THE RELATIONS AMONG LEARNING MOTIVATION, REASONING ABILITY, AND LEARNING ENVIRONMENT AT HOME WITH MATHEMATICS LEARNING OUTCOMES ON STUDENT IN GRADE VIII

Nurul Amalina Kurniasih[a], Aris Thobirin[b]

Program Studi Pendidikan Matematika Universitas Ahmad Dahlan

Jalan Ring Road Selatan, Tamanan, Banguntapan, Bantul, Yogyakarta 4

[a]Amalinanurul21@gmail.com, [b]aris.thobi@math.uad.ac.id

ABSTRACT

The result of the study in a low student is related to many factors. Learning motivation, reasoning ability, and learning environment at home are estimated to have a relationship between learning outcomes. This research aims to know there is or not a positive relationship between learning motivation, reasoning ability, and learning environment at home with mathematics learning outcomes on students in grade VIII of Muhammadiyah Junior High School 7 Yogyakarta (SMP Muhammadiyah 7 Yogyakarta) in odd semester academic year 2017/2018. The population in this research are all students in grade VIII of SMP Muhammadiyah 7 Yogyakarta in odd semester 2016/2017 academic year as many as seven classes. Sampling technique using sampling random technique to class and class VIII G is chosen as the sample class. The data collecting technique using questionnaires and test methods. The instrument of collecting data using questionnaires of motivation to learn, a test of reasoning ability, and a questionnaire of the learning environment at home and mathematics test. Data analysis to hypotheses testing using correlation analysis product-moment and double linear regression analysis. The result of this research shows that if there is a positive relationship between learning motivation, reasoning ability, and learning environment at home with mathematics learning outcomes. Insignificance level 5%, $v_1=3$, $v_2=23$, $F_{count} = 23,6772$ and $F_{table} = 3,0280$, Fcount > Ftable with double correlation coefficient R = 0,8691 and double three-variable regression similarity namely $\hat{Y} = -18,4337 + 0,4405X_1 + 0,3450 X_2 + 0,4005X_3$. Big relative contribution $X_1 = 44,1397\%$, $X_2 = 32,8583\%$, $X_3 = 23,0020\%$, with double determination coeffition 0,7266 and efective contribution $X_1 = 33,3432\%$, $X_2 = 24,8212\%$ dan $X_3 = 17,3757\%$.

Keywords: Learning Motivation, Reasoning Ability, Learning Environment at Home, Mathematics Learning Outcomes.

INTRODUCTION

Education is a human effort that is carried out continuously throughout life to achieve the quality of good human resources. The good quality of human resources is a sign of the development of a nation, according to the Law of the Republic of Indonesia Number 20 of 2003 concerning National Education System Chapter 1 Article 1 states that: Education is a conscious and planned effort to create an atmosphere of learning and learning process so that students actively develop their potential to have spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by themselves, society, nation, and country.

Mathematics is one of the basic sciences that must be mastered by every human being, especially by students in school, because mathematics cannot be separated from everyday human life. mathematics is always experiencing developments that are directly proportional to the progress of science and technology. (Fathani, Abdul Halim 2009: 76). Mathematics is one of the subjects taught at school, therefore by studying mathematics students are expected to have high motivation to get good mathematics learning outcomes so that they can apply mathematics in their daily lives. But in reality, there are still many students who think that mathematics is a difficult and frightening subject because of the abstract objects of mathematics, so to understand it requires the ability to think and reason logically as well as perseverance and enthusiasm in learning mathematics.

The success of students in the learning process is inseparable from several factors that influence. Slameto (2010: 54) says that the factors that influence student learning include: (1) internal factors, namely factors that exist from within individuals in the form of physical factors, intelligence, attention, interest, readiness, talent, and fatigue. (2) external factors, namely factors that exist from outside the individual in the form of learning facilities, discipline in school, learning methods, peers, and so forth. According to Soemanto, Wasty (2003: 203), motivation to learn is one of the factors in students who determine the success or failure of students in teaching and learning. Indicators of students having good learning motivation are 1. Desire and desire to succeed in learning, 2. Support and needs in learning, 3. Hope and ideals of the future, 4. Appreciation in learning.

Based on information obtained from the results of interviews of seventh-grade students of SMP Muhammadiyah 7 Yogyakarta on April 10, 2017, stated that mathematics is a difficult subject and too many formulas and some do not like mathematics, so there is no willingness in students to pay attention the teacher when explaining the material. This shows that student motivation is still low. Based on information on April 10, 2017, in addition to learning motivation, some students also complained about mathematics because there were too many mathematics lessons so students became less interested in learning. According to the student's statement of interest in learning will arise if the student's mood is good. If the students' mood is not good, the attention they give in learning in the classroom is also not optimal. This shows that student learning interest is still low. In addition to learning motivation and interest in learning, other internal factors that influence mathematics learning outcomes are reasoning abilities. Reasoning ability is the ability students must have as a basis for solving a problem, finding new methods or ways to solve problems, especially problems in mathematics.

Based on information obtained from the mathematics teacher at SMP Muhammadiyah 7 Yogyakarta stated that the lack of students 'reasoning abilities can be seen from the activities of students who can solve calculation problems but cannot explain the reasons for writing the answers, and the students' reasoning ability in understanding the questions is still lacking because some students confused in solving math problems, especially a story problem, so it must be guided by the teacher to solve the problem. Though the ability of mathematical reasoning is very necessary because the ability of reasoning, especially in mathematics can provide a direction to solve a problem. This shows that the reasoning ability in learning mathematics owned by students is still low. The external factors that influence the achievement of student learning outcomes are the learning environment, especially the learning environment at home. The learning environment at home that is comfortable, clean, conducive, and supports learning activities can be a meaningful environment for a child's development. Therefore the learning environment at home has a very important role in the success of a student's learning.

Based on interviews with seventh-grade students of Muhammadiyah 7 Yogyakarta Middle School on April 21, 2017, it is said that learning at home is rare, let alone learning mathematics. This is because it is influenced by several factors such as a less supportive learning environment and the unavailability of special rooms for learning. This is what makes students sometimes have to learn to do in the living room. The atmosphere of the home which is sometimes crowded at the time of study and study schedules at home that has not been consistent also becomes another factor that causes the learning environment at home becomes uncomfortable and supportive. This shows that the learning environment of students at home is less supportive and conducive.

Based on information from eighth-grade students of SMP Muhammadiyah 7 Yogyakarta on April 21, 2017, most students consider mathematics as a difficult subject to understand compared to other lessons so students do not make it a challenge but rather a burden in learning. Therefore the results of learning mathematics are still far from the Minimal Completeness Criteria (MCC) or still less than the maximum. This can be seen from the average value of mathematics in the Mid-Semester Assessment grade VII students of SMP Muhammadiyah 7 Yogyakarta, where there are still many students who score below the Minimal Completeness Criteria (MCC), which is 73.

From the various problems above such as low learning motivation, low learning interest, low reasoning ability, and a learning environment that is less supportive and conducive, the researcher is

interested in researching the Relationship between Learning Motivation, Reasoning Ability, and Home Learning Environment with Mathematics Learning Outcomes.

Based on the background and boundaries of the problem, it can be formulated the problem to be investigated, is there a positive and significant relationship between learning motivation, reasoning ability and learning environment at home with mathematics learning outcomes of students of class VIII of SMP Muhammadiyah 7 Yogyakarta in the odd semester of the academic year 2017/2018? This research aims to find out whether there is a positive relationship between learning motivation, reasoning ability, and learning environment at home with mathematics learning outcomes of VIII grade students of SMP Muhammadiyah 7 Yogyakarta odd semester of the academic year 2017/2018.

METHODS

This research is classified as quantitative research. The place of research was carried out at Muhammadiyah 7 Junior High School Yogyakarta. While the research was conducted in the odd semester of the 2016/2017 school year. According to Sugiyono (2015: 117) population is a generalization area that consists of objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then drawn conclusions. The population in this study were all students of class VIII at Yogyakarta Muhammadiyah 7 Middle School odd semester 2016/2017 academic year consisting of 7 classes. According to Sugiyono (2015: 297), the sample is part of the number and characteristics possessed by the population. In this study, sampling was carried out using the Random Sampling technique for classes that were obtained by the lottery. The drawing is done by randomly taking classes and selected class G as a sample class.

The research variables are two variables, they are the independent variable and the dependent variable. The independent variable (Independent) consists of learning motivation (X_1), reasoning ability (X_2), and learning environment at home (X_3), while the dependent variable (dependent) is a mathematics learning outcomes (Y). Data collection techniques used questionnaires and test methods. According to Sugiyono (2015: 199) Questionnaire is a data collection technique that is done by giving a set of questions or written statements to respondents to answer. While the test is a series of questions or exercises and other tools used to measure the skills, intelligence knowledge, abilities, or talents possessed by individuals or groups (Arikunto, Suharsimi: 2013).

In this study, the questionnaire method was used to obtain data on learning motivation and learning environment at home. The test method is used to obtain data about reasoning abilities and mathematics learning outcomes of VIII grade students of SMP Muhammadiyah 7 Yogyakarta. The questionnaire test uses the content validity test by the reviewers and the instrument reliability test with the alpha formula, while the test instrument questions use the content validity test by the reviewers and the product-moment correlation technique, the different power test and the instrument reliability test with the KR-20 formula (Suharsimi Arikunto. 2013: 122-125). After the data is collected, the analysis prerequisite tests that must be met include normality test, independence test, and linearity test. Data analysis uses product-moment correlation analysis and multiple linear regression analysis.

RESULTS AND DISCUSSION

This normality test is used to test the distribution of data obtained by each variable whether it is normally distributed or not. The summary of the normality test results from the four variables are:

Table 1. Summary of Test Results for Study Variables Normality

No.	Variable	χ^2_{count}	χ^2_{table}	df	Information
1.	Motivation to learn (X_1)	2,3168	5,9915	2	Normal
2.	Reasoning Ability (X_2)	1,2922	5,9915	1	Normal
3.	Learning Environment at Home (X_3)	2,5196	9,4877	4	Normal
4.	Mathematical Learning Outcomes (Y)	8,7673	9,4877	3	Normal

Independence test is used to find out whether or not there is a relationship between independent variables. A summary of the results of the independent tests of the three independent variables is:

Table 2. Summary of Test Results for Research Variables

No.	Variable	χ^2_{count}	χ^2_{table}	df	Information
1.	X_1 to X_2	24,6791	37,6525	25	Independent
2.	X_1 to X_3	37,3318	37,6525	25	Independent
3.	X_2 to X_3	26,4375	37,6525	25	Independent

Linearity test is used to find out between independent variables and dependent variables whether they have a linear relationship or not. Summary of the linearity test results of the four variables are:

Table 3. Summary of Linearity Test Results for Research Variables

No.	Variable	F_{count}	F_{table}	Information
1.	X_1 to Y	1,7830	2,5437	Linear
2.	X_2 to Y	0,2139	2,6283	Linear
3.	X_3 to Y	1,0308	3,4669	Linear

In this section further discussion of the results of research analyzed in correlation. This study found that the seventh hypothesis test results were that there was a positive and significant relationship between learning motivation, reasoning abilities, and learning environment at home with mathematics learning outcomes. In other words, the greater the motivation of student learning, the smarter the reasoning abilities of students and the better, more comfortable, conducive and supportive of the learning environment of students at home, will also have a high effect on mathematics learning outcomes.

With a simple correlation analysis, the value of multiple correlation coefficient (R) between learning motivation (X_1), reasoning ability (X_2) and the learning environment at home (X_3) with mathematics learning outcomes (Y) is 0.8691 and the coefficient of determination (R^2) in the amount of 0.7554. Furthermore, in testing the significance of the correlation coefficient by using the F-test obtained $F_{count} = 23.6772$ while $F_{table} = 3.0280$ at a significant level of 5%, df = 23 so that $F_{count} \geq F_{table}$, thus the seventh hypothesis has been tested by rejecting $H_{0,7}$ and receive $H_{1,7}$. so there is a positive and significant relationship between learning motivation, reasoning ability, and the learning environment at home with mathematics learning outcomes of students of class VIII SMP Muhammadiyah 7 Yogyakarta odd semester of the academic year 2017/2018. Also, the double linear regression equation obtained for X_1, X_2 and X_3 is $\hat{Y} = -18,4337 + 0,4405X_1 + 0,3450X_2 + 0,4005X_3$. The relative magnitude of the contribution and effective contribution can be seen in the summary of results calculated in Table 4.

Table 4. Summary of Calculation Results of Relative Contributions and Effective Contributions.

Variable	RC (%)	EC (%)
Motivation to learn (X_1)	44,14	33,34
Reasoning Ability (X_2)	32,86	24,82
Learning Environment at Home (X_3)	23,00	17,38

Based on the table above it can be concluded that the variable of learning motivation contributes the most than the variable ability of reasoning and learning environment at home.

CONCLUSION

Based on the results of research and discussion as described above, it can be concluded that there is a positive and significant relationship between learning motivation, reasoning ability, and learning environment at home with mathematics learning outcomes for students of class VIII of SMP Muhammadiyah 7 Yogyakarta in the odd semester of the school year 2017/2018. This is indicated by the F-test that is $F_{count} > F_{tabel}$ or 23.66772 > 3.0280. The multiple correlation coefficient (R) between

learning interest (X_1), reasoning ability (X_2) and the learning environment at home (X_3) with mathematics learning outcomes (Y) of 0.8691 and the coefficient of determination (R^2) of 0.7554 with the double linear regression equation $\hat{Y} = -18,4337 + 0,4405X_1 + 0,3450X_2 + 0,4005X_3$. The relative contribution of X_1 is 44.1397%, the relative contribution of X_2 are 32.8583% and the relative contribution of X_3 is 23.0020% and the effective contribution is X_1 of 33.3432%, X_2 are 24.8212% and the effective contribution of X_3 is 17, 3757%.

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