

## THE RELATIONSHIP AMONG THE MATHEMATICAL UNDERSTANDING, LEARNING MOTIVATION AND PARENT'S ATTENTION WITH STUDENTS MATHEMATICS LEARNING OUTCOMES

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### ABSTRACT

Based on the observation in State Junior High School (SMP Negeri) 5, Kebumen obtained some information that the lack of student mathematics understanding, motivation learning is still low, and parents' lack of attention in learning activities. This study aims to determine the presence or absence of a positive relationship between and significant relationship among the mathematics understanding, motivation learning, and parent's attention with learning achievement mathematics students class VIII SMP Negeri 5 Kebumen academic year 2017/2018. This research population was the students of VIII grade in SMP Negeri 5 Kebumen in 2017/2018, consisting of class VIIIA, VIIIB, VIIC, VIID, VIIE, and VIIF, totaling 192 students. Samples were taken from VIIIB as the research sample class and with the random sampling technique. The writer uses the questionnaire method to collect the data motivation learning, parents' attention, and test method to understand math results. The research instrument: validity test, different power test, and reliability test. Test requirement analysis includes a test of normality, a test of linearity, and independence. The writer uses product-moment correlation analysis and multiple linear regression analysis to analyze the data. The results showed a positive and significant relationship between the intensity of learning, independent learning, and parents' attention with mathematics learning outcomes in students class VIII of SMP Negeri 9 Yogyakarta academic year of 2016/20167. It is showed by  $F_{count} > F_{table}$  is  $6,333638138 > 3,340000$  with  $R = 0,635819872$  and  $R^2 = 0,4042669$  with  $\hat{Y} = 116,657907687 + 0,335224741X_1 + 0,086942518X_2 + 0,167131038X_3$ , with  $SR X_1 = 43,20231\%$ ,  $RC X_2 = 12,03309\%$  and  $RC X_3 = 44,76460\%$ ,  $EC X_1 = 17,46527\%$ ,  $EC X_2 = 4,86458\%$  and  $EC X_3 = 18,09684\%$ .

**Keywords:** The Mathematics Understanding, Motivation Learning, Parent's Attention, and Mathematics Learning Outcomes

### INTRODUCTION

The implementation of education in schools is carried out with the teaching and learning process. In its implementation, it does not always run smoothly because there are some obstacles. However, these obstacles can be overcome if the teaching and learning process is carried out with discipline. The success of students in learning material is expressed in learning outcomes. The learning outcomes here can be in the form of scores or grades. High and low learning outcomes can be used to determine whether a student has changed or not in learning.

The purpose of learning mathematics is to equip students to understand mathematical concepts, use sound reasoning, communicate ideas with mathematical symbols, solve mathematical problems, and have an attitude of appreciating the usefulness of mathematics (Permendiknas no 22: 2006). One aspect contained in mathematics learning is the concept. It will be difficult for students to lead higher mathematics learning if they do not understand the concept. According to Susanto, A (2013: 208), understanding is the ability to explain a situation with different words and can interpret or draw conclusions from tables, graphs, data, and so on. Understanding is defined as the absorption of the material being studied. According to Purwanto (in Murizal, Yarman, & Yerizon, 2012), understanding is the level of ability that expects students to understand the meaning or concept, situation, and facts they know. With good understanding skills possessed by students, there are indications of good learning outcomes.

Two factors can affect learning outcomes, namely, internal and external factors. Internal factors are factors that exist in individuals, for example, student motivation in learning. External factors exist outside the individual, for example, the state of the family environment and the community's state. Learning motivation is one of the factors that come from within individuals that can affect student learning outcomes. According to Mc, students need to have awareness, willingness, and motivation from within students to act, act and think based on creativity and full of initiative, self-confidence, responsibility, and not merely pressure from the teacher or other parties. Donald (in Djamarah, 2011) said that motivation is a change of energy in a person who is characterized by the emergence of affective (feelings) and reactions to achieve goals. Energy changes in a person can be in the form of real activity in physical activity. Because someone has a goal in his activities, someone has a strong motivation to achieve it with all the efforts. Another factor that causes the poor learning outcomes of mathematics is outside the individual, namely the family environment and the community environment. Wirowidjojo in Slameto (2010) states that the family is the first and foremost educational institution, wherein the family there are parents and children. Parents have an important role in building a harmonious relationship in the family because the family is harmonious. There is a real, stable. In a good relationship, especially the relationship between children and parents, parents' intensity in guiding children to learn will increase. In the National Education System Law, No 20 of 2003 Chapter IV article 7 also stated that Parents of children of compulsory age of study, are obliged to provide basic education to their children. Parents' attention in question is all forms of business, encouragement, and parental involvement in children's learning activities at home and school.

Based on observations at SMP Negeri 5 Kebumen in September 2017, grade VIII students' mathematics learning outcomes at SMP Negeri 5 Kebumen are still low. This is seen from the average math scores in the Middle Semester Deuteronomy class VIII odd semester of SMP Negeri 5 Kebumen in 2017/2018.

**Table 1.** Middle Deuteronomy Grade Tests for Mathematics in Class VIII Odd Semester of SMP Negeri 5 Kebumen Academic Year 2017/2018

<b>Kelas VIII</b>	<b>A</b>	<b>B</b>	<b>C</b>
Average	58,41	75,69	57,19
Score Max	83	90	78
Score Min	43	55	30
$\geq$ MCC	3	23	3
$<$ MCC	29	9	29

*Source: SMP Negeri 5 Kebumen TA 2017/2018*

Based on Table 1, it can be seen that the results of the Mathematics Middle Semester Grade VIII grades in SMP Negeri 5 Kebumen are still low. As many as 69.79% of students still have not reached the Minimum Completeness Criteria (MCC), 75. Looking at the value of the Middle Test Semester, students still need to be improved mathematics. The low learning outcomes of the Middle Semester Deuteronomy of students is due to the difficulty of learning mathematics, which is influenced by several things.

Based on interviews with mathematics teachers in class VIII at SMP Negeri 5 Kebumen in September 2017, most students worked on the teacher's examples in working on math problems. However, for slightly different problems from the examples given, students still find it challenging to do it. This shows that students' mathematical understanding is still low. Students feel afraid to ask the teacher if they have difficulty in working on math problems. Based on interviews with some eighth-grade students of SMP Negeri 5 Kebumen in September 2017, students considered mathematics a difficult subject. Students only learn mathematics when given an assignment or when there will be just a test. Also, if students have difficulty in working on problems, students feel lazy to continue. This shows that learning motivation is still low, especially in mathematics.

Other information obtained from interviews with some eighth-grade students of SMP Negeri 5 Kebumen in September 2017, parents of students pay less attention to learning time and pay attention to

children's learning outcomes. Researchers interviewed one of the BK teachers who said that parents' attention to children was still insufficient because of their economic factors. Many parents paid less attention to their children's learning time, facilities, and learning outcomes, prioritizing their work to meet their needs family. This shows that the lack of attention from students' parents in their children's learning activities.

The purpose of this study is to find out: 1) There is a positive and significant relationship between mathematical understanding and mathematics learning outcomes of eighth-grade students at SMP Negeri 5 Kebumen in the academic year 2017/2018. 2) There is a positive and significant relationship between learning motivation and mathematics learning outcomes for class VIII students at SMP Negeri 5 Kebumen in 2017/2018. 3) Whether or not there is a positive and significant relationship between parents' attention and the mathematics learning outcomes of eighth-grade students at SMP Negeri 5 Kebumen in the academic year 2017/2018. 4) There is a positive and significant relationship between mathematical understanding and learning motivation with mathematics learning outcomes of eighth-grade students at SMP Negeri 5 Kebumen in 2017/2018. 5) There is a positive and significant relationship between mathematical understanding and parental attention with mathematics learning outcomes of eighth-grade students at SMP Negeri 5 Kebumen in 2017/2018. 6) There is a positive and significant relationship between learning motivation and parents' attention with Grade VIII students' mathematics learning outcomes at SMP Negeri 5 Kebumen in 2017/2018. 7) There is a positive and significant relationship between mathematical understanding, learning motivation, and parents' attention with Grade VIII students' mathematics learning outcomes at SMP Negeri 5 Kebumen in 2017/2018.

## METHODS

This research is classified as quantitative research. The place of research was conducted at SMP Negeri 5 Kebumen. Simultaneously, the research was conducted in the even semester of the academic year 2017/2018. This study's population were all students of class VIII Even Semester of SMP Negeri 5 Kebumen Academic Year 2017/2018 consisting of six classes: classes VIIIA, VIIIB, VIIC, and VIID VIIIE, and VIIF with a total population of 206 students. In this study, samples were taken randomly using a random sampling technique that is taken 1 class randomly. Sampling is done by lottery. After taking random classes by lottery, it turns out that class VIIC was taken as a trial class and class VIIIB as a sample class. This study consists of four independent variables (independent) and one dependent variable (dependent). Independent variables (independent) consist of mathematical understanding ( $X_1$ ), learning motivation ( $X_2$ ), and parents' attention ( $X_3$ ), while the dependent variable (dependent) is the learning outcomes of mathematics ( $Y$ ). Data collection techniques used questionnaires and test methods. In this study, the questionnaire method is used to obtain learning motivation and parents' attention. Test methods are used to obtain data about mathematical understanding and mathematics learning outcomes Grade VIII students of SMP Negeri 5 Kebumen. Questionnaire instrument test uses content validity test by reviewers. For learning achievement test questions according to Arikunto, Suharsimi (2013) product-moment correlation technique, for questionnaire instrument reliability, testing according to Arikunto, Suharsimi (2012) uses alpha Cronbach formula, while the instrument reliability test results studying in Arikunto, Suharsimi (2012) using the KR-20 formula. After the data is collected, the analysis prerequisite tests must be met normality test, independent test, and linearity test. Data analysis uses product-moment correlation analysis and multiple linear regression analysis.

## RESULTS AND DISCUSSION

In the first hypothesis test, a simple correlation coefficient ( $r$ ) of 0.357494376 is obtained. A coefficient of determination ( $r^2$ ) of 0.127802229 can be explained that 12.7802229% of learning outcomes are influenced by mathematical understanding. In contrast, the rest is influenced by other factors. There is a variation in mathematics learning outcomes ( $Y$ ) explained by mathematical understanding ( $X_1$ ) through a linear line  $\hat{Y} = 59,521233919 + 0,317477830X_1$ , with a regression direction coefficient 0.317477830. This means that each increase of one unit  $X_1$  results in a 0.317477830  $Y$  increase. Amelia Fitrah (2014) states a positive and significant relationship between

mathematical understanding and mathematics learning outcomes. There is a variation in mathematics learning outcomes (Y) explained by the creativity of learning mathematics ( $X_1$ ) through linear lines  $\hat{Y} = 45,2 + 0,389677419X_1$ , with a regression direction coefficient 0.389677419. This means that each increase of one unit  $X_1$  resulted in 0.389677419 increase Y. Testing of the significance of the correlation coefficient using the t-test obtained  $t_{count} = 2.352604721$  while  $t_{table} = 2.068657599$  at a 5% significance level. The first hypothesis test results accept a positive and significant relationship between mathematical understanding and mathematics learning outcomes. In other words, the higher the student's mathematical understanding, the better the student's learning outcomes will be.

In the second hypothesis test, the correlation coefficient obtained (r) of 0.305268567. The coefficient of determination obtained ( $r^2$ ) of 0.093188898 can explain that 9.3188898% of learning outcomes are influenced by learning motivation. In contrast, the rest is influenced by other factors. There is a variation in mathematics learning outcomes (Y) explained by learning motivation ( $X_2$ ) through a linear line  $\hat{Y} = 70,289108232 + 0,320707317X_2$ , with a regression direction coefficient of 0.320707317. This means that every increase of one unit of  $X_2$  results in 0.320707317, an increase in Y. This is consistent with Winda Setiawati's (2014) statement that there is a positive and significant relationship between learning motivation and mathematics learning outcomes. There are variations in mathematics learning outcomes (Y), which are explained by an interest in learning ( $X_2$ ) through linear lines  $\hat{Y} = 17,936 + 0,285 X_2$  with a regression direction coefficient of 0.285. This means that every increase of one unit  $X_2$  results in a 0.285 increase in Y. The second hypothesis test results are accepted that there is a positive and significant relationship between learning motivation with learning outcomes in mathematics. In other words, the higher the motivation of student learning, the higher the learning outcomes. Student learning motivation can be seen from the desire of students to learn mathematics.

In the third hypothesis test, the correlation coefficient (r) of 0.457543234 is obtained. The coefficient of determination ( $r^2$ ) of 0.209345811 is obtained, which can explain that 20.9345811% of learning outcomes are influenced by learning motivation. In contrast, the rest is influenced by other factors. There are variations in mathematics learning outcomes (Y) explained by learning motivation ( $X_2$ ) through linear lines  $\hat{Y} = 69,5059222928 + 0,207802162X_3$ , with a regression direction coefficient of 0.207802162. This means that each increase in one unit of  $X_2$  results in an increase Y of 0.207802162. Asti Febrina Widyati (2014) states a positive and significant relationship between parents' attention and mathematics learning outcomes. There is a variation in mathematics learning outcomes (Y) explained by parents' attention ( $X_3$ ) through a linear line  $\hat{Y} = 20,95833181 + 0,422056945X_3$ , with a regression coefficient of 0.422056945. This means that every increase of one unit  $X_3$  results in 0.302175039 Y increases. The third hypothesis test results are accepted that there is a positive and significant relationship between parents' attention and mathematics learning outcomes. In other words, the greater the attention of the parents of students in mathematics, the greater the results of learning mathematics.

The fourth hypothesis, From the multiple correlation analysis obtained by the value of the multiple correlation coefficient (R) of 0.444698027. This study also obtained a coefficient of determination ( $R^2$ ) of 0.1977563352, meaning 19.77563352% of learning outcomes are influenced by mathematical understanding and learning motivation. In contrast, the rest is influenced by factors other. There is a variance in mathematics learning outcomes (Y), which can be explained by mathematical understanding ( $X_1$ ) and learning motivation ( $X_2$ ) through linear lines  $\hat{Y} = 49,35095812 + 0,294982974X_1 + 0,266708645X_2$ . This means an increase in one unit ( $X_1$ ) results in 0, 294982974 an increase in Y. An increase in one unit ( $X_2$ ) resulted in 0,266708645 an increase in Y. As for the relative contribution of  $X_1$  by 60,81120% and  $X_2$  by 39.18880% and the effective contribution of  $X_1$  by 12.02580% and  $X_2$  by 7.74983%, it can be concluded that the mathematical understanding variable provides the most significant contribution to learning outcomes than the learning motivation variable. The fourth hypothesis test results accept a positive and significant relationship between mathematical understanding and learning motivation with mathematics learning outcomes. In other words, the higher

the students' mathematical understanding, the better student learning outcomes will be. Likewise, with the motivation to learn, the higher the students' motivation to learn mathematics, the better the learning outcomes.

The fifth hypothesis, From the multiple correlation analysis, the correlation coefficient ( $R$ ) value is 0.575920069. This study also obtained a coefficient of determination ( $R^2$ ) of 0.3316839259, meaning 33.16839259% of learning outcomes are influenced by mathematical understanding and parents' attention. In contrast, the rest is influenced by other factors. There is a variance in mathematics learning outcomes ( $Y$ ), which can be explained by mathematical understanding ( $X_1$ ) and parents' attention ( $X_3$ ) through linear lines  $\hat{Y} = 44,976790925 + 0,315347639X_1 + 0,201625941X_3$ . This means an increase of one unit  $X_1$  resulted in 0,315347639 an increase in  $Y$ . An increase in one unit  $X_3$  resulted in 0,201625941 an increase in  $Y$ . While for the relative contribution of  $X_1$  by 38.75986% and  $X_3$  by 61,24014% and effective contribution of  $X_1$  by 12.85602 % and  $X_3$  of 20.31237%. It can be concluded that the parent's attention variable gives the most significant contribution to learning outcomes than the mathematical understanding variable. The fifth hypothesis test results are accepted that there is a positive and significant relationship between mathematical understanding and parental attention with mathematics learning outcomes. In other words, the higher the student's mathematical understanding, the better the student's learning outcomes. Similarly, parents' attention and the parents' attention and learning mathematics will be more improved.

Discussion of the sixth hypothesis test results, From the multiple correlation analysis, obtained the value of the multiple correlation coefficient ( $R$ ) of 0.502589175. This study also obtained a coefficient of determination ( $R^2$ ) of 0.2525958788, meaning 25.25958788% of learning outcomes are influenced by parents' learning motivation and attention. In contrast, the rest is influenced by other factors. There is a variance in mathematics learning outcomes ( $Y$ ), which can be explained by learning motivation ( $X_2$ ) and parents' attention ( $X_3$ ) through linear lines  $\hat{Y} = 61,008485891 + 0,224193421X_2 + 0,18606911X_3$ . This means an increase of one unit ( $X_2$ ) resulted in 0,224193421 an increase in  $Y$ . An increase in one unit ( $X_3$ ) resulted in an increase in 0,18606911  $Y$ . While for the relative contribution of  $X_2$  by 25,79003% and  $X_3$  by 74.20997% and effective contribution of  $X_2$  by 6.51446% and  $X_3$  amounted to 18.745132%. It can be concluded that the parents' attention variable contributed the most to the learning outcomes than the learning motivation variable. The sixth hypothesis test results are accepted that there is a positive and significant relationship between learning motivation and parents' attention to mathematics learning outcomes. With high student motivation, student learning outcomes will also increase. Likewise, with good parents' attention, children will be more eager to carry out their obligations as students who are learning to get good learning outcomes.

Discussion of the seventh hypothesis test results from the multiple correlation analysis obtained by the value of the multiple correlation coefficient ( $R$ ) of 0.596814723. This study also obtained a coefficient of determination ( $R^2$ ) of 0.3561878136, meaning 35.61878136% influenced by mathematical understanding, learning motivation, and parents' attention while the rest by other factors. The variance of mathematics learning outcomes ( $Y$ ) can be explained by mathematical understanding ( $X_1$ ), learning motivation ( $X_2$ ), and parents' attention ( $X_3$ ) through linear lines  $\hat{Y} = 119,7827890 + 0,2936X_1 + 0,170742 X_2 + 0,185500239X_3$ . This means an increase in one unit ( $X_1$ ) resulted in 0.2936 increase in  $Y$ , an increase in one unit ( $X_2$ ) resulted in 0,170742 increase in  $Y$  and an increase in one unit ( $X_3$ ) resulted in 0,185500239 increase in  $Y$ . As for the relative contribution of  $X_1$  by 33.60491%,  $X_2$  of 13.92889% and  $X_3$  of 52.46620% and effective contribution of  $X_1$  amounted to 11.96966%,  $X_2$  amounted to 4.96130% and  $X_3$  amounted to 18.66882%, it can be concluded that the parent's attention variable gave the most significant contribution towards learning outcomes rather than mathematical understanding variables and learning motivation.

The seventh hypothesis test results are accepted that there is a positive and significant relationship between mathematical understanding, learning motivation, and parents' attention to mathematics learning outcomes. In other words, the higher the students' mathematical understanding, the better the learning outcomes will be. Likewise, with students' motivation to learn about

mathematics, the learning outcomes will be even better. The attention of parents can also influence mathematics learning outcomes. The higher the attention of parents to children, the higher the learning outcomes. Vice versa.

## CONCLUSION

Based on the results of research and discussion, as described in Chapter IV, the following research conclusions can be drawn:

1. There is a positive and significant relationship between mathematical understanding and mathematics learning outcomes for class VIII students at SMP Negeri 5 Kebumen in the Academic Year 2017/2018.
2. There is a positive and significant relationship between learning motivation and mathematics learning outcomes for class VIII students at SMP Negeri 5 Kebumen in the Academic Year 2017/2018.
3. There is a positive and significant relationship between parents' attention and students' mathematics learning outcomes of class VIII at SMP Negeri 5 Kebumen in the Academic Year 2017/2018.
4. There is a positive and significant relationship between mathematical understanding and learning motivation with mathematics learning outcomes of class VIII students at SMP Negeri 5 Kebumen Academic Year 2017/2018.
5. There is a positive and significant relationship between mathematical understanding and parental attention with the mathematics learning outcomes of students of class VIII at SMP Negeri 5 Kebumen Academic Year 2017/2018.
6. There is a positive and significant relationship between learning motivation and people's attention and mathematics learning results for eighth-grade students of SMP Negeri 5 Kebumen in the Academic Year 2017/2018.
7. There is a positive and significant relationship between mathematical understanding, motivation to learn, and parents' attention with mathematics learning outcomes of students of class VIII in SMP Negeri 5 Kebumen Academic Year 2017/2018.

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