The Influence of Learning Interest and Motivation on Mathematics Learning Achievement in Class VII Students of SMP Negeri 80 Jakarta

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Article Info	Abstract
	This study aims to determine: (1) The relationship between interest and learning motivation on mathematics learning achievement among seventh-grade students at SMP Negeri 80 Jakarta; (2) The relationship between learning interest and mathematics learning achievement at SMP Negeri 80 Jakarta; (3) The relationship between learning motivation and mathematics learning achievement among seventh-grade students at SMP Negeri 80 Jakarta. The research method employed is a quantitative approach with a type of quantitative descriptive research. The research population includes all seventh-grade students at SMP Negeri 80 Jakarta. Meanwhile, the research sample consists of 75 students. The data collection technique in this research involves the use of instruments, namely: (1) learning interest questionnaire, (2) learning motivation questionnaire, and (3) even semester final exam scores. The obtained data were analyzed using descriptive statistical analysis techniques and inferential statistical analysis techniques. The results of descriptive statistical analysis indicate that students' learning interest scores reached 77.3%, falling into the moderate category. Meanwhile, learning motivation reaches 73.3%, categorized as high, and learning achievement at 89.3% is in the category of beginning to develop. Meanwhile, the results of inferential analysis show that: (1) there is a positive and significant relationship between learning interest and mathematics learning achievement of seventh-grade students at SMP Negeri 80 Jakarta, with a t_{value} where $t_{calculated} > t_{table}$ (3.044 > 1,933) ; (2) There is a positive and significant relationship between learning motivation and mathematics learning achievement of seventh-grade students at SMP Negeri 80 Jakarta, with a t_{value} where $t_{calculated} > t_{table}$ (8.874 > 1,933) ; (3) There is a positive and significant relationship between learning interest and learning motivation on the mathematics learning achievement of seventh-grade students at SMP Negeri 80 Jakarta, with a F_{tes} where $F_{calculated} > f_{table}$ (40.679 > 3,12); The magnitude of the influence of the relationship between learning interest and learning motivation on students' mathematics learning achievement is 51%, as seen from the value of adjusted R Square = 0.517. **Keywords:** Academic Achievement, Learning Interest, Learning Motivation

1. Introduction

Mathematics learning in schools also functions as an important means of achieving national education goals. (Nur et al, 2021) emphasizes the importance of mathematics as a basic science that must be studied by students. Mathematics provides real benefits in various aspects of life, and

understanding this discipline is the key to achieving better results in achieving the national education goals that have been set. Students can improve their living standards, face future challenges, and contribute more actively to the development of superior human resources in Indonesia by understanding mathematics well. Therefore, the role of mathematics as a fundamental science and education in Indonesia complement each other to achieve educational success and the country's progress.

However, mathematics is one of the subjects that students are less interested in and like, even though mathematics is a subject that must be taught to students in order to develop logical, realistic, critical, rational, honest and effective thinking. Therefore, the study of mathematical ideas is very important. In schools, the goal of learning mathematics is to improve students' abilities for critical thinking, reasoning, and problem solving. For learning to be enjoyable and successful, students must feel involved and motivated (Asri et al., 2021).

It has become a national and even international problem that mastery of mathematics (especially mathematics at school) is very low compared to other subjects. Based on the 2019 *Trends in International Mathematics and Science Study* (TIMSS), students' mathematics learning achievement in Indonesia is relatively low compared to other countries that participated in the assessment. At the TIMSS *Primary level*, which involves 4th grade elementary school students, Indonesia recorded an average mathematics score of 425 points. The global average score at this level is 500 points.

This shows that Indonesian students have mathematics achievements that are below the global average at that level of education. At the TIMSS *Secondary level*, which involves grade 8 junior high school students, Indonesia recorded an average mathematics score of 395 points. The global average score at this level is also 500 points. Thus, Indonesian students at this level also show lower mathematics achievement compared to students in other countries participating in the assessment. This data shows that there is a gap between the mathematics learning achievements of Indonesian students and the achievements of students in other countries on a global scale. Factors such as curriculum, teaching methods, teacher quality, and learning and supporting environment factors can also play a role in determining student mathematics achievement. (https://timss.bc.edu/.)

The same condition also occurs at SMP Negeri 80 Jakarta, which can be seen from the results of observations and short interviews with mathematics subject teachers, that the average mathematics score for Class VII students in the Mid-Semester Assessment (PTS) for the 2022/2023 Academic Year is 60, which is at category has not yet developed. This shows that students are still failing in mathematics. Students have high interest and motivation to learn, which is one of the factors that influences their learn achievement. A high level of interest and motivation will help in the mathematics learning process. A strong factor in encouraging students to learn is their interest in the lesson. Students who have a strong interest in lessons tend to be more motivated to study diligently than students who just follow lessons without a strong interest. They may be willing to learn, but find it difficult to persist due to a lack of adequate encouragement. This is reinforced by research conducted by (Tasya & Abadi, 2019) which reached the conclusion that mathematics
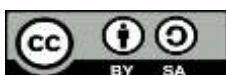
learning achievement is influenced by internal and external factors, one of which is interest in learning and encouragement to learn.

Teachers need to strive to create an environment that motivates students so that they always feel important and motivated to continue learning. One method to achieve this is to develop a high interest in learning through the delivery of interesting material and variations in teaching styles. Including this variety can create excitement and satisfaction in students during the learning process. Apart from interest in learning, student learning achievement is also greatly influenced by the level of motivation. Learning motivation has a key role in achieving student learning success. Motivation functions as an impulse within students, both consciously and unconsciously, which encourages them to take action with predetermined goals. Motivation acts as a driving force that helps students to move forward and achieve their goals. Therefore, teachers need to stimulate high interest in learning and understand students' motivation in order to improve their achievement, because students who have high interest will diligently pursue knowledge. This can be done by presenting interesting learning and motivating students to achieve the desired learning goals (Heriyati, 2017). Although much research has been conducted in the context of the influence of interest and learning motivation on mathematics learning achievement, there is still a lack of research that specifically examines this phenomenon at SMP Negeri 80 Jakarta.

Based on the description above, researchers are interested in conducting research which aims to determine the relationship between interest and learning motivation on learning achievement in class VII students at SMP Negeri 80 Jakarta with the title "The Influence of Interest and Motivation for learning on mathematics learning achievement of students in Class VII at SMP Negeri 80 Jakarta"

2. Method

This research uses quantitative methods using correlation and multiple regression analysis techniques to determine the relationship and influence between two independent variables and one dependent variable. This research was carried out at SMP Negeri 80 Jakarta, in the even semester of the 2023/2024 academic year. The number of samples in this study was 75 students selected using the Slovin formula technique. In this research there are three variables, namely two independent variables and one dependent variable. Independent variables include learning motivation ($X1$) and learning interest ($X2$). The two independent variables are collected through questionnaires. Meanwhile, the dependent variable, namely student Mathematics Achievement (Y), is obtained from the UAS scores for the even semester of the 2023/2024 academic year which are obtained from school documents.

The research design can be seen in the following picture:

Picture 1
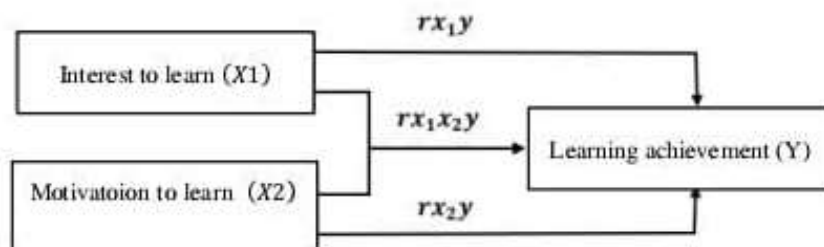
Information

$X1$	: Interest to learn
$X2$	: Motivation to learn
Y	: Learning achievement
rx_1Y	: relationship between interest in learning and learning achievement
rx_2Y	: the relationship between learning motivation and learning achievement
rx_1x_2Y	: the relationship between interest and motivation for learning with learning achievement

In testing research hypotheses, data analysis needs to be carried out. The data analysis process involves steps such as describing the data for each research variable, testing analysis requirements, and testing hypotheses.

1. There is a positive and significant relationship between interest and learning motivation on mathematics learning achievement in class VII students at SMP Negeri 80 Jakarta.
2. There is a positive and significant relationship between interest in learning and mathematics learning achievement in class VII students at SMP Negeri 80 Jakarta.
3. There is a positive and significant relationship between learning motivation and mathematics learning achievement in class VII students at SMP Negeri 80 Jakarta.

The regression equation used in this research is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2$$

Information:

Y	:Learning achievement
α	: Constant Coefficient
X_1	: Interest to learn
X_2	: Motivation to learn
$\beta_1\beta_2$	: Independent Variable Coefficient

The application of the regression equation above is carried out to measure the intensity of the influence of the independent variable on the dependent variable. Data processing is made easier and assisted by using the MS Excel program.

3. Results and Discussion

3.1. Results of Descriptive Statistical Analysis

1. Interest to learn

Table 1

Descriptive Statistics of Interest in Learning

	Interest to learn *X1*
Mean	59.81333333
Standard Error	1.322799833
Median	60
Mode	70
Standard Deviation	11.4557826
Samples Variance	131.234955
Kurtosis	0.018540931
Skewness	-0.04991591
Range	53
Minimum	30
Maximum	83
Sum	4486
Count	75

The results of the descriptive analysis of the Learning Interest variable (X1) for class VII students at SMP Negeri 80 Jakarta were obtained by filling out a questionnaire with 25 items and 4 alternative answers . Based on table 1, the average value of learning interest 59,81, median , 60,00 mode of 70 value, standard deviation, 11,45 variance value 131,235, range of data, 53 minimum value 30, maximum value 83 and total score 4468.

Table 2

Frequency Distribution and Percentage of Learning Interest Scores

Category	Formula	Frequency	Percent (%)
TALL	$M + 1SD \leq X$	9	12
CURRENTLY	$M - 1SD \leq X < M + 1SD$	58	77,333
LOW	$X < M - 1SD$	8	10,666
TOTAL		**75**	**100**

Student interest scores can be seen that 9 students (12% of 75 students) are in the high category, 58 students (77.3% of 75 students) are in the medium category and 8 students (10.6% of 75 students) is in the low category. This shows that the learning interest of Class VII students at SMP Negeri 80 Jakarta is in the medium category, namely 7 7,33 %.

2. Motivation to learn

Table 3

Descriptive Statistics of Learning Motivation

Learning Motivation X2	
Mean	92.73333333
Standard Error	1.407615495
Median	93
Mode	93
Standard Deviation	12.19030777
Samples Variance	148.6036036
Kurtosis	1.017019304
Skewness	-0.459841807
Range	69
Minimum	53
Maximum	122
Sum	6955
Count	75

Results of descriptive analysis of the Learning Motivation variable (X2) for class VII students at SMP Negeri 80 Jakarta, which were obtained by filling in a questionnaire with 25 items and 5 alternative answers. Based on Table 3, the average value of learning motivation, 92,73 median, 93,00mode 93, standard deviation 12,190 value, variance value 148,60 range of data, 69 minimum value 53, maximum value 122 and total score 6955.

Table 4

Frequency and Percentage Distribution of Learning Motivation Scores

Category	Formula	Frequency	Percent (%)
TALL	$M + 1SD \leq X$	12	16
CURRENTLY	$M - 1SD \leq X < M + 1SD$	55	73.3333333
LOW	$X < M - 1SD$	8	10.6666667
	TOTAL	**75**	**100**

In table 4 , the frequency distribution and percentage of students' learning motivation scores can be seen that 12 students (1.6 % of 75 students) are in the high category, 55 students (73.3 % of 75 students) are in the medium category and 8 students (10.6 % of 75 students) is in the low category. This shows that the learning motivation of Class VII students at SMP Negeri 80 Jakarta is in the medium category, namely 73.3%.

3. Learning achievement

Table 5

Descriptive Statistics of Learning Achievement

Y's Learning Achievement	
Mean	67.68
Standard Error	0.661191935
Median	68
Mode	66
Standard Deviation	5.726090124
Samples Variance	32.78810811
Kurtosis	-0.055900257
Skewness	-0.044537632
Range	30
Minimum	53
Maximum	83
Sum	5076
Count	75

Results of descriptive analysis of the Learning Achievement (Y) variable for class VII students at SMP Negeri 80 Jakarta, obtained through UAS scores for the even semester of 2023/2024. Based on Table 5, the average learning achievement value is 67.68, median 68.00, mode 66, standard deviation value 5.726. The variance value is 32.788 range or data range 30. The minimum value is 53, the maximum value is 83, and the total score is 5076.

Table 6

Frequency Distribution and Percentage of Learning Achievement Scores

Category	Formula	Frequency	Percent (%)
Undeveloped	$N = skor \frac{perolehan}{skor\ maksimal} \times 100$	8	10.6666667
Starting to Develop	$N = skor \frac{perolehan}{skor\ maksimal} \times 100$	67	89.3333333
Developing According to Expectations	$N = skor \frac{perolehan}{skor\ maksimal} \times 100$	0	0
Highly Developed	$N = skor \frac{perolehan}{skor\ maksimal} \times 100$	0	0

Total		75	100

In table 6 , the frequency distribution and percentage of students' learning achievement scores can be seen that 8 students (10.6 % of 75 students) are in the not yet developing category, 6.7 students (89.3 % of 75 students) are in the starting to develop category . This shows that the mathematics learning achievement of Class VII students at SMP Negeri 80 Jakarta is in the starting to develop category 8 9 , 3 %.

3.2 Inferential Analysis Results

1. Prerequisite Test Results

a. Normality test

Table 7

Normality Test Results

	Interest in Learning (X1)	Learning Motivation (X2)	Learning Achievement (Y)
N	75	75	75
Mean	59.81	92.73	67.68
Standard Deviation	11.46	12,19	5.73
D_n	0.067	0.069	0.056
KS Table	0.154	0.154	0.154

Normality test uses the *Kolmogorov-Smirnov method* . In Table 7. It can be seen that the value $D_n < KS \ tabel$ for interest in learning is 0,067< 0154 motivation to learn is 0,067< 0154 and achievement in learning mathematics is 0,067< 0154 This shows that the three variables have values D greater than $KS \ tabel$ Therefore, it can be concluded that the variables in this study are normally distributed.

b. Multicollinearity Test

Table 8

Multicollinearity Test Results

Variable	Tolerance	VIF
Interest to learn X1	0.973	1,028
Motivation to learn X2	0.973	1,028

From Table 8 it can be seen that the values   toerance *for* the independent variables X1and X2 are 0,973. Both values are greater than. 0,10 Furthermore, the VIF values for variables X1 and X2 are 1,028 Both VIF values are less than. 0,10 So, it can be concluded that there is no multicollinearity between the independent variables in this study.

2. Hypothesis testing

a. First hypothesis

Table 9

Joint F Test Analysis Results

ANOVA					
	Df	*S um of S qures*	*M ean S quares*	*F*	*The g. F*
Regression	2	1287,1953	643.5977	40,679	0,000
Residual	72	1139.1246	15.82118		

The first hypothesis test was carried out to determine the relationship between the variables of learning interest (X1)and learning motivation (X2) on learning achievement (Y) Based on table 9, it can be seen that the value $F_{calculated}$ is equal 40,6789 to the significance value 0,000. Because of the value $F_{calculated} > f_{table}$, (40,679 > 3,12 it can be concluded that learning interest and learning motivation together have an influence on mathematics learning achievement.

Table 10 Determinant Coefficient Results (R^2)

SUMMARY OUTPUTS	
Regression Statistics	
Multiple R	0.728363517
R Square	0.530513413
Adjusted R Square	0.517472119
Standard Error	3.977584233
Observations	75

Based on the table above, the results of multiple linear regression analysis show the coefficient of determination. $adjusted\ R\ Square = 0,517$. This shows that the influence of learning interest and learning motivation on students' mathematics learning achievement is large 51% and the remainder is influenced by other factors.

Next, to test the second and third hypotheses, multiple linear regression tests were carried out by carrying out the T test together.

Table 11

Results of Joint T Test Analysis

	B	*S.E*	*Coefficients*	*Q*	*P- V alue*
(Constant)	28,589	4,665		6,127	0,000
Interest in Learning (X1)	0.124	0.040	0.249	3,043	0.00 3

Learning Motivation (X2)	0.341	0.038	0.726	8,874	0,000

From table 11 above, the regression equation is obtained, namely:

$$\hat{Y} = 28{,}589 + 0{,}124x_1 + 0{,}341X_2$$

This equation can be interpreted to mean that the value 28.589 is a constant value which indicates that the variables of learning interest and learning motivation are considered constant or have not changed. The regression coefficient for the learning interest variable (X1) is equal 0,124, meaning that if it increases by 1 point, learning achievement (Y) will increase 0, 124 with (X2) constant assumptions. Furthermore, the coefficient of learning motivation (X2) is as large 0,341 as it means that if learning motivation (X2) increases by 1 point, the value added to learning achievement (Y) will increase 0,341assuming it (X1) remains constant.

b. Second Hypothesis

Based on table 11 , the regression equation is obtained, namely:

$$\check{Y} = 28{,}589 + 0{,}241X_1$$

Based on the table of values t_{hitung} for interest in learning of 3,043and value t_{table} using the formula $t_{tabel} = \alpha/2; n - k - 1) = (0{,}05: 75 - 2 - 1) = (0{,}025: 73 = (1{,}993)$Because of the value where $t_{hitung} > t_{tabel}$, namely (3,043 > 1,993) . Due to grades where $t_{hitung} > t_{tabel}$, it can be concluded that there is a positive and significant relationship between learning motivation and student learning achievement VII SMP Negeri 80 Jakarta. As a result, the proposed hypothesis is considered to have been answered.

c. Third Hypothesis

From the table above, the regression equation is obtained, namely:

$$\hat{Y} = 28{,}589 + 0{,}341X_2$$

Based on the table, the value of t_{hitung} learning motivation is 3.043 the value t_{tabel}using the formula $t_{tabel} = \alpha/2; n - k - 1) = (0{,}05: 75 - 2 - 1) = (0{,}025: 73 = (1{,}993)$Because of the value $t_{hitung} > t_{tabel}$, namely (8,874 >1,993) Therefore, it can be concluded that there is a positive and significant relationship between learning motivation and learning achievement of class VII students at SMP Negeri 80 Jakarta. As a result, the proposed hypothesis is considered to have been fulfilled and answered.

4. Conclusion

1. There is a positive and significant relationship between learning interest and learning motivation on students' mathematics learning achievement in class VII of SMP Negeri 80 Jakarta. This relationship can be seen from the test F, namely $F_{hitung} > F_{tabel}$ namely, (40,679 >3,12) the

magnitude of the relationship between learning interest and learning motivation on students' mathematics learning achievement is as large as 51% seen from the value $adjusted\ R\ Square = 0,517$. This shows that the higher the interest in learning and motivation to learn, the higher the student's mathematics learning achievement will be. Conversely, if interest in learning and learning motivation is low, students' mathematics learning achievement will be low.

2. There is a positive and significant relationship between interest in learning and students' mathematics learning achievement in class VII of SMP Negeri 80 Jakarta. This relationship can be seen from the value t where $t_{hitung} > t_{tabel}$ that is. (3,044 > 1,993).

3. There is a positive and significant relationship between learning motivation and students' mathematics learning achievement in class VII of SMP Negeri 80 Jakarta. This relationship can be seen from the value t where $t_{hitung} > t_{tabel}$ namely (8,874 > 1,993).

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