THE RELATIONSHIP BETWEEN UNDERSTANDING BASIC CONCEPTS, CREATIVITY PROBLEM SOLVING, AND UTILIZATION OF LEARNING RESOURCES WITH STUDENTS MATHEMATICS LEARNING OUTCOMES

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ABSTRACT

This research aims to know if there is a positive and significant of Relationship between Understanding Basic Concepts, Creativity Problem Solving, and Utilization of Learning Resources with Students Mathematics Learning Outcomes in Class VII in State Junior High School (SMP Negeri) 1 Bambanglipuro Bantul Regency of Even Semester Academic Year of 2016/2017. The sample class in SMP Negeri 1 Bambanglipuro Bantul in 2016/2017 consists of 7 classes. A sample class is a class VII D using random sampling. Data collection instruments using an Understanding Basic Concepts test, Creativity Problem-Solving test, questionnaires Utilization of Learning Resources, and mathematics achievement test. Test research instruments used validity, different test power, and Reliability test. Analysis prerequisite test, including normality test, linearity test, and independent test. Data analysis for hypothesis testing using correlation analysis and multiple regression analysis. The results showed a positive and significant relationship between Understanding Basic Concepts, Creativity Problem Solving, and Learning Resources with Mathematics Learning Outcomes. The significant level of 5%, v_1=3, v_2=23, F_{count}=4.3028 and F_{table}=3,0279,F_{count}> F_{table} with multiple correlation coefficient of R^2 = 0,3595, and multiple regression equation there variable is $\hat{Y}$= -81,06 + 0,3948X_1 + 1,3489X_2 + 1,0474X_3. Donations are relatively X_1=26,8851%, X_2=37,6980%, X_3=35,4168%, with multiple determination coefficient of 0,750 and the effective contribution X_1=9,6647%, X_2=13,5518%, X_3=12,7317%.

Keywords: Understanding Basic Concepts, Creativity Problem Solving, Utilization of Learning Resources, Mathematics Learning Outcomes

INTRODUCTION

Mathematics is one of the subjects that students respect because mathematics is a difficult subject and is identical to symbols and formulas. Often students have difficulty learning mathematics because they do not understand the basic mathematical concepts they are learning. To understand a mathematical subject, students must master the basic concepts of mathematics and the relationship between basic concepts.

Based on observations and interviews at SMP Negeri 1 Bambanglipuro on Wednesday, October 26, 2016, students still experience difficulties understanding mathematics in class VII-A. Some students feel confused in class when the teacher is giving lesson material orally. Then the student asks his friend to explain the explanation from the teacher again. Students' slowness proves that students have not been able to understand the basic concepts of mathematics correctly. This can be seen from the results of the mathematics midterm test (UTS) in class VII even semester of SMP Negeri 1 Bambanglipuro Bantul in the 2016/2017 school year shown in Table 1 below:

Table 1. The results of the midterm scores are even in the seventh-grade mathematics class at SMP Negeri 1 Bambanglipuro, Bantul

Class	VII A	VII B	VII C	VII D	VII E	VII F	VII G
Average	83,50	78,15	40,55	34,75	33,60	34,00	34,10
The highest	94,15	91,65	66	53	50	54	50
Lowest	50	50	0	19	16	17	20
MCC	75	75	75	75	75	75	75
≥ MCC	91,18%	77,14%	0%	0	0%	0%	0%
<MCC	8,82%	22,88%	100%	100%	100%	100%	100%

(Data Source: SMP Negeri 1 Bambanglipuro Bantul)

Through observation, many students solve mathematical problems only work as what is given by the teacher and only from learning sources, namely student textbooks. Therefore, other learning resources are needed, in addition to student handbooks such as Student Worksheets (LKS) or others. Creativity skills are also needed to choose and apply the right way to solve the problem they face correctly.

According to Jamaris (2013), learning creativity is a mental activity related to human understanding of the environment. Student creativity is still weak to make students still have difficulty in learning mathematics. Based on researchers from Ms. Sri Herwulan, S.Pd., as a mathematics teacher at SMP Negeri 1 Bambanglipuro, Grade VII students' creativity is still not creative because in working on math problems sometimes it is not smooth, their curiosity lacks in working on problems mathematics.

According to Arif S. Sadiman (1989), outside students and facilitating the learning process are called learning resources. In learning activities, the teacher will act as familiar with full responsibility and provides textbooks to students to explore and process information towards the planned teaching and learning goals.

Based on the description of the background of the problem, research problems can be formulated as follows:

1. Is there a positive and significant relationship between understanding the basic mathematics concepts with mathematics learning outcomes of Grade VII students of SMP Negeri 1 Bambanglipuro in the even semester of the 2016/2017 school year?
2. Is there a positive and significant relationship between students' mathematics learning creativity and mathematics learning outcomes of Grade VII students of SMP Negeri 1 Bambanglipuro in the even semester of the 2016/2017 school year?
3. Is there a positive and significant relationship between the use of mathematics learning resources and mathematics learning outcomes of Grade VII students of SMP Negeri 1 Bambanglipuro in the even semester of the 2016/2017 school year?
4. Is there a positive and significant relationship between understanding the basic mathematics and student creativity concepts in learning mathematics with mathematics learning outcomes for students of class VII SMP Negeri 1 Bambanglipuro, even semester 2016/2017 school year?
5. Is there a positive and significant relationship between understanding the basic concepts of mathematics and using learning resources in mathematics with mathematics learning outcomes of Grade VII students of SMP Negeri 1 Bambanglipuro in the even semester of the 2016/2017 school year?
6. Is there a positive and significant relationship between students' mathematics learning creativity and the use of mathematics learning resources with mathematics learning outcomes for Grade VII students of SMP Negeri 1 Bambanglipuro in the even semester of the 2016/2017 school year?
7. Is there a positive and significant relationship between understanding the basic concepts of mathematics, students' mathematics learning creativity, and the use of mathematics learning resources with mathematics learning outcomes of Grade VII students of SMP Negeri 1 Bambanglipuro the even semester of the 2016/2017 school year?

In connection with the main problems formulated above, the objectives of this study are:

1. To determine whether there is a positive and significant relationship between understanding the basic mathematics concepts with mathematics learning outcomes in class VII SMP Negeri 1 Bambanglipuro even semester 2016/2017 school year.
2. To determine whether there is a positive and significant relationship between students' mathematics learning creativity and mathematics learning outcomes in VII grade SMP Negeri 1 Bambanglipuro even semester 2016/2017 academic year.
3. To determine whether there is a positive and significant relationship between mathematics learning resources and mathematics learning outcomes for Grade VII SMP Negeri 1 Bambanglipuro, even semester 2016/2017 academic year.
4. To determine whether or not there is a positive and significant relationship between understanding the basic concepts of mathematics and students' mathematics learning creativity with the results of learning mathematics in class VII SMP Negeri 1 Bambanglipuro even semester 2016/2017 academic year.
5. To determine whether or not there is a positive and significant relationship between understanding the basic concepts of mathematics and the use of mathematics learning resources with mathematics learning outcomes for VII grade students of SMP Negeri 1 Bambanglipuro in the even semester of the 2016/2017 school year.
6. To determine whether there is a positive and significant relationship between students' mathematics learning creativity and mathematics learning resources with mathematics learning outcomes for grade VII SMP Negeri 1 Bambanglipuro, even semester 2016/2017 academic year.
7. To find out whether or not there is a positive and significant relationship between understanding the basic concepts of mathematics, students' mathematics learning creativity, and utilizing mathematics learning resources with mathematics learning outcomes in VII grade SMP Negeri 1 Bambanglipuro even semester 2016/2017 academic year.

METHODS

This research is quantitative. The research site was conducted at SMP Negeri 1 Bambanglipuro Bantul. In contrast, the research was conducted in the even semester of the 2016/2017 school year. The population in this study were all eighth-grade students of SMP Negeri 1 Bambanglipuro Bantul in the even semester of the 2016/2017 school year, consisting of 4 classes consisting of classes VII A, VII B, VII C, VII D, VII E, VII F, VII F and VII G. In this study samples were taken at random using a random sampling technique for class. In the draw, class VII C was obtained as a sample class with 27 students, and grade VII D was a trial class with 27 students. In this study, there are two kinds of research variables: the independent and dependent variables. The independent variables in this study consisted of understanding the basic concepts (X_1), problem-solving creativity (X_2), and the use of learning resources (X_3).

In contrast, the dependent variable in this study was mathematics learning outcomes (Y). Data collection techniques used questionnaires and test methods. In this study, the questionnaire method was used to obtain data on the use of learning resources. The test method is used to obtain data on understanding basic concepts, problem-solving creativity, and mathematics learning outcomes of Grade VII Semester students of SMP Negeri 1 Bambanglipuro Bantul.

Analysis of the questionnaire instrument trial and test using content validity test by experts and product-moment correlation techniques. According to (Arikunto, Suharsimi 2013: 213) With the formula:

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

For different power, tests use the discrimination index formula (Arikunto, Suharsimi, 1981: 157-158). For the reliability test, the questionnaire instrument with alpha formula and the test instrument use the KR-20 formula (Arikunto, Suharsimi, 2005: 100-101). After the data has been collected, descriptive data analysis, analysis prerequisite tests, and hypothesis testing are performed. Analysis prerequisite tests that

must be met include normality test, linearity test, and independent test. To test the hypothesis used t-test and F-test. For the t-test (Sugiyono, 2015: 259), the formula is used:

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

Description:

$r =$ correlation coefficient

$n =$ number of samples

For the F-test (Sugiyono, 2015: 266-267) using the formula:

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

Description:

R = multiple correlation coefficient

k = number of independent variables

n = number of sample members

RESULTS AND DISCUSSION

The study results stated that the instrument is feasible to be presented or distributed to be filled by respondents. For the instrument trial analysis, based on the test of the validity of the numerical ability test, it was found that from 25 items, there were 22 valid items, and the mathematics learning achievement test obtained that from 25 items, there were 20 items that were declared valid, as shown in Table 2.

Table 2. Validity Test Results

Instrument	Number of Items	Total fall	No Autumn	Valid Amount
Understanding of Basic Concepts	25	4	9,15,18,22	21
Creativity Problem Solving	15	5	2,5,9,10, 13	10
Mathematical Learning Outcomes	25	5	13,15,22, 23,24	20

Based on the test results of the test of understanding the basic concepts, it is found that from 21 items, there are 12 items with good criteria and nine items with sufficient criteria. For the creativity test of problem-solving, it was found that out of 10 items, there were three items with excellent criteria, six items with the right criteria, and 1 item with sufficient criteria. Moreover, for the mathematics learning achievement test, it is found that from 20 items, there are ten items with good criteria, ten items with sufficient criteria, as shown in Table 3.

Table 3. Difference Test Results for Valid Item Tests

Criteria	No. Item Question		
	Basic Concept Understanding	Problem Solving Creativity	Mathematics Learning Outcomes
Very good	-	6,14,15	-
Good	1,2,3,4,6,8,10,11,12,13,24,25	3,4,7,8,11,12	1,2,5,6,7,8,10,18,19,25
Enough	5,7,15,16,17,19, 20,21,23	1	3,4,9,11,12,14,16, 17,20,21
Total	21	10	20

Based on the reliability test, it was stated that the instrument of understanding the basic concepts, the activity of solving problems, the utilization of learning resources, and the learning outcomes of mathematics were reliable with high criteria for instruments of understanding basic concepts and creativity in solving questions, as well as sufficient criteria for the use of learning resources as shown in Table 4.

Table 4. Reliability Test Results

Instrument	Number of Grains	r_{count}	Criteria
Basic Concept Understanding	25	0,783	High
Problem Solving Creativity	15	2,408	High
Utilization of Learning Resources	25	0,842	High
Mathematics Learning Outcomes	25	0,781	High

For the prerequisite analysis test in the normality test, it was found that the four variables understood basic concepts, creativity in solving problems, utilizing learning resources, and learning outcomes of mathematics with a normal distribution, as shown in Table 5.

Table 5. Summary of Normality Test Results

Variable	χ^2_{count}	χ^2_{table}	*df*	Info.
Basic Concept Understanding (X_1)	3,807	7,815	3	Normal
Problem Solving Creativity (X_2)	5,901	5,991	2	Normal
Utilization of Learning Resources (X_3)	4,527	5,991	2	Normal
Mathematics Learning Outcomes (Y)	7,466	7,815	3	Normal

Furthermore, based on the linearity test, it was found that the variables of understanding basic concepts with mathematics learning outcomes, creativity in solving problems with mathematics learning outcomes, and the use of learning resources with mathematics learning outcomes had a linear relationship, as shown in Table 6.

Table 6. Summary of Linearity Test Results

Variable	F_{count}	F_{table}	Info.
X_1 and Y	-21,911	3,47	Linear
X_2 and Y	0,949	2,99	Linear
X_3 and Y	2,477	3,6	Linear

Furthermore, based on the independent test, it was found that the variables of understanding basic concepts and creativity in solving questions, creativity in solving questions and utilizing learning resources as well as understanding basic concepts and using learning resources were independently related, as shown in Table 7.

Table 7. Summary of Independent Test Results

Variable	χ^2_{count}	χ^2_{table}	*df*	Info.
X_1 and X_2	25,971	37,652	25	Independent
X_2 and X_3	27,715	37,652	25	Independent
X_1 and X_3	20,945	37,652	25	Independent

To test the hypothesis, the first hypothesis test results show a positive and significant relationship between understanding basic concepts and mathematics learning outcomes. The research results were obtained $t_{count} = 1.7477$ and $t_{table} = 1.7081$ at a significant level of 5% with a simple correlation coefficient (r) of 0.33. This can be explained by a linear relationship $\hat{Y}$ = 35,575 + 0,4448 X_1. This means that if the understanding of basic concepts is higher, learning mathematics will increase. This calculation shows that the higher the understanding of basic concepts, the learning outcomes of mathematics will increase, and vice versa.

The second hypothesis test result is a positive and significant relationship between creativity in solving problems with mathematics learning outcomes. The research results were obtained $t_{count} =$ 2,4874 and $t_{table} = 1,7081$ at a significant level of 5% with a simple correlation coefficient (r) of 0.3974.

This can be explained by a linear relationship $\hat{Y}$ = 9,0416 + 1,5716 X_2. This means that if creativity in solving problems is higher, learning mathematics will increase. This calculation shows that the higher the creativity of the student's problem solving, the higher the mathematics learning outcomes will be, and vice versa.

The third hypothesis test result is that there is a positive and significant relationship between learning resources and mathematics learning outcomes. The research results were obtained $t_{count} =$ 2,297 and $t_{table} =$ 1,7081 at a significant level of 5% with a multiple correlation coefficient (r) of 0.4175. This can be explained by a linear relationship $\hat{Y}$ = -34,183 + 1,4336 X_3. This means that if the utilization of learning resources is higher, learning mathematics will increase. The results of these calculations indicate that the higher the use of learning resources, the higher the learning outcomes of mathematics, and vice versa.

The fourth hypothesis test result is a positive and significant relationship between understanding basic concepts and creativity in solving problems with mathematics learning outcomes. The research results were obtained $F_{count} =$ 4,4938 and $F_{table} =$ 3,3852 at a significant level of 5% with a multiple correlation coefficient (R) of 0.5219. This can be explained by a linear relationship $\hat{Y}$ = -21,775 + 0,4564 X_1 + 1,6 X_2. This means that if basic concepts and creativity in solving problems are higher, learning mathematics will increase. Meanwhile, the relative contribution of X_1 was 26.8851%, and X_2 was 37.6980%. The effective contribution of X_1 was 9.6647%, and X_2 was 13.5518%. The results of these calculations show that the higher the understanding of basic concepts and creativity in solving problems, the higher the learning outcomes of mathematics and vice versa.

The fifth hypothesis test result is a positive and significant relationship between creativity in problem-solving and learning resources with mathematics learning outcomes. The research results were obtained $F_{count} =$ 4,5686 and $F_{table} =$ 3,3852 at a significant level of 5% with a multiple correlation coefficient (R) of 0.5251. This can be explained by a linear relationship $\hat{Y}$ = -63,9230 + 1,2872 X_2 + 1,2045 X_3. This means that if the creativity of solving problems and learning resources is higher, learning mathematics will increase. Meanwhile, the relative contribution of X_2 was 37.6980%, and X_3 was 35.4168%. The effective contribution of X_2 is 13.5518%, and X_3 is 12.7317%. This calculation shows that the higher the creativity in solving problems, and the use of learning resources, the higher the mathematics learning outcomes will be, and vice versa.

The sixth hypothesis test result is that there is a positive and significant relationship between understanding basic concepts and learning resources with mathematics learning outcomes. The research results were obtained $F_{count} =$ 5,2868 and $F_{table} =$ 3,3852 at a significant level of 5% with a multiple correlation coefficient (R) of 0.4983. This can be explained by a linear relationship $\hat{Y}$ = -48,9462 + 0,3708 X_1 + 1,2963 X_3. This means that if the understanding of basic concepts and utilization of learning resources is higher, learning mathematics will increase. While the relative contribution of X_1 was 26.8851%, and X_3 was 35.4168%. The effective contribution of X_1 was 9.6647%, and X_3 was 12.7317%. The results of this calculation show that the higher the understanding of basic concepts and the use of learning resources, the learning outcomes of mathematics will increase, and vice versa.

The seventh hypothesis test result is that there is a positive and significant relationship between understanding basic concepts, creativity in solving problems, and utilizing learning resources with mathematics learning outcomes. The research results were obtained $F_{count} =$ 4,3028 and $F_{tabel} =$ 3,0279 at a significant level of 5% with a multiple correlation coefficient (R) of 0.5995. This can be explained by a linear relationship $\hat{Y}$ = -81,06 + 0,3948 X_1 + 1,3489 X_2 + 1,0473 X_3. This means that if the understanding of basic concepts, creativity in solving problems, and learning resources are high, learning mathematics will increase. While the relative contribution of X1 was 26.8851%, X_2 was 37.6980%, and X_3 was 35.4168%. The effective contribution of X_1 is 9.6647%, X_2 is 13.5518%, and X_3 is 35.9482%. The results of this calculation show that the higher the understanding of basic concepts, creativity in solving problems, and the use of learning resources, the learning outcomes of mathematics will increase, and vice versa. The double coefficient of determination is 0.3594. This proves that students' mathematics learning outcomes are related to understanding basic concepts, creativity in solving questions and using

learning resources by 35.94%. In comparison, 64.06% is related to other factors not discussed in this study.

CONCLUSION

Based on the results of research and discussion, several research conclusions can be drawn as follows:

1. There is a positive and significant relationship between understanding basic concepts and mathematics learning outcomes of grade VII students at SMP Negeri 1 Bambanglipuro, even semester, 2016/2017 academic year. This is indicated by the t-test, namely $t_{count} > t_{table}$ or 1.7477> 1.7081. The simple correlation coefficient (r) between understanding basic concepts and learning outcomes of mathematics is 0.33 with a linear regression equation $\hat{Y} = 35{,}575 + 0{,}4448\ X_1$.
2. There is a positive and significant relationship between the creativity of solving problems and the mathematics learning outcomes of grade VII students of SMP Negeri 1 Bambanglipuro, even semester, 2016/2017 academic year. This is indicated by the t-test, namely $t_{count} > t_{table}$ or 2.4874> 1.7081. The simple correlation coefficient (r) between creativity in solving problems with mathematics learning outcomes is 0.3974 with a linear regression equation $\hat{Y} = 9{,}0416 + 1{,}5716\ X_2$
3. 3. There is a positive and significant relationship between the use of learning resources and the mathematics learning outcomes of grade VII students of SMP Negeri 1 Bambanglipuro, even semester, 2016/2017 academic year. The t-test indicates this, namely $t_{count} > t_{table}$ or 2.297> 1.7081. The simple correlation coefficient (r) between learning resources and mathematics learning outcomes is 0.4175 with a linear regression equation $\hat{Y} = -34{,}183 + 1{,}4336\ X_3$.
4. 4. There is a positive and significant relationship between understanding basic concepts, creativity in solving problems with the mathematics learning outcomes of grade VII students of SMP Negeri 1 Bambanglipuro in the even semester of the 2016/2017 academic year. This is indicated by the F-test, namely $F_{count} > F_{table}$ or 4,4938 > 3,3852. The multiple correlation coefficient (R) between the understanding of basic concepts, creativity in solving problems with the mathematics learning outcomes of grade VII students of SMP Negeri 1 Bambanglipuro even semester of 2016/2017 academic year with mathematics learning outcomes of 0.5219 with multiple linear regression equations $\hat{Y} = -21{,}775 + 0{,}4564\ X_1 + 1{,}6\ X_2$.
5. There is a positive and significant relationship between creativity in solving questions, using learning resources, and the mathematics learning outcomes of grade VII students of SMP Negeri 1 Bambanglipuro in the even semester of the 2016/2017 academic year. The F-test indicates this, namely $F_{count} > F_{table}$ or 4.5686> 3.3852. Multiple correlation coefficient (R) between creativity in solving problems, utilization of learning resources with mathematics learning outcomes is 0.5251 with multiple linear regression equation $\hat{Y} = -69{,}923 + 1{,}2872\ X_2 + 1{,}2045\ X_3$.
6. There is a positive and significant relationship between understanding basic concepts, using learning resources, and the mathematics learning outcomes of seventh-grade students of SMP Negeri 1 Bambanglipuro, even semester, 2016/2017 academic year. The F-test indicates this, namely $F_{count} > F_{table}$ or 5.2868> 3.3852. The multiple correlation coefficient (R) between understanding basic concepts, utilizing learning resources, and mathematics learning outcomes is 0.667 with a linear regression equation $\hat{Y} = -48{,}9462 + 0{,}3708\ X_1 + 1{,}2963\ X_3$.
7. There is a positive and significant relationship between understanding basic concepts, creativity in solving questions, utilizing learning resources, and mathematics learning outcomes for grade VII students of SMP Negeri 1 Bambanglipuro, even semester, 2016/2017 academic year. The F-test indicates this, namely $F_{count} > F_{table}$ or 4.3028> 3.0279. The multiple correlation coefficient (R) between understanding basic concepts, creativity in solving problems, utilizing learning resources with mathematics learning outcomes is 0.5995 with linear regression equations $\hat{Y} = -81{,}06 + 0{,}3948\ X_1 + 1{,}3489\ X_2 + 1{,}0473\ X_3$.

Based on the preceding, of the three independent variables dominant in mathematics learning outcomes is creativity in solving problems.

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