

Influence Achievement Motivation and Knowledge Base Against the High School Mathematics Learning Outcomes

Latif Sahidin and Arbain

(Lecturer in Mathematics Education and Alumni in Mathematics Education
Teachers Training and Educational Faculty, Halu Oleo University)

Abstract: This descriptive study using two independent variables, namely: achievement motivation and a basic knowledge of mathematics and one dependent variable mathematics learning outcomes. Analysis of each variable preceded by a linear scatter diagram to determine whether each independent variable on the dependent variable. The results of scatter diagrams each independent variable on the dependent variable provides two models used, each quadratic towards mathematics learning outcomes. The results of the empirical analysis concludes that the data support the hypothesis, namely achievement motivation and a basic knowledge of mathematics simultaneously and partially have a significant influence on mathematics learning outcomes.

Keywords: Achievement Motivation and Basic Mathematics Knowledge, Learning Outcomes

1. PRELIMINARY

Mathematics education is one branch of science is an integral part of national education is no less important than the other sciences. Now the math has been progressing very rapidly and very beneficial for sustainable development, both in education and in other areas, which is one part of the national development in an effort to educating the nation, improving human resources quality to be able to face the globalization era filled with various changes toward improving the quality of education overall.

In order to improve the quality of education, government and society organizes educational system effective, efficient and adapted to the development of Science and Technology (Science and Technology) implemented in various levels of education, both formal and informal. Education formally manifested in formal schools housed by the government. The education system is fully implemented in formal classes led by a teacher as a partner of student learning. Partners learned that formed in different subjects, one of which is being studied mathematics courses ranging from elementary through high school, and the role is very important in view of mathematics is used as a tool in solving problems encountered in other fields of science.

Thus mathematics is closely associated with other science, so it cannot be separated. Therefore, students are required to master the subject matter of mathematics systematically and thoroughly. But in the pursuit of learning outcomes that satisfy many of the factors that cause it. According to Shah (2003: 132), the factors that affect learning outcomes can be classified into two. First, internal factors which include physical factors (factors of health and disability), psychological factors (achievement motivation, interest, including basic knowledge of mathematics). Second, external factors which include family factors, school and community. Both of these factors, both internal and external to contribute in achieving the learning objectives so that the optimal learning difficulties can be resolved.

Motivation is a requirement to learn, therefore, motivation plays an important role in learning because it encourages people to do an activity to learn that there is a change of behavior to achieve the objectives in the form of high learning outcomes. One of the most important motivation theories

in psychology is the drive to achieve, namely the tendency to achieve success or objectives, and activities that lead to success, it will be followed by an increase in the learning outcomes of a person (Djiwandono, 1996: 133).

Djaali (2008: 110) argues that achievement motivation is one of the factors that will determine the success in learning. The size of the effect depends on the intensity. Differences in intensity of achievement motivation (need to Achieve) is shown in various stages of accomplishments achieved by various individuals. The influence of achievement motivation on learning outcomes, depending on the conditions in the environment and the individual conditions.

As a follow-up of student learning outcomes, in addition influenced by achievement motivation, is also influenced by the students' knowledge of basic mathematics. A basic knowledge of mathematics is a prerequisite that must first be mastered before a student studying mathematics matter further. The knowledge base is able to give you a hint of success or failure of students to master advanced sustainable material starts from the problem of partial towards global problems. On this basis kehirarkian mathematics is indispensable and makes a basic knowledge of mathematics be the deciding factor in the ability of students to explore the matter further.

Hudojo (2003: 69), suggests that learning math is a high mental activity. Studying the concept B which was based on a concept first one needs to understand the concept A, without understanding the concept A, a person will have difficulty in understanding the concept of B. This means learning mathematics should be gradual and sequential and based on the experience of the past. Ruseffendi (1993: 25), states that learning mathematics for a student is a continuous process so that the necessary understanding or knowledge of basic math better in the beginning to learn next. It means to understand a new mathematical concepts necessary prerequisite knowledge is often called a basic knowledge of mathematics.

Once the importance of basic knowledge of mathematics so as to measure the outcomes of learning mathematics is also very crucial. Empirically that students who have good mathematical learning outcomes must have a good achievement motivation as well as a basic knowledge of mathematics is good too. Both these factors both achievement motivation and a basic knowledge of mathematics can contribute to the efforts to achieve optimal learning mathematics. This means that students who have a good achievement motivation, a good basic knowledge of mathematics is the main indicator to measure the results of learning mathematics.

Based on preliminary observations of researchers on SMA Kartika VII-2 Kendari through interviews with teachers of mathematics courses locals that the motivation of students grade XI in the first semester of the 2010/2011 academic year studying mathematics in general is relatively low. This can be seen in terms of performing tasks, if there are no consequences in gathering tasks should then only a small fraction of students who do the work. That situation became bad habits on students in learning. In the teaching and learning process tends to increase student motivation when they are asked to do a task that they could, but it would be the opposite occurred when a given task is difficult. The difficulty arises because the lack of mastery of basic knowledge of mathematics as a prerequisite for further study material, so it adversely affects the students' mathematics learning outcomes.

2. METHODS

The population in this study were all students of class XI SMA Kartika VII-2 Kendari 2010/2011 evenly distributed in 3 parallel classes namely class XI XI IPA3 IPA1 up with the number of students 182 people. The sample in this study was 25% of the population, which is where the sampling is done by proportional random sampling technique. The variables in this study consisted

of: (i) the independent variable, namely achievement motivation (X1) and a basic knowledge of mathematics (X2); and (ii) the dependent variable, which is the result of learning mathematics (Y)

Data collection techniques in this study using a set of instruments: (a) instruments student learning outcomes in mathematics; (B) instruments student achievement motivation towards mathematics courses; and (c) a basic knowledge of instruments matematika. Analysis of the data in this study using SPSS version 15.0 statistical analysis which consisted of descriptive and inferential statistical analysis. Descriptive statistics is required to describe the characteristics of the distribution of scores of each variable (achievement motivation, basic knowledge of mathematics, mathematics learning outcomes), which is a mean, median, mode, standard deviation and percentage. Inferential analysis necessary to test hypotheses formulated or regression analysis.

Hypothesis testing is done by using a ready-made program SPSS version 15.0, through multiple regression analysis to test the hypothesis of the existence of significant influence achievement motivation and a basic knowledge of mathematics together on learning outcomes in mathematics.

3. RESULTS

Based on research data on the distribution of 30 item questionnaire data is achievement motivation on 46 students into the sample as shown in Table 3 below, obtained the minimum value = 50, maximum value = 90, the value of the average (mean) = 68.46, the middle value (median) = 70, and standard deviation (SD) = 9.84. Descriptive value variable data achievement motivation of students to a math lesson when grouped in the category Sudijono, values obtained with very high category as much as 2 students or 4:35%, high category as many as 15 students or 32.61%, the categories were as many as 16 students or 34.78%, the low category as much as 9% of students or 19:57, and the very low category as many as four students or by 8.70%.

table 3

	N	Minimum	Maximum	Mean	Std. Dev.	Variance
X1	46	51.00	90.00	68.4565	9.83578	96.743
X2	46	50.00	92.00	70.5435	11.79210	139.054
Y	46	51.00	96.00	72.9130	9.75437	95.148
Valid N (listwise)	46					

Descriptive analysis of research data on the distribution of 16 item instrument basic knowledge of mathematics at 46 students into the sample as shown in Table 3 above, the value of the minimum = 50, maximum value = 92, the value of the average (mean) = 70.54, a middle value (median) = 72, and standard deviation (SD) = 11.79.

Descriptive analysis of research data on the distribution of 16 item instrument learning outcomes mathematics at 46 students into the sample as shown in Table 3 above, the value of the minimum = 51, maximum value = 96, the value of the average (mean) = 72.91, a middle value (median) = 74, and standard deviation (SD) = 9.75. Descriptive value variable data result of learning mathematics when grouped into categorization Arikunto, gained as much as 8 students or by 17:39% in both categories at all, as many as 29 students or as much as 63.04% in both categories, as many as six students or by 13:04% by category enough, as much as 3 students or by 6:52% with less category and as many as 0 students or equal to 0% with the category failed.

The regression analysis between the independent variables of achievement motivation (X1) and squares (X12), a basic knowledge of mathematics (X2) and squares (X22) to variable mathematics learning outcomes (Y) as follows.

First Analysis 1 with design models: X1 X2 X12 X22, to test the hypothesis of the influence of all independent variables together on the dependent variable (Y). All independent variables are also followed by achievement motivation and a basic knowledge of mathematics is not significant. While squares factors have positive influence and no significant effect on the dependent variable (Y), shown in the following table.

table 2
Achievement Motivation Results of Analysis of Variance (X1) and Knowledge
Basic Mathematics (X2) Together against the Learning Outcomes
Mathematics (Y) using Method backward

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3306.848	4	826.712	34.771	.000(a)
	Residual	974.804	41	23.776		
	Total	4281.652	45			
2	Regression	3305.914	3	1101.971	47.434	.000(b)
	Residual	975.739	42	23.232		
	Total	4281.652	45			
3	Regression	3305.649	2	1652.824	72.819	.000(c)
	Residual	976.003	43	22.698		
	Total	4281.652	45			

table 3
Achievement Motivation Regression Analysis (X1) and Knowledge
Basic Mathematics (X2) Partial against Mathematics Learning Outcomes (Y)
using Method backward

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	41.192	30.731		1.340	.187
	X1	.252	1.273	.255	.198	.844
	X1 ²	.003	.009	.384	.302	.764
	X2	-.218	1.015	-.264	-.215	.831
	X2 ²	.003	.007	.549	.452	.654
2	(Constant)	44.814	24.427		1.835	.074
	X1 ²	.005	.001	.634	5.453	.000
	X2	-.076	.709	-.092	-.107	.916
	X2 ²	.002	.005	.382	.442	.661
3	(Constant)	42.223	2.642		15.981	.000
	X1 ²	.005	.001	.635	5.521	.000
	X2 ²	.002	.001	.290	2.525	.015

a Dependent Variable: Y

Source: Primary Data Processed With SPSS Ver.15.0

Based on Table 3 (1) Variable X2 have a negative impact and no significant effect on the result of learning mathematics, while the variable X1, X12, X22 has a positive impact and no significant effect on learning outcomes, there is statistically the model must be modified. By using backward models that do not match the modified data. Modifications done in two stages: (i) issued a major variables of achievement motivation (X1), (ii) issued a major variable basic knowledge of mathematics (X2), and retains its square X12 and X22 in each modification.

Second: Modification Model

First by Design X2 X12 X22 and X12 X22 Second by Design.

The analysis of the first modification (model 2) as in Table 3 (2) above shows that the basic knowledge of mathematical variables and no significant negative effect on the dependent variable Y which is sufficient reason not to use this second model as the model used.

Results of analysis used was a modification of the second (model 3) obtained the results as shown in Table 3 (3) above. Multiples of achievement motivation (X12) and multiples of variable basic knowledge of mathematics (X22) has a positive and significant impact on learning outcomes of mathematics (Y). So the third model to be applied to the next test hypotheses. Testing the hypothesis-1 with a statement that reads: achievement motivation and a basic knowledge of mathematics simultaneously have a significant influence on mathematics learning outcomes. The necessary statistical hypotheses related to testing the hypothesis is $H_0: H_1$ opponent: not H_0 . Based on the analysis of variance as shown in Table 2 (3) above by using the F-test statistic in which the value of $F_h = 72\ 819 > 3,215$ with Sig.F value = $0.000 \leq 0:05$. Thus H_0 is rejected. This means that the achievement motivation and a basic knowledge of mathematics together have a significant effect on the results of students' mathematics learning.

To test the significance of regression coefficients is done by using the t test are shown in Table 5 (3) above, with the formulation of the statistics as follows:

H_0 : regression coefficient does not mean, as opposed to H_1 : regression coefficient means.

Based on the results of the calculations in Table 5 (3), regression equation. This means that the results of students' mathematics learning can be estimated when the score achievement motivation and the score variable basic knowledge of mathematics is known is that any increase in the variable score achievement motivation and score a basic knowledge of mathematics one unit will be followed by the increase in the variable results of students' mathematics learning by 0005 units on score quadratic achievement motivation and 0,002 units over the score squared variable basic knowledge of mathematics at a price of 42 223 constant. Furthermore, tcount for constant coefficient is 15 981 with the Sig. = 0.000 and the regression coefficient tcount for X12 is 5,521 with the Sig. = 0.000 and the regression coefficient tcount for X22 is 2,525 with the Sig. = 0.015. When compared with = 0:05 to both the value of Sig., The Sig. Smaller than . This shows that the constants and coefficients of the regression coefficient means. The magnitude of the effect of achievement motivation and a basic knowledge of mathematics on mathematics learning outcomes can be known from the magnitude of the simultaneous determination coefficient (R^2) is 0772. Thus, the influence of achievement motivation and a basic knowledge of mathematics to the learning outcomes of mathematics is 77.2%

Testing the hypothesis-2 with a statement that reads: achievement motivation and a basic knowledge of mathematics have a significant influence on the results of students' mathematics learning. To test the hypothesis using statistical hypothesis as follows: $H_0: H_1$ opponent: not H_0 . Based on the analysis in Table 6 below shows that $F_h = 124\ 095 > F = 4.06$ or the Sig. = $0000 \leq 0:05$. Thus H_0 is rejected. This means that the achievement motivation (X12) has a significant influence on mathematics learning outcome variable (Y).

To test the significance of regression coefficients is done by using the t test, with statistical formula as follows:

H0: regression coefficient does not mean, as opposed to H1: regression coefficient means.

table 7
Testing Results Regression Coefficients between Variables X12 Against Y
Coefficients (a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	43.221	2.767		15.619	.000
X1 ²	.006	.001	.859	11.140	.000

a Dependent Variable: Y

Based on the results of the calculations in Table 7 above regression equation = $43.221 + 0.006 X_{12}$. This means that the results of students' mathematics learning can be estimated when the score student achievement motivation in mind that every one unit increase in variable X12 will be followed by the increase in variable Y sebesar 0.006 units at a price of 43.221 constant. Furthermore, tcount for constant coefficient is 15.619 with the Sig. = 0.000 and tcount for the regression coefficient is 11,140 with the Sig. = 0.000. When compared with the second value of Sig., The Sig. Smaller than . This shows that the constants and coefficients of the regression coefficient means. The magnitude of the effect of achievement motivation on mathematics learning outcomes can be known from the magnitude of the partial determination coefficient (r^2) is 0.738. Thus, the influence of achievement motivation on learning outcomes math is 73.8%.

4. DISCUSSION

Influence Achievement Motivation and Basic Knowledge of Mathematics on Mathematics Learning Outcomes

Based on regression analysis menunjukkan that achievement motivation (X1), motivation squared berpretasi (X12), a basic knowledge of mathematics (X2) and squared basic knowledge of mathematics (X22) together have an influence on mathematics learning outcomes (Y). However, it should be noted that the variable basic knowledge of mathematics students have a negative impact, while the achievement motivation, achievement motivation and squares squared basic knowledge of mathematics have positive influence and insignificant that it is very possible either by the substance or basis of statistics. Therefore, the model is expected to be modified. Modifications done two stages, namely: (i) maintaining a variable basic knowledge of mathematics, achievement motivation and squares squared basic knowledge of mathematics as independent variables. The results of the analysis is based on the hypothesis testing shows that a basic knowledge of mathematics have a negative impact, while the motivation berpretasi squared and squared basic knowledge of mathematics have a positive effect; (ii) eliminate the achievement motivation and basic knowledge of mathematics, in that it maintains squared squared achievement motivation and basic knowledge of mathematics as independent variables. The results of the analysis is based on the hypothesis testing showed that the square of achievement motivation (X12) and squared basic knowledge of mathematics (X22) together have a positive effect.

In conclusion model that proved a match is the second modification of the model is a model with a design X12 X22, so this model will be applied to the next test hypotheses.

Based on the results of the regression analysis of data squared squared achievement motivation and basic knowledge of mathematics together with the data of students' mathematics learning regression equation. After testing the significance and linearity of regression is a conclusion bring the regression equation can be used to predict the score results if the students' mathematics learning achievement motivation score and score a basic knowledge of mathematics together known. Referring to the estimated regression function can be seen that the constant value of 42 223 is the prediction scores of students' mathematics learning outcomes without supported by scores of achievement motivation and a basic knowledge of mathematics together. While the direction of the regression coefficient of 0.005 X12 and X22 regression coefficient direction of 0002 showed a positive relationship both motivation and achievement of the basic knowledge of mathematics. This means that the results of students' mathematics learning (Y) can be estimated when the score achievement motivation and score a basic knowledge of mathematics known that any increase in the variable score achievement motivation and score a basic knowledge of mathematics one unit will be followed by the increase in variable score results of students' mathematics learning by 0005 units on 0002 achievement motivation scores and top-scoring unit basic knowledge of mathematics together. Secasra simultaneous with the coefficient of determination (R²) of 0772, or by 77.2%. This means that 77.2% change in results is explained by the students' mathematics learning achievement motivation and a basic knowledge of mathematics together and the remaining 22.8% is influenced by other factors not examined in this study. It can be said that achievement motivation and knowledge of basic mathematics high is one of the conditions for obtaining high mathematics learning outcomes. Therefore, to obtain encouraging results of mathematics learning, the expected motivation in the form of stimulus to the students to study hard pushed to take precedence. When the learning process performed by the teacher to be well received by the students will give motivation to students to always study hard by repeating the material that has been received from the teachers that will make the results of the students' mathematics learning will increase.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

First: The results of the analysis of the design X1 X2 X12 X22 (model 1) indicates X2 have a negative impact and no significant effect on learning outcomes, there is statistically the model must be modified.

Second: The first modification to the design X2 X12 X22 (model 2) shows that the variable basic knowledge of mathematics (X2) and no significant negative effect on the dependent variable (Y) so that enough of a reason not to use this second model as the model used.

Third: The results of the analysis used was a modification of the second (model 3) obtained by the square of achievement motivation (X12) and squared basic knowledge of mathematics (X22) has a positive and significant impact on learning outcomes of mathematics (Y).

Fourth: Achievement motivation and a basic knowledge of mathematics together have an influence on the results of students' mathematics learning shown by the regression equation, the coefficient of determination (R²) of 77.2%. This shows that the achievement motivation and a basic knowledge of mathematics to contribute positively or good support in an effort to improve students' mathematics learning outcomes.

5.2 Suggestion

Based on the discussion and conclusion of the study, the authors suggest:

First: By seeing their influence student achievement motivation on the results of students' mathematics learning, the students of class XI IPA SMA Kartika VII-2 Kendari expected to

increase motivation underachievement and teachers as educators to be able to present the subject matter that create an atmosphere stimulus is always fun students to receive course material, so that students are always eager to learn and in turn the result of students' mathematics learning can be improved.

Second: By looking at the influence of basic knowledge of mathematics students' learning outcomes math class XI IPA SMA Kartika VII-2 Kendari, is expected to teachers who teach math, so really feel confident that the material taught has been understood by the students before going to matter next.

BIBLIOGRAPHY

- Djaali, 2008. Educational Psychology. Jakarta: Earth Literacy.
- Djiwandono, Sri Esti. 1996. Educational Psychology. Jakarta: Dirjendikti
- Hudojo, H. 2003. Development of Curriculum and Learning Mathematics. Surabaya: National Business.
- Russefendi, E. T. 1993. Mathematics Education 3. Jakarta: Open University.
- Simbolon, Hotman. 2009. Statistics. Yogyakarta: Graha Science.
- Shah, Muhibbin. 2003. Educational Psychology with a New Approach. Bandung: Youth Rosdakarya.