e-ISSN: 2986-8076
DOI: 10.57254/tess.v2i1.17

International Journal of Geometry and Applied Mathematics
TESSERACT
Vol. 2, No. 1, March 2024 hal. 1-120
Journal Page is available to http://ekalaya.nindikayla.com/index.php/home

THE INFLUENCE OF LEARNING INTEREST AND LEARNING MOTIVATION ON STUDENT MATHEMATICS LEARNING ACHIEVEMENT

Ine Theana Pebriani[1], Joko Purwanto[2*], Gunawan[3], Jaka Wijaya Kusuma[4]
[1,2*,3]Universitas Muhammadiyah Purwokerto
[4]Universitas Bina Bangsa
Email: jokotien@gmail.com

Abstract

Learning requires study interest and desire. Students' achievement in mathematics is influenced by their study interest and drive. This study aims to determine 1) the impact of study interest on students' mathematics learning achievement; 2) the impact of study motivation on students' mathematics learning achievement; and 3) the impact of study interest and motivation on students' mathematics learning achievement. This study was carried out in SMA Negeri 3 Banjar. Ex post facto approaches are employed in the quantitative research. This study's population was class X MIPA SMA Negeri 3 Banjar, and the sample was chosen using Cluster Random Sampling X MIPA 2. Questionnaires and tests that had passed validity and reliability assessments were employed in data collection approaches. The precondition tests are performed first, including the linearity, normalcy, multicollinearity, and heteroscedasticity tests. The correlation coefficient, coefficient of determination, partial test (t test), and simultaneous test (F test) are then used to build a multiple linear regression model. The linear regression model that was developed is Y = -13,961 + 0,581X1 + 0,663X2. According to the findings of the study, 1) interest in learning has a positive effect on students' mathematics learning achievement by 40.3%; 2) study motivation has a positive effect on students' mathematics learning achievement by 37.7%; and 3) study interest and study motivation have a significant effect on students' mathematics learning achievement by 76.4%.

Keywords: *Study Interest, Study Motivation, Students Mathematics Learning Achievment*

INTRODUCTION

According to Syaputra (2019), students' understanding and proficiency in mathematics are attained through active participation in classroom instruction. According to Ningsih and Nurrahmah (2016), learning achievement plays a significant part in education and can be used to determine a student's learning success. Shafi'i et al. (2018) reaffirmed this claim, stating that learning attainment is an individual's peak performance at a certain time that results in a stimulus and reaction leading to the acquisition of new abilities.

Asri et al. (2021) state that interest is one of the elements that significantly affects how well pupils learn mathematics. Students that exhibit high levels of curiosity and interest in what they are studying are said to be interested in learning; this is demonstrated by their excitement, participation, and persistence in class activities. According to Sirait (2016) research findings, learning interest had a 49.8% impact on students' growth in mathematical learning achievement. Students' achievement in arithmetic is also influenced by their ambition to learn. Pratiwi et al. (2018) state that learning motivation is a catalyst for zeal and a desire to study. According to Lomu and Widodo (2018), motivation

e-ISSN: 2986-8076
DOI: 10.57254/tess.v2i1.17

can change a person's energy by recognizing affective emergence, taking action to accomplish specific goals, and motivating others to take action. Motivation has a high correlation with the urge to take advantage of oneself regarding learning activities, meaning that motivation has a significant impact on students' learning activities to attain learning achievement. The findings of the Winata and Friantini (2019) study, which indicate that learning motivation influences 19.5% of students' achievement in mathematics learning, corroborate this claim.

About 60% of pupils exhibit low motivation and enthusiasm in participating in mathematics learning, according to the findings of an interview conducted with a mathematics instructor at SMAN 3 Banjar. It is evident from the discussion's outcomes that there is little learning motivation and interest. Both are very supportive of mathematics learning accomplishment, according to the findings of the research above. Therefore, research entitled "The Influence of Learning Interest and Learning Motivation on Student Mathematics Learning Achievement" at SMAN 3 Banjar is required to determine the number of students who have shown interest in learning and learning motivation on mathematics learning achievement.

METHODS

Ex post facto quantitative research methods such as multiple regression analysis are used in this study to ascertain the relationship between two independent and dependent variables. The study was carried out at SMA Negeri 3 Banjar. Class X MIPA 2 comprised up to 32 students chosen by cluster random sampling approach to serve as the study's sample. Three variables total two independent and one dependent are examined in this study. Learning motivation (X_2) and learning interest (X_1) were examples of independent variables. Questionnaires were used to collect data on both independent variables. Just one, the student mathematics learning achievement (Y) as determined by giving math exams, is the dependent variable. Validity tests and reliability analyses are performed on the instrument before administering surveys and tests.

The following are some examples of the learning motivation and learning interest factors that affect mathematics learning achievement in figure 1:

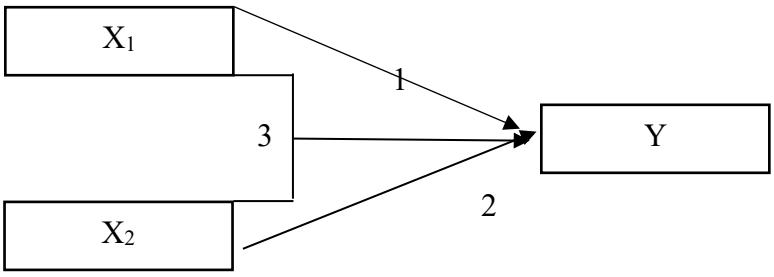

Figure 1. Research Design

Information:
X_1 : Minat Belajar
X_2 : Learning Motivation
Y : Student Mathematics Learning Achievement
1 : The effect of interest in learning on students' mathematics learning achievement

e-ISSN: 2986-8076
DOI: 10.57254/tess.v2i1.17

2 : The effect of learning motivation on students' mathematics learning achievement
3 : The influence of interest and motivation on learning achievement

Data analysis is required in order to test research hypotheses. The steps in the data analysis process are testing analytical requirements, testing hypotheses, and characterizing data for each study variable.

1. The first hypothesis states that learning motivation and interest majorly impact students' progress in mathematics learning.
2. The second hypothesis states that learning motivation has a major impact on students' achievement in mathematics learning.
3. The third hypothesis holds that learning motivation and interest have a major impact on students' progress in mathematics.

The following is the regression equation that this investigation produced:

$$Y = a + b_1X_1 + b_2X_2 + e$$

Information:
Y : Mathematics learning achievement variable
a : Constant price
b_1 : Learning interest regression coefficient
b_2 : Coefficient of regression of learning motivation
X_1 : Learning interest variable
X_2 : Learning motivation variable
e : Element of interference (*error*)

The degree of influence that the independent variable has over the dependent variable can be determined by applying the regression equation shown above. I am analyzing data with the SPSS 25 application.

RESULTS AND DISCUSSION

Research Results

Based on the results of data processing, the following results were obtained:

Prerequisite Test or Classical Assumption Test

Simple linear regression and multiple linear regression tests are examples of prerequisite tests, also known as classical assumption tests, used to conduct hypothesis testing. The traditional assumption tests include heteroscedasticity, multicollinearity, normalcy, and linearity. The following are the outcomes of the classical assumption test:

Linearity Test

The goal of the linearity test is to determine if there is a linear relationship between each independent variable to be examined and the dependent variables. Variables X_1 with Y and variables X_2 with Y make up the processed data.

Table 1.
Linearity Test Results
Learning Interest in Mathematics Learning Achievement
ANOVA Table

	Sum of Squares	df	Mean Square	F	Sig.

e-ISSN: 2986-8076
DOI: 10.57254/tess.v2i1.17

Mathematics Learning Achievement * Learning Interest	Between Groups	(Combined)	1297.792	15	86.519	2.450	.043
		Linearity	1086.120	1	1086.120	30.753	.000
		Deviation from Linearity	211.671	14	15.119	.428	.941
	Within Groups		565.083	16	35.318		
	Total		1862.875	31			

The output results in the linearity table display the sig value based on table 1. Since 0.000 < 0.05, the significance level is inside the H_0 range. Therefore, it may be said that H_0 is acceptable and a linear relationship exists between the variable of learning desire and mathematical learning accomplishment.

Table 2.
Linearity Test Results
Learning Motivation for Mathematics Learning Achievement
ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Mathematics Learning Achievement * Learning Motivation	Between Groups	(Combined)	1555.792	14	111.128	6.152	.000
		Linearity	1048.496	1	1048.496	58.044	.000
		Deviation from Linearity	507.296	13	39.023	2.160	.069
	Within Groups		307.083	17	18.064		
	Total		1862.875	31			

The sig values are displayed in Table 2's output results in the linearity table. Since 0.000 < 0.05, the significance level is inside the H_0 range. Thus, it can be said that H_0 is accepted, indicating a linear relationship between the learning incentive variable and mathematical learning accomplishment.

Correlation Coefficient Test

Determining the strength of the association between the independent and dependent variables is the goal of the correlation coefficient.

Table 6.
Correlation Coefficient Results

Correlations

	Minat Belajar	Motivasi Belajar	Prestasi Belajar Matematika

e-ISSN: 2986-8076
DOI: 10.57254/tess.v2i1.17

Learning Interest	Pearson Correlation	1	.470**	.764**
	Sig. (2-tailed)		.007	.000
	N	32	32	32
Learning Motivation	Pearson Correlation	.470**	1	.750**
	Sig. (2-tailed)	.007		.000
	N	32	32	32
Mathematics Learning Achievement	Pearson Correlation	.764**	.750**	1
	Sig. (2-tailed)	.000	.000	
	N	32	32	32

**. Correlation is significant at the 0.01 level (2-tailed).

The overall sig. value in Table 6 is 0.000 < 0.05, indicating that Ha is accepted and that there is a significant correlation or association between learning desire and mathematical achievement. The degree of high association and the type of positive link are associated with the correlation value of 0.764 between mathematical learning achievement and learning desire. Therefore, learning mathematics is more successful when there is a greater interest in the subject, and vice versa. The correlation coefficient 0.750 between learning motivation and mathematics learning achievement indicates the degree of strong link and positive relationship form. Therefore, studying mathematics is more successful when learning motivation increases, and vice versa.

Coefficient of Determination Test

The goal of the coefficient of determination, also known as R2, is to calculate the percentage that learning motivation and learning interest factors impact learning achievement variables in mathematics.

Table 7.
Results of the Coefficient of Determination
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.883[a]	.780	.764	3.762

a. Predictors: (Constant), Motivasi Belajar, Minat Belajar

It is known that the magnitude of the Adjusted R Square value is 0.764 based on the output in Table 7. This indicates that learning desire and interest variables affect 76.4% of the variables related to mathematics learning achievement. The remaining portion is 23.6% (100% - 76.4%) impacted by other factors.

To ascertain whether each independent variable learning motivation and interest impacts the dependent variable—mathematics learning achievement partial tests or t tests are utilized.

e-ISSN: 2986-8076
DOI: 10.57254/tess.v2i1.17

Table 8.
Partial Test Results (t test)
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-13.961	8.987		-1.554	.131
	Learning Interest	.581	.109	.528	5.342	.000
	Learning Motivation	.663	.130	.502	5.087	.000

a. Dependent Variable: Prestasi belajar Matematika

The variable of learning interest in Table 8 has a value of t_(hitung) of 5.342, whereas the value is 2.045, indicating that. For the learning interest variable, the significance level is 0.000 < 0.05. This shows that the hypothesis H0 $t_{tabel}t_{hitung} > t_{tabel}$ tabel is rejected and the value is sig.is in the Ha area, i.e., the learning interest variable significantly positively affects the learning achievement variable in mathematics. The value for the learning motivation variable is 5.087, whereas the value is 2.045, which indicates that, according to the output data, $t_{tabel}t_{hitung} > t_{tabel}$. is the sign value. The variables related to learning motivation are 0.000 < 0.05. This shows that the variable of learning motivation has a significant positive effect on the variable of mathematics learning achievement, rejecting H_0, and that the value is sig.is in the Ha range.

The simultaneous test or F test aims to determine the significance of the role simultaneously or jointly between the independent variable, namely learning interest and learning motivation against the dependent variable, namely mathematics learning achievement.

Table 9.
Hasil Uji Simultan (uji F)
ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1452.425	2	726.212	51.310	.000[b]
	Residual	410.450	29	14.153		
	Total	1862.875	31			

a. Dependent Variable: Prestasi Belajar Matematika

b. Predictors: (Constant), Motivasi Belajar, Minat Belajar

From table 9 it is known F_{hitung} that is 51.310 while the value is 3.32 which means that the value of Sig value$F_{tabel}F_{hitung} > F_{tabel}$. is 0.000 < 0.05. This shows that H_0 is rejected and Ha is accepted, in other words the variables of learning interest and learning motivation have a significant effect on the variable of mathematics learning achievement.

e-ISSN: 2986-8076
DOI: 10.57254/tess.v2i1.17

Multiple Linear Regrtion Analysis Results

The following is a description of the outcomes of multiple linear regression analysis, which is used to ascertain the impact of learning motivation and interest on mathematics learning achievement:

Table 10.
Multiple Linear Regression Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-13.961	8.987		-1.554	.131
	Learning Interest	.581	.109	.528	5.342	.000
	Learning Motivation	.663	.130	.502	5.087	.000

a. Dependent Variable: Prestasi Belajar Matematika

Table 10 serves as the basis for the multiple linear regression analysis output data, which may be used to create the regression equation $\hat{Y} = -13.961 + 0.581X_1 + 0.663X_2$, which has the following possible interpretations:

1. 1. The X_1 coefficient is 0.581, meaning that mathematics learning achievement (Y) will rise by 0.581 if the learning interest (X_1) variable increases by 1% and the second independent variable, learning desire (X_2), remains fixed. This demonstrates that the learning interest variable positively impacts learning achievement in mathematics. Therefore, learning mathematics is more likely to be accomplished if there is a greater desire in learning. 40.3% is the effective contribution rate of the influence of mathematical learning interest on mathematical learning achievement.
2. The X_2 coefficient is 0.663, meaning that mathematics learning achievement (Y) will increase by 0.663 if the learning incentive variable (X_2) rises by 1% if the other independent variable, learning interest (X_1), stays the same. This demonstrates that factors related to learning motivation have a favorable impact on mathematical learning achievement. Therefore, studying mathematics is achieved more successfully if there is a greater drive to learn. The effective contribution of learning motivation to the achievement of mathematics learning is 37.7%.
3. The value of the learning accomplishment constant (Y) for mathematics is -13.961, which indicates that learning achievement will be negative if learning motivation (X_2) and learning interest (X_1) are equal to zero. Other aspects can influence mathematics learning achievement for constants to be positive.

Discussion

The Influence of Learning Interest on Student Mathematics Learning Presatation

Pupils' like, focus, interest, and engagement are all considered aspects of their learning interests. According to the multiple linear regression equation model, learning

interest has an X1 coefficient of 0.581, meaning that for every 1% rise in the learning interest variable (X1), students' mathematical learning achievement (Y) will also increase by 0.581. The t test is then used to demonstrate the significance of the correlation coefficient, yielding findings of 5.342 > 2.045 with sig values. The value of sig.is in the Ha area and 0.000 < 0.05 indicates that H0 is rejected; in other words, learning interest strongly affects math learning achievement. This is consistent with Sirait's (2016) finding that a strong desire in learning typically produces high learning performance, whereas a weak interest in learning produces low learning achievement. The findings of Islamic research (2019), which show that pupils motivated to learn contribute 50% of their academic success, further support this. in order to make it simpler for learners who are motivated to learn to accomplish better in mathematics.

The Effect of Learning Motivation on Student Mathematics Learning Achievement

The will to succeed, the urge to study, the learning spirit, and the ability to never give up are all examples of learning motivation. The coefficient of X2 for learning motivation in the multiple linear regression equation model is 0.663, meaning that for every 1% rise in the learning motivation variable (X2), there will be a corresponding 0.663 increase in students' mathematical learning achievement (Y). The t test is then used to demonstrate the significance of the correlation coefficient, yielding findings of 5.087 > 2.045 with sig values. The value of sig.is in the Ha area and 0.000 < 0.05 indicates that H0 is rejected; in other words, learning motivation strongly affects math learning accomplishment. This is consistent with the claim made by Lomu & Widodo (2018) that student learning activities, particularly those that strive for high learning achievement, are greatly influenced by motivation. The findings of Silfitrah & Mailili's (2020) study, which show that pupils with learning motivation have an impact of 67.42% on student learning achievement, support this. in order to make it simpler for pupils with a strong learning motivation to raise their success in mathematics.

The Effect of Learning Interest and Learning Motivation on Student Mathematics Learning Achievement

Both learning motivation and interest influence students' learning achievement in mathematics simultaneously. According to the Hajil test hypothesis test F, the value of F_{hitung} equal to 51.310 while the value is 3.32 which means that the value of Sig value$F_{tabel}F_{hitung} > F_{tabel}$. is 0.000 < 0.05. This demonstrates that H0 is rejected and Ha is accepted; in other words, learning achievement is significantly impacted by both learning motivation and learning interest at the same time. The coefficient of determination reveals that the Adjusted R Square value is 0.764, which explains the extent to which learning desire and interest impact mathematics learning accomplishment. This indicates that learning desire and interest variables affect 76.4% of the variables related to mathematics learning achievement. The remaining portion is 23.6% (100% - 76.4%) impacted by other factors.

CONCLUSION

Several inferences can be drawn from the quantitative examination of the data obtained, including the following:

1. Learning achievement in mathematics is significantly enhanced by interest in the subject and demonstrated by the t test, which produced sig values of 5.342 > 2.045.

e-ISSN: 2986-8076
DOI: 10.57254/tess.v2i1.17

The value of sig.is in the Ha area and 0.000 < 0.05 indicates that H_0 is rejected; in other words, learning interest strongly affects math learning achievement. Learning mathematics is more accomplished when there is greater interest in the subject. Conversely, learning mathematics is more difficult when there is less enthusiasm. 40.3% is the effective contribution rate of the influence of mathematical learning interest on mathematical learning achievement.

2. Math learning achievement is very positively impacted by learning motivation and demonstrated by the t test, which produced 5.087 > 2.045 sig values. The value of sig.is in the Ha area and 0.000 < 0.05 indicates that H_0 is rejected; in other words, learning motivation strongly affects math learning accomplishment. Learning mathematics is more successfully accomplished when a greater desire exists to study. Conversely, learning mathematics is less successful the less motivated one is to learn. The effective contribution of learning motivation to the achievement of mathematics learning is 37.7%.
3. Learning achievement in mathematics is significantly impacted by learning motivation and interest. The success rate in learning mathematics increases with learning motivation and enthusiasm. Conversely, learning mathematics is more difficult the less motivated and interested a person is. The effective share of learning motivation and interest in mathematics that contributes to learning achievement is 76.4%.

DAFTAR PUSTAKA

Asri, S. A., Tayeb, T., Mardiah, M., Kamal, S. I. M., & Suaidah, I. (2021). Pengaruh Minat Belajar Dan Motivasi Belajar Terhadap Prestasi Belajar Matematika Siswa Kelas Viii Smp Negeri 22 Sinjai. *Islamic Management: Jurnal Manajemen Pendidikan Islam*, *4*(1), 210. https://doi.org/10.30868/im.v4i01.1067

Islamiah, I. D. (2019). Pengaruh Minat Belajar Siswa terhadap Prestasi Belajar Matematika di SMKN 1 Cihampelas. *Journal on Education*, *1*(2), 451–457. https://doi.org/10.30998/diskursus.v1i01.3518

Lomu, L., & Widodo, S. A. (2018). Pengaruh motivasi belajar dan disiplin belajar terhadap prestasi belajar matematika siswa. *Prosiding Seminar Nasional Pendidikan Matematika Etnomatnesia*, *0*(0), 745–751.

Ningsih, R., & Nurrahmah, A. (2016). Pengaruh Kemandirian Belajar dan Perhatian Orang Tua Terhadap Prestasi Belajar Matematika. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *6*(1), 73–84. https://doi.org/10.30998/formatif.v6i1.754

Pratiwi, N. W. D., Sri Asri, I. G. A. A., & Kristiantari, M. G. R. (2018). Hubungan Motivasi Dengan Prestasi Belajar Siswa. *International Journal of Elementary Education*, *2*(3), 192. https://doi.org/10.23887/ijee.v2i3.15958

Silfitrah, S., & Mailili, W. H. (2020). Pengaruh Minat Belajar Dan Motivasi Belajar Terhadap Hasil Belajar Matematika Siswa Kelas Vii Smp Negeri 4 Sigi. *Guru Tua : Jurnal Pendidikan Dan Pembelajaran*, *3*(1), 53–60. https://doi.org/10.31970/gurutua.v3i1.39

Sirait, E. D. (2016). Pengaruh Minat Belajar Terhadap Prestasi Belajar Matematika. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *6*(1), 35–43. https://doi.org/10.30998/formatif.v6i1.750

Syafi'i, A., Marfiyanto, T., & Rodiyah, S. K. (2018). Studi Tentang Prestasi Belajar Siswa Dalam Berbagai Aspek Dan Faktor Yang Mempengaruhi. *Jurnal Komunikasi*

e-ISSN: 2986-8076
DOI: 10.57254/tess.v2i1.17

Pendidikan, *2*(2), 115. https://doi.org/10.32585/jkp.v2i2.114

Syaputra, I. (2019). *Pengaruh Minat dan Motivasi Belajar terhadap Prestasi Belajar Matematika*. *2*(1), 16–21. https://doi.org/10.21831/pspmm.v1i0.28

Winata, R., & Friantini, R. N. (2019). Pengaruh motivasi belajar terhadap prestasi belajar matematika siswa kelas VIII SMP negeri 1 Kuala Behe. *Jurnal Math Educator Nusantara: Wahana Publikasi Karya Tulis Ilmiah Di Bidang Pendidikan Matematika*, *5*(01), 43. https://doi.org/10.29407/jmen.v5i01.12810