THE RELATIONSHIP AMONG LEARNING MOTIVATION AND LEARNING FACILITIES WITH MATHEMATICS LEARNING OUTCOMES

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ABSTRACT

Student learning motivation is still low, and learning facilities owned by students are still inadequate. This study aims to determine whether there is a positive and significant relationship between learning motivation and learning facilities with mathematics learning results in class X of State Vocational High School (SMK N) 5 Yogyakarta Semester Even 2017/2018 Academic Year. This type of research uses quantitative research. This study's population were students of class X SMK N 5 Yogyakarta Even Semester 2017/2018 Academic Year, consisting of 2 classes totaling 64 students. Class X Ceramic Craft B as the research sample class was taken by random sampling technique. Data collection techniques using the questionnaire method to obtain learning motivation data and learning facilities and test methods to obtain data on mathematics learning outcomes. Research instrument test: validity test, different power test, and reliability test. Analysis prerequisite tests include normality test, linearity test, and independence test. Data analysis using product moment analysis and multiple linear regression analysis. The results showed a positive and significant relationship between learning motivation and learning facilities with mathematics learning results in class X Ceramic Craft B of SMK N 5 Yogyakarta Even Semester 2017/2018 Academic Year. This is indicated by F_{count}= 6,1108 and F_{table} = 2,99 so that $F_{coun} > F_{table}$, with the multiple correlation coefficient R^2 = 0,7135 and the multiple variable regression equation $\hat{Y} = -21{,}0510 + 0{,}1196X_1 + 0{,}7399X_2$. Relative contribution X_1 = 47,1054% and X_2 = 95,9989% and effective contribution X_1= 33,6097 % dan X_2 = 68,4952 %.

Keywords: learning motivation, learning facilities, mathematics learning outcomes

INTRODUCTION

Education is a process that lasts a lifetime, which aims to improve human dignity. Education is dynamic. Through human education can develop themselves by the environment by existing norms so that they live properly. For a nation, education is one of the assets to achieve national progress. Education will be born in the next generation of the nation, which is expected to give birth to a new generation that is more professional and can develop into higher quality human resources.

In facing the globalization era accompanied by the rapid development of science and technology (IPTEK), a person must quickly and quickly utilize information. For this reason, high quality and reasoned Human Resources (HR) and the ability to process information can be used to develop science and technology. Likewise, the standard in achieving education, among others, can be seen if a nation can utilize science and technology whose development is so rapid and will be primarily determined by the success of development in the field of education at all levels.

Mathematics is one of the many sciences that underlies other sciences and has an important role in improving Indonesia's education quality. Mastery of mathematics in supporting the success of the development of education is essential because mastery of mathematics for students, both in primary education and in secondary education, will be a powerful tool for learning other subjects, both at the same level of education and at the level of education that is higher. This means that someone who understands mathematics will have ample enough opportunity to study other subjects successfully. Thus, the mastery of mathematics for students needs to be improved, both at the primary and secondary education level to higher education. Learning outcomes are the learning process results, namely, the level of mastery achieved by students in participating in teaching and learning activities with established educational goals.

In mathematics class X SMK N 5, Yogyakarta shows that student learning outcomes are still low. Indicators of low student mathematics learning outcomes can be seen from the value of the Even Semester Midterm academic year 2017/2018 mathematics subjects class X SMK N 5 Yogyakarta.

Table 1. Grades of Midterm Exams Grade X SMK N 5 Yogyakarta Even Semester 2017/2018 Academic Year

Information	Class		Amount	Percentage
	A	B		
Above MCC (≥ 75)	2	0	2	3,125%
Under MCC (< 75)	30	32	62	96,875%
Total students	32	32	64	100%

(Source: SMK N 5 Yogyakarta)

From Table 1, it can be seen the results of mathematics UTS for class X SMK N 5 Yogyakarta. It can be seen that the results of learning mathematics most of the students are still below the Minimum Completeness Criteria (MCC), which is 75.

Based on the results of interviews with several students at SMK N 5 Yogyakarta obtained problems of learning mathematics experienced by students, among others: Most students do not pay attention even still playing cellphone in learning mathematics, students also like to talk alone in the back, and often in and out of class during lessons mathematics takes place because student motivation is still low. Students also can not be said to be independent learning in the learning process. When given exercises that differ slightly from the sample problems explained by students experiencing difficulties, some often discuss test questions. Of all the students tell about inadequate learning facilities at home, limited tools for learning, even students do not have their mathematics textbooks, so students cannot study at home, lack of other supporting books, stationery and places of study, such as desks and chairs commonly used but used for dining tables.

This study will examine the Relationship Between Motivation and Learning Facilities with Mathematics Learning Outcomes of Students of SMK N 5 Yogyakarta. Based on the background of the problems that have been raised can be formulated research problems as follows: 1) Is there a positive and significant relationship between learning motivation and mathematics learning outcomes of students of SMK N 5 Yogyakarta Even Semester for Academic Year 2017/2018? 2) Is there a positive and significant relationship between learning facilities with mathematics learning outcomes of students of SMK N 5 Yogyakarta Even Semester for Academic Year 2017/2018? 3) Is there a positive and significant relationship between learning motivation and learning facilities with Mathematics learning outcomes of students of SMK N 5 Yogyakarta Even Semester for Academic Year 2017/2018?

METHODS

This research is quantitative. The place of research was conducted at SMK N 5 Yogyakarta. In contrast, the research time was carried out in the even semester of 2017/2018. This study's population were all students of class X SMK N 5 Yogyakarta even semester of the academic year 2017/2018 as many as two classes containing 64 students arranged randomly, namely class X Ceramic Craft A and Ceramic Craft X B.

In this study, sampling using a random sampling technique for classes, namely by lottery class. Thus, it was found that Grade X students of Ceramic Craft B as the sample class.

There are two kinds of research variables in this study: the independent and dependent variables, namely X_1 (motivation to learn) and X_2 (independence of learning). In contrast, the dependent variable in this study is the result of learning mathematics (Y). Data collection techniques used test methods and questionnaires. This study used the test method to determine the effects of mathematics learning outcomes for class X students of SMK N 5 2017/2018 as the research sample. Simultaneously, the questionnaire method is used to obtain data on learning motivation and learning facilities of class X SMK N 5 Yogyakarta even semester, which is the research sample.

RESULTS AND DISCUSSION

The instrument study results stated that the instrument was appropriate to be presented or distributed to be filled in by respondents. For the instrument trial analysis, based on the test of the validity of the learning outcomes test, it was found that from 15 items, eight items were declared valid. As seen in Table 2.

Table 2. Summary of Test Validity of Research Instruments

Variable	Number Of Items	Number Of Items Drop	Drop Item Number	Number Of Items Valid
Results of Mathematic Outcome	15	7	1,3,4,6,7,11,15	8

Furthermore, based on the test of distinguishing learning outcomes, it was found that from 8 useful items, there were three items with good criteria and five items with good categories. It can be seen that useful items also have appropriate criteria to be used, as seen in Table 3.

Table 3. Summary of the Test Power of Different Valid Item Instruments

Variable	Criteria	No Item Question
Results of Mathematic Outcome	Very Good	-
	Good	5,13,14
	Enough	2,8,9,10,12
	Less	-
	Very Less	-

Furthermore, based on the reliability test, the instrument of learning motivation, learning facilities, and mathematics learning outcomes are reliable, as shown in Table 4.

Table 4. Summary of Research Instrument Reliability Tests

Variable	Number Of Items	R_{count}	R_{table}	Status
Motivation to learn	25	0,626	0,338	Reliable
Learning Facilities	25	0,740	0,338	Reliable
Mathematical Learning Outcomes	8	0,997	0,338	Reliable

The prerequisite test analysis on the normality test found that the learning motivation instruments, learning facilities, and mathematics learning outcomes were normally distributed, as seen in Table 5.

Table 5. Summary of Normality Test Results

Variable	R_{count}	R_{table}	Info.
Motivation to learn (X_1)	1,228	7,814	Normal
Learning Facilities (X_2)	1,216	7,814	Normal
Mathematical Learning Outcomes (Y)	1,038	7,814	Normal

Next, based on the independent test, it was found that learning motivation variables (X_1) and learning facilities (X_2) had an independent relationship, as seen in Table 6.

Table 6. Summary of Independent Test Results

Variable	χ^2_{count}	χ^2_{table}	Info.
X_1 with X_2	14,394	37,652	Independent

Furthermore, based on the linearity test, it was found that the variables of learning motivation (X_1) and mathematics learning outcomes (Y), as well as learning facilities (X_2) and mathematics learning outcomes (Y), have a linear relationship, as shown in Table 7.

Table 7. Summary of Linearity Test Results

Variable	F_{count}	F_{count}	Info.
X_1 with Y	0,545	3,57	Linear
X_2 with Y	0,827	2,48	Linear

The first hypothesis test results found a positive and significant relationship of learning motivation with mathematics learning outcomes to test the hypothesis. In this study, a simple correlation coefficient (r) of 0.0974 was obtained at a significant level of 5% to obtain a determinant coefficient (r^2) of 0.675, which can be explained that 67.5% of learning outcomes are influenced by learning motivation. In comparison, the remaining 32.5% is influenced by other factors not discussed in this study. There is a variation in learning mathematics (Y), which is explained by learning motivation (X_1) through a linear line $\hat{Y} = 195{,}3431 + 2{,}9535X_1$, with a coefficient of regression direction of 0.295. This means that every increase of one unit X_1 results in a 0.295 increase in Y.

The second hypothesis test results show a positive and significant relationship between learning facilities and student mathematics learning outcomes. In this study, a correlation coefficient (r) of 0.704 was obtained. So obtained (r^2) of 0.495 can explain 49.5% of learning outcomes influenced by learning facilities. In comparison, the remaining 50.5% of learning outcomes are influenced by other factors not examined in this study. There are variations in mathematics learning outcomes (Y), explained by numerical ability (X_2) through linear lines $\hat{Y} = -127{,}4750 + 2{,}1425\,X_2$. With the coefficient of regression direction of 0.214. This means that every increase of one unit X_3 results in a 0.214 increase in Y.

From the results of the third hypothesis test, it is found that there is a positive and significant relationship between students' learning motivation and learning facilities with student mathematics learning outcomes. In this study, a multiple correlation coefficient (R) of 0.859 was obtained. This study also obtained a coefficient of determination (R^2) of 0.738, meaning that 73.8% of learning outcomes are influenced by learning motivation and learning independence. In comparison, the remaining 26.2% of learning outcomes are influenced by other factors not examined in this study. There are variations in mathematics learning outcomes (Y) that can be explained by study habits (X_1) and home learning environments (X_2) through linear lines Yˆ = -21.0510 + 0.1196X_1 + 0.7399X_2. This means an increase in one unit (X_1) resulted in a 0.119 increase in Y. An increase in one unit (X_2) resulted in a 0.739 increase in Y. While for relative contributions, X_1 amounted to 37.0238% and X_2 amounted to 62.9123%. This calculation indicates that student mathematics learning outcomes will be even better by increasing student motivation and learning facilities.

Furthermore, the magnitude of the relative contribution (RC) and the magnitude of the effective contribution (EC) for each variable of Learning Motivation (X_1) and Learning Facilities (X_2) with Mathematics Learning Outcomes (Y) can be concluded that the learning motivation variable provides a more significant relationship with Mathematical learning outcomes than learning independence and learning facilities at home, as shown in Table 8.

Table 8. Summary of Relative Contributions and Effective Contributions

Variable	*RC*	*EC*
Motivation Learning (X_1)	37,0238 %	14,0431%
Learning facilities (X_3)	62,9123 %	23,8629%
Amount	100%	37,906%

CONCLUSION

Based on the results of the research and discussion described in the previous chapter, the conclusions obtained in this study are as follows:

1. There is a positive and significant relationship between learning motivation towards mathematics learning outcomes in students of class X Design and Production of Ceramic Craft B Semester II SMK N 5 Yogyakarta in the academic year 2017/2018 as indicated by the value of t_{count}= $2.5615 > 1.6973\ t_{table}$. The simple correlation coefficient (r) learning habits with mathematics learning outcomes of 0.0287 with a linear regression equation $\hat{Y} = 195{,}3431 + 2{,}9535X_1$.
2. There is a positive and significant relationship between learning facilities with mathematics learning outcomes in students of Class X Design and Production of Craft Ceramics B Semester II SMK N 5 Yogyakarta in the academic year 2017/2018. This is indicated by the t-test that is $t_{count} > t_{table}$ or $3.3289 > 1.6973$. Simple correlation coefficient (r) numerical ability with mathematics learning outcomes of 0.0499 with a linear regression equation $\hat{Y} = -127{,}4750 + 2{,}1425\ X_2$.
3. Simultaneously / together, learning motivation and learning facilities have a positive and significant relationship to mathematics learning outcomes in students of Class X Design and Production of Ceramic Craft B Semester II SMK N 5 Yogyakarta in the academic year 2017/2018 as indicated by the value of $t_{count} = 8,8607 > 3.30\ t_{table}$ The multiple correlation coefficient (R) of 0.3793 with a linear line equation $\hat{Y} = -44{,}6421 + 0{,}6479X_1 + 0{,}5287X_2$. The relative contribution of X_1 37.0238% and X_2 amounted to 62.9123%, and the effective contribution of X_1 amounted to 14.0431%, and X_2 amounted to 23.8629%.

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