THE RELATIONSHIP BETWEEN NUMERICAL ABILITY, PARENTAL ATTENTION, AND DISCIPLINE OF LEARNING WITH STUDENTS MATHEMATICS LEARNING OUTCOMES IN CLASS VII

Ifan Arifin[a] , Widayati[b]
Program Studi Pendidikan Matematika Universitas Ahmad Dahlan
Jalan Ring Road Selatan, Tamanan, Banguntapan, Bantul, Yogyakarta
[a]Ifanarifin46@gmail.co[a], [b]ummunabilah67@gmail.com

ABSTRACT

Based on the observation in SMP Muhammadiyah 9 Yogyakarta obtained some information that low numerical ability, parents pay less attention to children/students in terms of learning, and student learning discipline is less. This study aims to determine whether or not a positive and significant relationship between numerical ability, parental attention, and discipline of learning with the results of learning mathematics seventh-grade students Muhammadiyah Junior High School 9 Yogyakarta (SMP Muhammadiyah 9 Yogyakarta) even semester 2016/2017 academic year. SMP Muhammadiyah 9 Yogyakarta academic year 2016/2017 consists of 5 classes. All classes have an average value of final exams that is almost the same, so that the population in this study is class seventh gradee A to seventh grade E. Sampling technique using random sampling technique to class and class of VIIC selected as sample class. Data collection techniques used questionnaires and tests. The data collection instrument uses numerical ability tests, questionnaires of parental attention, discipline study questionnaires, and learning results. Test of research instrument using validity test, reliability test, and different power tests. The prerequisite analysis test includes a normality test, linearity test, and independence test—data analysis for hypothesis testing using product-moment correlation analysis and multiple linear regression analysis. The results showed a positive and significant relationship between numerical ability, parental attention, and discipline of learning with the results of learning mathematics. At a significant level of 5%, $v_1 = 3$, $v_2 = 28$, $F_{count} = 49{,}9147137$ and $F_{table} = 2{,}946685269$, $F_{count} > F_{table}$ with double correlation coefficient R = 0.917861751 and multiple regression equation three variables namely Y = -18 , 86970257 +0,385695364 X_1 + 0,260272591 X_2 + 0,599196062 X_3. Relative contribution X_1 = 38,54162209%, X_2 = 48,612,2907%, X_3 = 48,612,2907%, with double determination coefficient 0,842470194 and effective contribution X_1 = 32,47016786%, X_2 = 10,8224975% and X_3 = 40,95435408%.

Keywords: Numerical Ability, Parents Attention, Discipline Learning, Learning Outcomes

INTRODUCTION

Education is an important factor in a person's life. The Government of the Republic of Indonesia has given considerable attention to the world of education. This is evident in the function of national education listed in Law No. 20 of 2003 article 3 concerning the National Education System, namely: National education functions to develop capabilities and shape the character and civilization of a dignified nation, aimed at developing the potential of students to become human beings who have faith and devotion to God Almighty, have a noble, healthy, knowledgeable, creative, independent and be a democratic and responsible citizen. Schools are educational institutions that strive to improve human resources. The higher the level of one's education, it is expected that the higher the human resources they have. The government has set a 12-year compulsory education that is Elementary School (SD) to High School (SMA) or Vocational High School. It aims to optimize the empowerment of Human Resources (HR).

Along with the rapid development of science and technology in various fields, it will feel how important and the need for mathematics to be studied as basic science and the development of other sciences. According to Sukardjono (2007: 13) states that mathematics is a way or method of thinking and reasoning. Mathematics can be used to decide whether an idea is true or false, or at least there is a possibility of true. Mathematics is a field of exploration and discovery, where every day, new ideas are

found. Mathematics is a way of thinking that is used to solve all kinds of problems in science, government, and industry. Until now, mathematics was still categorized as a difficult subject. Some students have difficulty understanding the material given by the teacher during class lessons. So students do not like mathematics because they think mathematics is a complicated and boring subject, and there is even a tendency that mathematics is increasingly developing into a scary subject. This will have an impact on student mathematics learning outcomes. Student mathematics learning outcomes are an indicator to measure student success in the mathematics learning process. According to Herman Hudojo (2006: 251), the effectiveness of teaching is usually determined by the objective achievements that have been formulated. An efficient student learning outcomes assessment program is not just about assessing the completion of the process, but instead on a continuous assessment of the objectives that have been predetermined.

Even in favorite public schools, some students have difficulty in learning mathematics. Therefore students' mathematics learning outcomes may tend to be less than optimal. This is reinforced by looking at the average scores of Midterm Semester odd mathematics subjects in grade VII of SMP Muhammadiyah 9 Yogyakarta City in the 2016/2017 school year.

Table 1. The average value of midterm tests even in mathematics for eighth-grade students of SMP Muhammadiyah 9 Yogyakarta in the 2016/2017 school year

Class	A	B	C	D	E
Average	59,84	53,75	58,43	56,87	55,93
The highest	80	80	75	70	80
Lowest	45	25	40	30	35
<MCC	23	27	21	19	24
≥MCC	9	5	11	13	8

(Source Data: SMP Muhammadiyah 9 Kota Yogyakarta)

From Table 1, it can be seen that the average value of mathematics VII UTS at SMP Muhammadiyah 9 Yogyakarta City is still not optimal. Most students still have not reached the Minimum Mastery Criteria (MCC), which is 68. Of 160 students in class VII A, B, C, D, and E, more students have not yet reached the KKM than those who have reached the Minimum Completeness Criteria (MCC)**.** Several factors influence the still low learning outcomes of mathematics in SMP Muhammadiyah 9 Yogyakarta City. The critical success factor in learning is students as principals in learning activities. Without the awareness, willingness, and involvement of students, the learning process will not succeed. With the attitude of learning discipline in students, learning goals will be successfully achieved as expected.

Based on interviews with students of SMP Muhammadiyah 9 Yogyakarta on March 9, 2017, some information was obtained that most students still had difficulty understanding concepts in mathematics subject matter. Students must repeatedly repeat lessons and exercises so that the concepts are well embedded. Also, students admit that most students still have difficulty in counting or operating say. Students have difficulty when doing math tests because mathematics has a lot to do with numbers or numbers. Therefore students must practice their numerical abilities so that students have no difficulty in counting or operating numbers. Numerical ability is the ability to calculate using numbers. According to Dewa Ketut Sukardi (2003: 121) states that. Numerical ability is the ability of students to reason with numbers, use or manipulate relations with numbers, and logically describe the amount of material.

One external factor that can influence student learning is the attention of parents. Because parents are the first and foremost educational environment for children. According to Slameto (2013: 61), the family is the first and foremost educational institution. Based on an interview with Mrs. Siti Nurhanifah, S.Pd as a mathematics teacher at SMP Muhammadiyah 9 Yogyakarta, some information was obtained that, some students only use one notebook for one semester. Also, the teacher admitted that some of his students' report cards were not taken by their parents when distributing report cards. Even though parents come to school separately to take report cards is essential because it is a form of attention to parents to students or children in terms of learning. Besides school parents are very responsible for creating a

comfortable and enjoyable situation in learning. According to Slameto (2003: 105) states that attention is an activity carried out by someone about the selection of stimuli that come from their environment.

Factors that can affect student learning come from within students (internal factors) and outside students (external factors). Slameto (2013:54-72) states that Factors that influence learning of many types can be classified into two groups: internal and external. Internal factors include health, disability, intelligence, attention, interests, talents, motives, maturity, and readiness. Whereas external factors include the way parents educate, relationships among family members, the atmosphere of the home, family economic situation, understanding of parents, facilities, and infrastructure, environment, student participation in organizations, mass media, associate friends, and community life forms.

Siti Nurhanifah, S.Pd, as a mathematics teacher at SMP Muhammadiyah 9 Yogyakarta, also said that some students were still late for school. Also, teachers admit that most students do not do homework or homework given by their teacher. Homework is a task given by the teacher, with the aim that students can improve their understanding of the subject matter that has been given previously in school. However, there are often some students who do not do homework. The reason most students express is that they forget. Students should be more disciplined in terms of learning mathematics to get good learning outcomes. According to Cece Wijaya and Tabrani Rusyan (1992: 18), discipline lies in the heart and in a person's soul, which encourages the person concerned to do something or not do something as determined by applicable norms and regulations. (pangab: 1967) .

Based on the background of the problem, it can be formulated the problem to be investigated, namely is there a positive and significant relationship between numerical ability, parental attention, and learning discipline with mathematics learning outcomes for seventh-grade students of the even semester of SMP Muhammadiyah 9 Yogyakarta 2016/2017 school year. This research aims to find out whether or not there is a positive and significant relationship between numerical ability, parental attention, and learning discipline with mathematics learning outcomes for seventh-grade students of SMP Muhammadiyah 9 Yogyakarta 2016/2017 academic year.

METHODS

This research is classified as quantitative research. The place of research was carried out at SMP Muhammadiyah 9 Yogyakarta. At the same time, the research was conducted in the even semester of the 2016/2017 school year. This study population was seventh-grade students in the even semester of SMP Muhammadiyah 9 Yogyakarta, which consists of 5 classes—based on the average grade VII UTS so that the population in this study consisted of 5 classes. In this study, samples were taken at random using a random sampling technique for class. It is said random because the sampling class is done randomly from the existing class. After all, the ability of each class in the population is the same, and the sample class taken is VII C, and the test class is VII B. The research variables are two variables; they are the independent variable and the dependent variable. The independent variable (Independent) consists of Numerical Ability (X_1), Parental Attention (X_2), and Learning Discipline (X_3), while the dependent variable (dependent) is the result of learning mathematics (Y). Data collection techniques used questionnaires and test methods. In this study, the questionnaire method was used to obtain data on parents' attention and learning discipline. Simultaneously, the test method is used to obtain data about numerical abilities and mathematics learning outcomes of Grade VII students at SMP Muhammadiyah 9 Yogyakarta.

The questionnaire test uses the content validity test by the reviewers and the instrument reliability test using the alpha formula. The test instrument questions use the instrument validity test with the product-moment correlation technique with the formula:

$$r_{XY} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\{N\sum X^2 - (\sum X)^2\}\{N\sum Y^2 - (\sum Y)^2\}}}$$

(Arikunto S, 2012:80)

Different power tests and instrument reliability tests with the KR-20 formula (Suharsimi Arikunto. 2012: 232). After the data is collected, the analysis prerequisite tests that must be met include normality test, linearity test, and independence test. Data analysis uses product-moment correlation analysis and multiple linear regression analysis. Using the t-test and F-test, according to Sugiyono (2015: 266) using the formula:

$$t_{count} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

With
r= correlation coefficient
n= number of samples
for the F-test using a formula

$$F = \frac{R^2/k}{(1-R^2)/(n-k-1)}$$

With
F = F price regression line
R^2 = coefficient of determination
n = sample size
k = number of independent variables

RESULTS AND DISCUSSION

In this section, further discussion of the results of the research analyzed in correlation. This study found that the seventh hypothesis test results were that there was a positive and significant relationship between numerical ability, parental attention, and learning discipline with mathematics learning outcomes. In other words, the higher the numerical ability of students, the higher the learning outcomes. Likewise, with the parents' attention, the more parents pay attention to student learning, the learning outcomes will be better. Likewise, with the discipline of learning, the higher the learning outcomes.

This normality test is used to test the distribution of data obtained by each variable, whether it is usually distributed. The summary of the normality test results from the four variables are:

Table 1. The summary of normality test results

No	Variable	χ^2_{count}	χ^2_{table}	df	Info.
1	Numerical ability (X_1)	4,129	7,815	3	Normal
2	Parents ' attention (X_2)	2,420	7,815	3	Normal
3	Learning discipline (X_3)	3,437	9,488	4	Normal
4	Mathematics Learning Results (Y)	3,397	7,815	3	Normal

The independence test is used to determine the presence or absence of relationships between free variables. A summary of the independence test results of the three free variables are:

Table 2. The summary of the independence test results

Variable	χ^2_{count}	χ^2_{table}	df	Info.
X_1 with X_2	329,449	437,6525	25	Independent
X_1 with X_3	337,446	437,6525	25	Independent
X_2 with X_3	225,138	437,6525	25	Independent

The linearity test is used to know between the free variables and the bound variables to have linear relationships. Summary of the results of the linearity test of the four varieties are:

Table 3. The summary of the results of the linearity test

No	Variable	F_{count}	F_{table}	Info.
1	X_1 with Y	0,430	3,1313	Linear
2	X_2 with Y	0,325	2,4034	Linear
3	X_3 with Y	2,540	2,6358	Linear

From the seventh hypothesis, the test result is a positive and significant relationship between numerical ability, parental attention, and learning discipline with the results of mathematical learning. In other words, the higher the students' numerical ability, the more students get the attention of their parents, and the better discipline of the students in learning will have a high impact on the learning results of mathematics. The research showed that students ' numerical capabilities, parental attention to their children, and students ' learning discipline are mostly categorized as the percentage of value accrual of 68.75%, 65.625%, and 68.75 % are categorized enough. From this data can be seen the numerical ability of students, the attention of parents to their children, and the discipline of learning the students less well, because there is still a percentage of the acquisition of poor values of 18.75%, 18.75%, and 15.625% are In the category less good. In other words, 18.75% of students ' numerical capabilities, 18.75% of parents ' attention to their children, and 15.625% are under sufficient categories.

This study acquired a double correlation coefficient (R) of 0.917861751 at a significant level of 5% and V = 28. Thus the acquired coefficient of the determinant (R^2) of 0.842470194 can be explained that 84.2470194% of learning outcomes are influenced by numerical ability, parental attention, and discipline learning through linear lines $\widehat{Y} = -18{,}86970257 + 0{,}385695364X_1 + 0{,}260272591X_2 + 0{,}599196062X_3$. Meaning each increment of one unit X_1 resulted in 0.385695364 increase of Y, the increment of one unit X_2 resulted in a 0.260272591 increase of Y and the increment of one unit X_3 resulted in a 0.599196062 increase in Y. The relative contribution of X_1 38.54162209%, the relative contribution of X_2 is 12.84614883% and X_3 48.61222907%, and the effective donation X_1 of 32.47016786% effective donation X_2 of 10.8224975% and X_3 of 40.95435408%.

CONCLUSION

Based on the results of the research and discussion as described above, the research conclusions can be concluded that there is a positive and significant relationship between numerical ability, parental attention, and learning discipline with learning outcomes of grade VII students SMP Muhammadiyah 9 Yogyakarta in the even semester of the school year 2016/2017. This is indicated by the F-test i.e. $F_{count} > F_{table}$ or 49,9147137 > 2,946685269. The double correlation coefficient (R) between numerical ability, parental attention, and learning discipline with math learning results of 0.917861751 at 5% and V = 28. Thus acquired determinant (R^2) of 0.842470194, which is explained as 84.2470194% of learning outcomes, is affected by numerical ability, parental attention, and learning discipline through a linear regression equation $\widehat{Y} = -18{,}86970257 + 0{,}385695364X_1 + 0{,}260272591X_2 + 0{,}599196062X_3$. As for the relative donation of X_1 38.54162209%, the relative contribution of X_2 is 12.84614883% and X_3 48.61222907%, as well as the effective donation X_1 of 32.47016786% effective donation X_2 of 10.8224975% and X_3 of 40.95435408%.

REFERENCES

Arikunto Suharsimi.2012. Dasar-Dasar Evaluasi Pendidikan.Jakarta: Bumi Aksara.

Cece Wijaya, Tabrani Rusyan.1999.Kemampuan Dasar Guru Dalam Proses Belajar-Mengajar.Bandung: PT REMAJA ROSDAKARYA.

Departemen Pendidikan Nasional, 2003. Undang-Undang Nomor 20 Tahun 2003, Tentang Sistem Pendidikan Nasional, Jakarta: Depdiknas

Dewa Ketut Sukardi.2003.Analisis Tes Psikologi Dalam Penyelenggaraan Bimbingan di Sekolah.Jakarta: Rineka Cipta

Herman Hudojo.2006.Pengembangan Kurikulum Matematika dan Pelaksanaanya di depan Kelas.Surabaya: USAHA NASIONAL.

Slameto.2013.Belajar dan Faktor-Faktor yang Mempengaruhi.Jakarta:Rineka Cipta.

Sukardjono. 2007.Filsafat dan Sejarah Matematika.Jakarta: Universitas Terbuka.

Sugiyono.2015.Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D.Bandung: Alfabeta.

Slameto.2003.Belajar dan Faktor-Faktor Yang Mmpengaruhinya.Jakarta: Rineka Cipta.