THE RELATIONSHIP BETWEEN NUMERICAL ABILITY AND THE ROLE OF PEERS AGAINST MATHEMATICS LEARNING OUTCOMES IN STUDENTS CLASS VIII OF SMP NEGERI 2 SANDEN

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ABSTRACT

Lack of numerical ability and inappropriate peer roles are thought to be some factors related to mathematics learning outcomes. Therefore, this study aims to determine whether or not a positive and significant relationship between the numerical ability and the role of peers to the results of learning mathematics eight grade class of SMP Negeri 2 Sanden Bantul regency in the academic year of 2016/2017. The population in this study are all students of eighth grade class of SMP Negeri 2 Sanden in the academic year of 2016/2017, which consists of 8 classes with a total of 217 students. Sample technique using random sampling technique and obtained eight grade class as a sample class. The technique of data retrieval is done by questionnaire method to know peer role, as well as a test method to know numerical ability and result of student learning of mathematics. Test of research instrument using validity test, reliability test, and different power test. 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 that there is a positive and significant relationship of numerical ability and the role of peers to the results of teaching mathematics students of eighth grade class of SMP Negeri 2 Sanden Bantul regency in the academic year of 2016/2017. This is shown by $F_{count} = 4.051642194 \geq F_{tabel} = 3.39$. Coefficient of double correlation $(R) = 0,4947604752$ and linear regression equation $\hat{Y} = 16,11822912 + 0,3822734012\ X_1 + 0,3787961883\ X_2$. Relative contribution (RC) $X_1 = 58,7233\%$ and (RC) $X_2 = 41,2767\%$ and Effective Contribution(EC)$X_1 = 14,3748\%$ and (EC)$X_2 = 10,1040\%$.

Keywords: Numerical Ability, Peer Role, Mathematics Learning Outcomes

INTRODUCTION

In the world of education, mathematics becomes a science that holds essential aspects of life. Expressed by Ruseffendi ET (Suherman, Erman, 2003: 16), Mathematics is formed as a result of human thought related to ideas, processes, and reasoning. The function of mathematics itself as tools thought patterns, and knowledge or knowledge. Knowing the function of mathematics is expected as a teacher or manager of mathematics education can understand the relationship between mathematics and various other sciences in life. As a follow-up, it is expected that students are explained to see various examples of the use of mathematics as a tool to solve problems in other subjects in the world of work or everyday life.

The low learning outcomes in SMP Negeri 2 Sanden, Bantul Regency, 2016/2017 Academic Year, can be seen from the odd semester Semester Exam scores of Grade VIII students with CCM 75, 212 have not yet reached CCM out of 217 students. This shows that the results of student mathematics learning are still low. According to Ula, Shoimatul (2013: 18-29), several factors that influence learning are divided into two categories: internal factors consisting of physiological and psychological factors as well as external factors consisting of environmental factors and contributory factors.

Mathematics is dominated by solving problems with arithmetic operations, symbols, and formulas, so students need to have numerical ability to support high learning outcomes. According to Samekto (1987: 9), the numerical ability is the ability to calculate operations that include operations of addition, subtraction, multiplication, division, removal, pulling roots, and the ability to manipulate

numbers and symbols of numbers. This numerical ability of each student is different. Numerical ability is vital, and this ability can be known through numerical ability tests. In the book Ki Fudyartanta (2010: 68), Numerical Ability Test: Designed to measure the ability to understand numerical relationships and solve problems related to numerical concepts (numbers). Numeric Ability tests measure computing ability (calculations) rather than numerical reasoning. Numeric Abilities test results are significant for predictions in mathematics, physics, chemistry, engineering, and other fields that require quantitative thinking skills. For example, accounting, statistics, and assistant laboratory assistant.

Peers have a role in student learning outcomes, while peers, according to Santrock, John W (2003: 219), are children or adolescents with the same level of maturity. According to Slameto (2010: 71) states that the influences of students' peers more quickly enter the soul than we thought. The involvement of good peers will have a good effect on students, and vice versa, bad peers, will undoubtedly affect the bad ones. Bad peers such as those who like to stay up late, wandering, smoking addicts, movies, drinking, even more immoral peers, perms, drunks, etc., will surely drag students to the threshold of danger and will surely learning becomes messy. In order for students to learn well, it is necessary to make efforts for students to have good peers and to develop good relationships and supervision from parents.

The formulation of the problem in this study is: 1) Is there a positive and significant relationship between numerical ability and mathematics learning outcomes? 2) Is there a positive and significant relationship between the roles of peers and mathematics learning outcomes? 3) Is there a positive and significant relationship between numerical ability and the role of peers on learning outcomes?

This study's objectives are 1) To find out whether there is a positive and significant relationship between numerical ability and mathematics learning outcomes. 2) To determine whether there is a positive and significant relationship between the role of peers and mathematics learning outcomes. 3) To determine whether there is a positive and significant relationship between numerical ability and the role of peers in mathematics learning outcomes.

RESEARCH METHOD

The model of attachment between the variables in this study consisted of two independent variables: numerical ability, the role of peers, and one dependent variable, namely mathematics learning outcomes. The study was conducted at Sanden Public Middle School 2 in Bantul Regency 2016/2017 Academic Year for grade VIII students. The population in this study is all students of class VIII odd semester at Sanden 2 Public Middle School in Bantul Regency 2016/2017 consisting of 8 classes, namely VIII A, VIII B, VIII C, VIII D, VIII E, VIII F, VIII G, and VIII H.

In this study, the sampling technique used was random sampling using a class draw. After random sampling, class VIII C was obtained, consisting of 28 students as a research class. The techniques used in data collection are questionnaire techniques with questionnaires on the role variables of peers and test techniques to determine numerical abilities and mathematics learning outcomes. The prerequisite test with the normality test uses the Chi-Squared formula, the linearity test with the F-test formula, and the independence test with the Chi-Squared formula. Research hypothesis testing uses a simple correlation test and multiple regression analysis tests with two variables.

Research hypothesis testing with a simple correlation test is used to determine whether there is a positive and significant relationship between 1) numerical ability to student mathematics learning outcomes 2) the role of peers on student mathematics learning outcomes. Furthermore, the multiple regression analysis tests are used to determine whether there is a positive and significant relationship between numerical ability and the role of peers on student mathematics learning outcomes.

RESULTS AND DISCUSSION

Table 1. Distribution of student numbers by ability score category

Category	Score	f	%
High	X>77,950074	5	17,9
Medium	54,164212≤X≥77,950047	20	71,4
Low	X<54,164212	3	10,7
	Total	28	100

From the calculation results, it can be seen that most of the VIII C class of SMP Negeri 2 Sanden odd semester 2016/2017 Academic Year has a level of numerical ability frequency, which is located at intervals $54,164212 \leq X \leq 77,950074$ with a moderate category of 20 students or 71, 429%.

Table 2. Distribution of the number of students by peer role categories

Category	Score	f	%
High	X>83,396332	5	17,9
Medium	64,896464≤X≥83,396332	19	67,8
Low	X<64,8964648	4	14,3
	Total	28	100

Moreover, the results of the categorization, as seen it is known that the role of peers in class VIII Odd Semester of the 2016/2017 school year is included in the medium category because the highest frequency lies in the interval of $64,8964648 \leq X \leq 83,3963932$ namely 19 students or 67.857%.

Table 3. Distribution of students based on learning outcomes categories

Categories	Score	f	%
High	X>83,48661	5	17,9
Medium	56,87767≤X≥83,48661	17	60,7
Low	X<56,87767	6	21,4
	Total	28	100

From the results of the categorization as it can be seen that the learning outcomes of the eighth-grade students of the odd semester of SMP Negeri 2 Sanden in the 2016/2017 school year are included in the medium category because the most significant frequency is found at intervals of $56,87767 \leq X \leq 83,48661$ A total of 17 Students or 60.714%.

Table 4. Summary of normality test results

No.	Variable	X^2_{count}	X^2_{table}	df	Information
1	Numerical Ability	0,149	7,815	3	Normal
2	The Role of Peers	1,289	7,815	3	Normal
3	Mathematics learning outcomes	4,415	7,815	3	Normal

Table 5. Summary of independent test results

No.	Variable	X^2_{count}	X^2_{table}	Information
1	X_1 and X_2	24,216	37,652	Independent

Table 6. Summary of linearity tests

No.	Variable	X^2_{count}	X^2_{table}	Information
1	X_1 and Y	1,760	2,494	Linear
2	X_2 and Y	0,821	3,455	Linear

Table 7. Hypothesis Test

Hypothesis	t_{count}	t_{table}	df	Information
1	2,289	1,705	26	H_0 rejected
2	1,943	1,705	26	H_0 rejected
3	4,052	3,39	$v_1 = 2$ $v_1 = 25$	H_0 rejected

The first hypothesis test result is that there is a positive and significant relationship between numerical ability and mathematics learning outcomes. In other words, students who can work on math problems have a high numerical ability. In this case, students can work on problems correctly with small and large numbers and understand the operation of these numbers. Students can also develop their numerical abilities if the student is accustomed to practicing counting problems.

The second hypothesis test result is that there is a positive and significant relationship between the roles of peers and mathematics learning outcomes. In other words, students who can have good peers have a positive effect on their learning. Diligent peers will be encouraging for students to study diligently, remind their friends if there are assignments, and help in learning also make students more comfortable to accept lessons. On the contrary, it can be seen that lazy peers will also make students lazy in learning. Consequently, it will affect low learning outcomes.

The third hypothesis test result is that there is a positive and significant relationship between numerical ability and the role of peers with mathematics learning outcomes. The higher the numerical ability of students, the higher the learning outcomes obtained, especially if the student can get along with good peers, which will positively influence students. Good peers will encourage students to be good, too, especially in achieving high learning outcomes.

CONCLUSION

1. There is a positive and significant relationship between numerical ability on mathematics learning outcomes of students of class VIII of SMP Negeri 2 Sanden odd semester of the 2016/2017 school year which is indicated by t-test namely $t_{count} > t_{table}$ or $2.317245311 > 1.7056$ simple correlation coefficient (r) between the numerical ability to mathematics learning outcomes of 0.4137303139 with a linear regression equation $\hat{Y} = 39{,}59819851 + 0{,}452579496\, X_1$.

2. There is a positive and significant relationship between the role of peers on the learning outcomes of students of class VIII SMP Negeri 2 Sanden odd semester of the 2016/2017 school year which is indicated by t-test namely $t_{count} > t_{table}$ or $1.942783375 > 1.7056$ simple correlation coefficient (r) between peers towards mathematics learning outcomes of 0.3560432989 with a linear regression equation $\hat{Y} = 34{,}05069525 + 0{,}479606025 X_2$.

3. There is a positive and significant relationship between numerical ability and the role of peers in the mathematics learning outcomes of Grade VIII students of SMP Negeri 2 Sanden odd semester 2016/2017 academic year. This is indicated by the F-test that is $F_{count} > F_{table}$ or $3.977692607 > 3.39$. The multiple correlation coefficient (R) between numerical ability and peers on mathematics learning outcomes is 0.4913233572 and (R^2) is 0.241398641 with multiple linear regression equation $\hat{Y} = 17{,}02484309 + 0{,}3813744924 X_1 + 0{,}3675800303\, X_2$. The relative contribution of X_1 is 59.75257592%, and the relative contribution of X_2 is 40.224742408%, and the amount of effective contribution X_1 is 14.42419064%, and the effective contribution of X_2 is 9.71567349%.

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