 3 Sawit Tahun Ajaran 2016/2017). Skripsi. Fakultas Keguruan dan Ilmu Pendidikan. Surakarta: Universitas Muhammadiyah Surakarta.

Mujiman, Haris. (2007). Manajemen Pelatihan Berbasis Belajar Mandiri. Yogyakarta: Mitra Cendekia.

Slameto. (2010). Belajar dan Faktor- Faktor yang Mempengaruhinya. Jakarta: Rineka Cipta

Sudjana, Nana. (2001). Teknik Analisis Regresi dan Korelasi. Bandung: PT Tarsito.

_____. (2014). Dasar-dasar Proses Belajar Mengajar. Bandung: Sinar Baru Algensindo.

Sugiyono. (2015). Metode Penelitian Pendidkan. Bandung: Alfabeta.