CONTRIBUTION OF TEACHERS' UNDERSTANDING OF MATHEMATICAL CONCEPTS TO STUDENTS' UNDERSTANDING OF MATHEMATICAL CONCEPTS IN GRADE 3 ELEMENTARY SCHOOL IN BULELENG SUBDISTRICT

N. M. Aristya Dewi, Gd. Suweken, I G. N. Yudi Hartawan
Mathematics Education Department Fakulti of Math and Science Ganesha University of Education
e-mail: aristya_dewi77@yahoo.co.id

ABSTRAK

Penelitian ini bertujuan untuk mengetahui kontribusi pemahaman konsep matematika guru terhadap pemahaman konsep matematika siswa kelas III SD di Kecamatan Buleleng. Penelitian ini merupakan penelitian yang bersifat *ex-post facto*. Populasi dari penelitian ini adalah kelas III SD di Kecamatan Buleleng yang jumlahnya 87 kelas. Sampel ditentukan dengan teknik *Cluster Random Sampling.* Hal ini dikarenakan kelas III SD yang diteliti terbagi ke dalam 15 gugus. Dalam penelitian ini, ukuran sampel yang digunakan adalah 21 sampel. Pengumpulan data dilakukan dengan mengadakan tes pemahaman konsep matematika guru dan tes pemahaman konsep matematika siswa. Data yang diperoleh kemudian dianalisis menggunakan analisis korelasi sederhana dan regresi linear sederhana. Hasil penelitian menunjukan bahwa pemahaman konsep matematika guru tergolong baik dengan rata-rata skor 66,67. Pemahaman konsep matematika siswa tergolong cukup baik dengan rata-rata skor 47,87. Selanjutnya, kontribusi pemahaman konsep matematika guru terhadap pemahaman konsep matematika siswa adalah sebesar 25,3%. Artinya, sekitar 25,3% variasi dalam pemahaman konsep matematika siswa dijelaskan oleh pemahaman konsep matematika guru, sedangkan sisanya 74,7% ditentukan oleh variabel lain yang tidak diteliti.

Kata-kata kunci: pemahaman konsep matematika guru, pemahaman konsep matematika siswa

ABSTRACT

The main objective of this research was to determine the contribution of teachers' understanding of mathematical concepts to students' understanding of mathematical concepts in grade 3 elementary school in Buleleng Subdistrict. This research is an ex-post facto research. Population of this research is all 3rd grade in Buleleng Subdistric consisting of 87 classes. Samples were determined by cluster random sampling technique. This is because the grade 3 which were observed divided into 15 clusters. In this research, the sample size used was 21 samples. Data was collected by using a test of conceptual understanding for teachers and for students. Then the data were analyzed using simple correlation analysis and simple linear regression analysis. The results showed that teachers' understanding of mathematical concepts is good with an average score of 66.67 and students' understanding of mathematical concepts is quite good with an average score of 47.87. Furthermore, the contribution

of teachers' understanding of mathematical concepts to students' understanding of mathematical concepts is 25.3%. This means that about 25.3% of the variation in students' understanding of mathematical concepts can be explained by the teacher understanding of mathematical concepts, while the remaining 74.7% is determined by other variables that are not investigated.

Keywords: *teachers' understanding of mathematical concepts, students' understanding of mathematical concepts*

INTRODUCTION

Education is one of the critical success factors in improving the development of human resources to realize the ideals of national development. Education in Indonesia begins with elementary school. One of the main subject in elementary school is mathematics. Mathematical proficiency is needed by human at the early age of development, especially when children are in elementary school. Mathematics needs to be mastered by elementary school students to help them understand the knowledge that will be received later at the higher education level.

The National Education Minister Regulation No. 22 of 2006 on the Content Standards of Mathematics Subjects stated that mathematics courses in elementary school intended to make students have the ability to: 1) understand mathematical concepts, explain the relationship between concepts and apply concepts or algorithms in a flexible, accurate, efficient, and precise in problem solving, 2) using the reasoning in pattern and properties, perform mathematical manipulation in making generalizations, compile evidence, or explain the ideas and mathematical statements, 3) solve problems that include the ability to understand a problem, design a mathematical model, solve the model and interpret the obtained solution, 4) communicate ideas with symbols, tables , diagrams, or other media to clarify the situation or problem, and 5) have the attitude to appreciate the usefulness of mathematics in life, have curiosity, attention and interest in studying mathematics, as well as a tenacious attitude and confidence in solving problems.

The objectives described above until now is a difficult thing to achieve. This is reflected in the quality of mathematics education in Indonesia is still low. UNESCO in 2012 reported that Indonesia is ranked 64th out of 120 based on the assessment Education Development Index (EDI). In addition, the average achievement of Indonesian participants in the Trends in International Mathematics and Science Study (TIMSS) is not very satisfactory. TIMSS represents the range of abilities of learners into four categories, namely proficient standard (625), a high standard (550), intermediate standard (475), and a low standard (400). In the TIMSS 2011, the average achievement of Indonesian participants is 386, which means Indonesia is at a low level. Achievement of the average Indonesian participant in TIMSS 2011 decreased from the average achievement in TIMSS 2007 that is 397, although the framework of TIMSS 2011 is no different with the framework of TIMSS 2007. The lowest average persentage of Indonesian students' achievement is on the cognitive domain. One cause of this low achievement is the lack of understanding of mathematical concepts.

Conceptual understanding is the ability in the form of mastery of a subject matter, where students not only know or remember the number of concepts studied, but also were able to express in another form that is easy to understand, providing interpretation of data and is able to apply the concept in accordance with cognitive structures holds.

Conceptual understanding is the most important in the study of mathematics as Zulkardi (2003: 7) stated that "mathematics courses emphasize the concept". According to Jerome Bruner

(in Asikin, 2004) in his theories ie construction theory, notation, contrast and variation, as well as the connectivity stated that learning mathematics is learning about the concepts and structures of mathematics contained in the materials, studied and search for connections between concepts and structures. Understanding of a concept and structure will facilitate the transfer. In other words, understanding a concept is to understand the concept by converting the information into a meaningful form.

According to Bruner (in Asikin, 2004), to instill mathematical concepts, teachers are asked to provide a learning experience in the form of examples relates to a mathematical concepts of the various forms in accordance with the cognitive structure of students and students are also given the opportunity to try define the concept with their own language. To do this, of course, teachers have to have a correct understanding of the concept so that learning process with understanding can be reached.

At first glance the concept of mathematics given to elementary students is simple and easy, but the actual material contains concepts that are fundamental and important and should not be considered trivial. Accuracy is required in presenting these concepts, so that students are able to understand it correctly, because the impressions and views that students have received on a concept in elementary school can be carried over to the next period.

For example, if from the beginning in a triangle, the teacher always point out that the base of a triangle is the side that is on the bottom and the altitude is always indicated by the vertical line segment that perpendicular to the side of the base and ends in a point angle over the side, henceforth student will continue to do the same. If in a triangle, has no horizontal side, then students will confuse to make the base, because the students have accepted an understanding of the base as the horizontal side of the triangle and is in the bottom.

With regard to the concept of the base of a triangle, actually its three sides have an equal chance to be selected as the the base, and the altitude indicated by the line through one vertex of the triangle and perpendicular to the side in front of it. Thus, the base of a triangle is not necessarily the bottom side and the altitude of a triangle also not always be determined by a vertical line segment, because the altitude depends on the base that chosen.

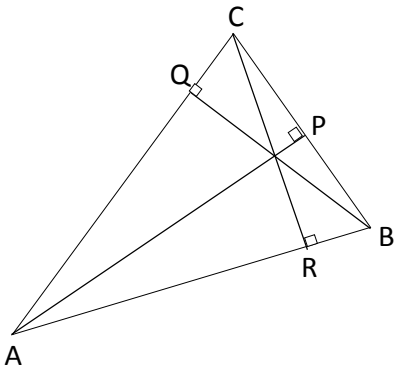

Figure 1. The base and the altitude of the ABC triangle

As an example in Figure 1, if the base is AB, the altitude is CR, if the base BC, the altitude is the AP, and if the base is AC, the altitude is BQ.

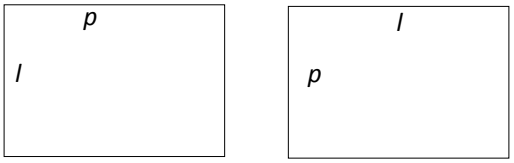

Figure 2. The length and width of rectangle

Another example that is still associated with the literal context of the term is the concept of a rectangle. Many have argued that the length of a rectangle is always longer than the width. Given a rectangle with sides of length is 12 cm and 5 cm, then a lot of students will set the side with a size of 12 cm as the length and side with a size of 5 cm as the width. Setting literal context of the term length and width of the rectangle could become a question for students when they are faced with real problems. For example, if we go to a textil store, the seller will only ask how length the fabric is needed, because the width of the fabric has been set, for example 1.5 m. If we buy fabric with a length of 1 m, then we will get the fabric in rectangular-shaped with a length of 1 m and a width of 1.5 m. Based on real examples, it appeared that "the length" of a rectangle can be shorter than "the width". Therefore, in the concept of a rectangle, the term length and width does not need to be literally set, because that term emerged as a name to distinguish the size of the sides of a rectangle.

Students who do not get the concept of integer multiplication correctly at the time in elementary school, will argue that the concept of 2×3 and 3×2 are same. Actually 2×3 and 3×2 only similar in the level of computational results, and this shows the commutative principle in integer multiplication. The concept of 2×3 differs from the concept of 3×2, for $2\times3=3+3$ and $3\times2=2+2+2$. The most obvious illustration of this concept is in the use of prescription. Usually written on the packaging of a drug, for example 3×1 tablet taken daily. This does not indicate that the drug is taken 3 tablets at once in a single use, but it provides an indication that the use of the drug in a day is 1 tablet in the morning, 1 tablet in the afternoon and 1 tablet in the evening, so 3×1 has the understanding of 1 + 1 + 1.

The examples above show that the mathematical concepts need to be rendered correctly from the beginning when the students were familiar with the concept, because first impressions captured by students will continue to be recorded and became his views in later period. If there is a concept that given incorrectly, then this should be corrected as soon as possible so as not to cause difficulties for students in the future.

An understanding of mathematical concepts correctly absolutely required by a teacher before they begin to teach students (Prihandoko, 2005). These efforts are urgently required, especially for elementary school teachers who will teach mathematical concepts to elementary school students.

Teachers' understanding of the mathematical concepts is theachers' ability in the form of mastery of a number of mathematics materials, where teachers not only know or remember the number of concepts but can restate their knowledge both in speech and in writing to the student so that the student really understand what being delivered.

Basically, an elementary school teacher should master mathematical concepts correctly and are able to present it in an interesting and appropriate to the developmental level of students, because according to the theory of cognitive development Piaget, cognitive development of elementary school students are at the concrete operational level, the students will be able to understand a concept if they manipulate concrete objects. Elementary school teachers play an

important role in conveying the mathematical concepts to students who have a concrete level, because of errors in delivering a concept by teachers fatal to the students in dealing with the next problems that are still associated with the concept.

Based on such review, it is implied that the teachers' understanding of mathematical concepts affect the ability of students' mathematical concepts. It is also implied in Liping Ma research (2009), which showed that elementary school teachers in China have an understanding of fundamental mathematics concepts deeper than the elementary school teachers in the United States (US). The study was motivated by the success of Chinese students in mathematics olympiad when compared to US students. Liping Ma (2009) feels that the success of the student is influenced by the ability of teachers, therefore Liping Ma simply comparing teachers' understanding of fundamental mathematics of the two countries with the exclusion of the influence of other factors. Yet in the world of education, particularly in mathematical learning process there are many other factors which could affect the ability of students so it is possible that teachers' conceptual understanding actually do not have a significant effect. Under these conditions, I believe still needs to be done a research to learn how far the level of the relationship and the contribution of teachers' understanding of mathematical concepts to students' understanding of mathematical concepts.

This study will be conducted at grade 3 in elementary school. In grade 3, students begin given a deep understanding of the lesson material and at this level, especially in mathematics, the students were interested in mathematics (NCTM, 2000).

Based on this, I conducted a study entitled "Contributions of Teachers' Understanding of Mathematical Concepts to Students' Understanding of Mathematical Concept in Grade 3 of Elementary School in Buleleng Subdistrict".

Based on the background described above, problems of this research formulated as follows: (1) How is teachers' understanding of mathematical concepts in grade 3 of elementary school in Buleleng Subdistrict?, (2) How is students' understanding of mathematical concepts in grade 3 of elementary school in Buleleng Subdistrict?, and (3) How much is the contribution of teachers' understanding of mathematical concepts to students' understanding of mathematical concepts in grade 3 of elementary school in Buleleng Subdistrict?

The purpose of this study are: 1) to find out how is teachers' understanding of mathematical concepts in grade 3 of elementary school in Buleleng Subdistrict, 2) to find out how is students' understanding of mathematical concepts in grade 3 of elementary school in Buleleng Subdistrict, and 3) to find out how much the contribution of teachers' understanding of mathematical concepts to students' understanding of mahematical concept in grade 3 of elementary school in Buleleng Subdistrict.

The results from this research are expected to be used as an initial guide to determine policies in preparing the school program or curriculum that is able to accommodate the development of conceptual understanding mathematics for teachers and students.

METHOD

This research belong to the ex-post facto type research. This research aims to find out the contribution of teachers' understanding of mathematical concepts to students' understanding of mathematical concepts in 3rd grade of elementary school in Buleleng Subbdistric.

The population in this research is the 3rd grade of elementary school in Buleleng Subdistrict. In Buleleng Subdistrict there were 77 elementary schools consisting of 73 public school and four private elementary school, overall the number of grade 3 is 87 classes.

The sampling technique used in this study is a cluster random sampling technique, since it would examine the third grade elementary school located in Buleleng Subdistrict, which are divided into 15 groups. In this study, researchers took 21 samples. The sampling will be taken from each group by random sampling technique.

The study involved independent variables, namely the teachers' understanding of mathematical concepts and the dependent variable, namely the students' understanding of mathematical concepts.

In summary the research design can be seen in Figure 3.

Figure 3. Research Design (Source: Sugiyono, 2008:105)

Explanation:

X : teachers' understanding of mathematical concepts

Y : students' understanding of mathematical concepts

r_{xy} : Correlation of teachers' understanding of mathematical concepts to students' understanding of mathematical concepts

In this study, the steps taken are as follows.

a. Initial Scoping Phase
b. Instruments Preparation Phase
c. Testing Instrument Phase
d. Revision Instrument Phase
e. Data Collection Phase
f. Data Analysis and Hypothesis Testing Phase
g. Preparation of Reports Phase

The data collected in this study is data about teachers' understanding of mathematical concepts and students' understanding of mathematical concepts. The instrument used to measure the learning achievement of students in the form of test understanding of mathematical concepts for teachers and for students. These tests in the form of essay test which consists of ten items. The conceptual understanding test for teacher and for students will be different. Teachers' tests will be adjusted for the circumstances and the situation of teachers in the classroom as teachers delivering to students, but with the same indicator. The minimum score of each item is 0, while the maximum score is 2. Thus, the total maximum score is 20, while the total minimum score is 0. The test indicator conceptual understanding can be seen in Table 1.

Before the tests carried out on samples, expert judging should be performed first. Test experts conducted by two lecturers of mathematics education majors who have expertise in the field of mathematics education. The technique used in the test expert is an expert assessment developed by Gregory in Candiasa (2010a). The test then tested in ten third grade elementary school in Buleleng Subdistrict. Then the results of the test will be analyzed with regard of validity, reliability, difficulty indices, and different power items.

Table 1. Test indicator of understanding of mathematical concepts

No.	Aspects of the Concept which is Measured
1.	Defining the concept.
2.	Make examples and non examples
3.	Presenting a concept with a model, diagrams and symbols.
4.	Changing a representation form to another form.
5.	Recognize the various meanings and interpretations of the concept.
6.	Identify properties of a concept and know the conditions that determine a concept.
7.	Comparing and contrasting concepts.

(modified from NCTM, 1989: 223)

Validity test conducted using the correlation product moment formula. Based on the results of the analysis of trial test for students' understanding of concepts, obtained all items (10 items) is valid because has r value more than 0.130. When the review is based on difficulty indices, all items classified in the moderate category and when viewed from a different power test, the entire item is in excellent condition. Reliability test was conducted using Cronbach Alpha formula and the result is 0,800, which is included in the high category.

Then the results of the analysis of trial tests for teachers' understanding the concept, for its validity, all items is valid/ consistent because has r value more than 0.632. When the review is on difficulty indices, allt items classified in the moderate category based on different power tests, the entire item is in excellent condition. Results of test reliability was obtained 0.841, which is included in the very high category..

Research activities then continued with the collection of sample data, which is done by conducting test of an understanding of mathematical concepts test for teachers and for students.

Data obtained were then analyzed using descriptive analysis, simple correlation analysis, and simple linear regression analysis. Descriptive analysis is used to describe profile of teachers' understanding of mathematical concepts and profile of students' understanding of mathematical concepts. To determine whether there is a relationship between teachers' understanding and students' understanding simple correlation analysis is used. To determine the contribution of teachers' understanding of mathematical concepts to students' understanding of mathematical concepts, then a simple linear regression analysis is used. Through a simple linear regression analysis, regression equation between teachers' understanding of mathematical concepts (X) to students' understanding of mathematical concepts (Y) will be obtained.

Before hypothesis testing is conducted, assumptions test must conducted first as a precondition for analysis. The first assumptions test is the normality test. In this study, normality test of residual data tested through Normal Probability Plots and Kolmogorov-Smirnov test. Normality can be recognized or detected by looking at the distribution of the data (points) on the diagonal axis of the graph Normal Probability Plot of residual. By Kolmogorov-Smirnov test, distribution of residual data is normal if sig. value greater than the specified significance ~ .

Table 2. Hypothesis testing of normality test

No.	Hypothesis
1	Ho: distribution of residual data is normal.
2	Ha: distribution of residual data is not normal

Decision making:

- If the data are spread around the diagonal line and follow the direction of the diagonal line, then Ho is accepted.
- If the data are spread away from the direction of the line or do not follow the diagonal, then Ho is rejected.

The second assumption test is the linearity test and significance toward regression. Linearity tests is generally done simultaneously with significance toward regression tests. The statistical test applied to both test is a statistical test F (Candiasa, 2010b).

Table 3. Hypothesis testing of linearity test

No	Statistics Hypothesis
1.	H_o : Regression model is a linear
2.	H_a : Regression model is a not linear

Criteria for deciding is the relationship between the two variables be linear if F on the calculation (F-TC) is smaller than F table or when testing using SPSS, the relationship between the two variables be linear when sig. F Deviation From Linearity is greater than the specified significance ~ (Candiasa, 2010b).

Table 4. Hypothesis testing of significance toward regression

No	Statistics Hypothesis
1.	H_o: $_2 = 0$ There was no relationship between the variables X and Y.
2.	H_a: $_2 \neq 0$ There is a relationship between variables X and Y.

Criteria for deciding is the regression coefficient significant if the F on the calculation (F-reg) is greater than the F table or when testing using SPSS, regression coefficient significant when sig. Linearity of F is smaller than the specified significance ~ (Candiasa, 2010b).

The third assumption test is autocorrelation test using Durbin-Watson coefficients. Durbin Watson table contains two values, namely $d_L\ (d-Lower)$ and $d_U\ (d-Upper)$. If $d_U < d < 4 - d_U$ it means autocorrelation not occur.

The fourth assumption test is heteroscedasticity test. The technique used to perform heteroscedasticity test is to use a scatter plot of the residuals in linear regression module in SPSS 16.00 for windows and Glejser test which is done by regressing between independent variables with residual absolute value.

Criteria for deciding is if on the scatter diagram, residual forms a particular pattern which is wavy, dilated or constricted then it can be said that there are problems with heteroscedasticity. However, if on the scatter diagram residuals do not form a particular pattern which points on the scatter diagram is spread randomly around 0 and Y axis then there is no heteroscedasticity, thus further regression analysis can be done. While the deciding criteria in Glejser test is if the value of the significance between independent variables and absolute residual greater than 0.05 then there is no heteroscedasticity. If the assumption test has been fulfilled, then the next is hypothesis testing. Hypothesis testing is done by testing the null hypothesis (Ho) against the alternative hypothesis (Ha).

To test the null hypothesis (H0) student t statistic will be used.

$$t = \frac{r_{xy}\sqrt{n-2}}{\sqrt{1-r_{xy}^{\ 2}}} \qquad (1)$$

(Candiasa, 2010b)

Explanation:

r_{xy} : Correlation Coefficient
n : sample size

Table 5. Hypothesis testing of correlation coefficient

No.	Statistics Hypothesis	Explanation
1.	$H_o : \ ° = 0$	There is no correlation between teachers' understanding of mathematical concepts to students' understanding of mathematical concepts.
2.	$H_a : \ ° \neq 0$	There is a correlation between teachers' understanding of mathematical concepts to students' understanding of mathematical concepts.

t value that obtained from the formula then compared with the *t* value from the table corresponding to $dk = n-2$. Criteria for deciding is when $t_{\text{calculation}} > t_{\text{table}}$, the null hypothesis is rejected. Thus, the correlation between X and Y with a correlation coefficient (r_{xy}) is significant Candiasa, 2010b).

To calculate the contribution of an independent variable to the dependent variable (in %) using the coefficient determination formula as follows.

Contribution of variable X to variable Y = $\left(r_{XY}\right)^2 \times 100\%$ (2)

RESULTS AND DISCUSSION

The data collected in this study consist of data about Teachers' understanding mathematical concepts and students' understanding of mathematical concepts, obtained through tests conducted at the samples elementary school. A summary of analysis of both data can be seen in Table 6.

Table 6. General description of mathematical concept of teachers and students

Statistic	Teachers (X)	Students (Y)
Mean	66.67	47.87
Max	85	60.56
Min	50	35.42
Standar Deviasi	9.661	8.286

In Table 6, the average value of grade 3 elementary school teachers' understanding of mathematical concept in Buleleng Subdistrict is 66.67 which can be categorized as good. This means teachers' understanding of mathematical concept in grade 3 in Buleleng Subdistrict is generally good.

While based on Table 6 the average value of students' understanding of mathematical concepts in grade 3 elementary school in Buleleng Subdistrict is 47.87 that can be considered quite well. This indicates that students' understanding of mathematical concepts in grade 3 elementary school in Buleleng Subdistrict can generally be categorized quite good.

Before testing the hypothesis, first the normality, linearity and significance regression, autocorrelation and heteroscedasticity are tested.

Normality test in this study were tested through Normal Probality Plot and Kolmogorov-Smirnov test. Based on Figure 4, dots approach and follows the diagonal line, so that Ho is accepted. This was confirmed by the Kolmogorov-Smirnov test results which obtaining significant value 0.200 > 0.005. This means that distribution of residual data is normal.

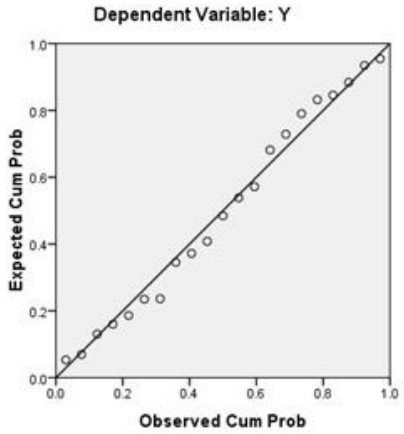

Figure 4. Plot normality test

Summary of linearity and significance regression test results are presented in Table 7.

Table 7. Linearity and significance toward regression test results

Variable		F Linearity		F Deviation From Linearity		Explanation
Independent	Dependent	Calculation	Sig.	Calculation	Sig.	
X	Y	4.985	0.044	0.288	0.932	Linier

From Table 7, the value of F Linearity is 4.985 with $sig. = 0{,}044 < 0{,}05$ and the value of F Deviation From Linearity is 0,288 with $sig. = 0{,}932 > 0{,}05$. Based on these results it can be concluded that the regression model is linear and coefficient regression is significant.

Based on calculations, the Durbin-Watson coefficients obtained is 2,257. Approximations value of d_U table for $n = 21$ dan $k = 1$ is 1.420. Thus fulfilling the range $1{,}420 < d < 4 - 1{,}420$ or $1{,}420 < 2{,}257 < 2{,}580$. So it can be decided that no cases of autocorrelation.

Heteroscedasticity test results presented in Figure 5.

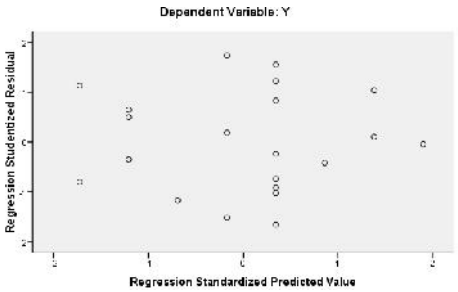

Figure 5. Test results of heteroscedasticity

Based on Figure 5, the data has a random pattern, so that error variance of data is constant, consequently no cases of heteroscedasticity. This is reinforced by the Glejser test results. Glejser test obtained the significance of independent variables is 0.560 > 0.05. It can be concluded that there was no heteroscedasticity in the regression model.

Because of the five tests for regression assumptions have been met, then the hypothesis test can be done. But before hypothesis test can be done, first should be performed a simple linear regression analysis.

From regression analysis can be obtained regression equation between teachers' understanding mathematical concepts (X) to students' understanding of mathematical concepts (Y), that is $\hat{Y} = 0{,}431X + 19{,}115$, which suggests that any increase by one unit in teachers' understanding of mathematical concept (X), resulting in the value of students' understanding mathematical concepts (Y) will increase by 0.430 units.

The results of simple correlation analysis can be seen in Table 8.

Table 8. The results of simple correlation analysis

Variables	Correlation Coef. (r)	Determination Coef. (r^2)
X to Y	0.503	0.253

Hypothesis testing is done by comparing value *t* from calculations with *t* table. Based on the results of the simple correlation analysis is obtained $r = 0{,}503$ thus obtained $t_{calculation} = 2{,}357$ and $t_{table} = 2{,}093$. Since $t_{calculation} > t_{table}$ is obtained a decision that the null hypothesis (Ho) is rejected. This means that there is a correlation between teachers'

understanding of mathematical concepts to students' understanding of mathematical concepts, both individually and collectively, and can be generalized to the population.

Furthermore, in order to calculate the contribution of teachers' understanding of mathematical concepts to students understanding of mathematical concepts can be used the coefficient determination formula as follows.

Contribution= $(r_{XY})^2 \times 100\%$

$= 0{,}253 \times 100\% = 25{,}3\%$

It means that approximately 25.3% of the variation in students' understanding of the concept can be explained by teachers' understanding of the concept, while the remaining 74.7% is determined by other variables that are not investigated.

These data indicated that the level of understanding of the concept of grade 3 elementary school mathematics teacher in Buleleng Subdistrict is good. However, from these data, teachers' understanding of mathematical concepts can not be said to be entirely satisfactory. Although a large part of teachers' understanding mathematical concepts already classified as good in fact there are 3 people were classified as very good, but there are also some teachers were classified as quite good with valued between 50 and 55.

In the test of understanding of mathematical concepts, generally of seven indicators in the test, the teacher still need to improve their abilities in identifying properties of a concept and to know the conditions that determine the concept, especially in geometry. In addition, some teachers still wrong in defining the division as repeated subtraction or multiplication as repeated addition. Though the division and multiplication is the most basic things that must be understood by the students.

For a teacher, it is an obligation to have a correct understanding of the concept. Basically, an elementary school teacher must master mathematical concepts correctly, due to an error in the concept by teachers will be fatal to students in dealing with the next problems that are still associated with the concept. Understanding concepts is like capability that is essential in the learning process so that an improved understanding of the concept of teachers is very necessary.

Analysis of the value of students' understanding of mathematical concepts showed that students' understanding of mathematical concepts is not so good. In general, students still have difficulty in answering problem of conceptual undertanding. When students are given a same concept but in a different presentation, students will become confused and do not understand the material given. There are still many students who have not been able to define the concept in writing correctly. They know the concept but they can not explain it. For example, just the concept of multiplication as repeated addition. Students know the results, but students do not know how to get those results by using repeated addition. Most students learn multiplication simply by memorizing the result, without knowing the process.

In addition there are many students who still have not been able to present the concept to other models. For instance, when students are asked to describe the location of a particular number on the number line, there are still many students are wrong or not entirely true. Though the number line is a very important thing to be known and understood by the students.

Implicitly seen that so far most students learn mathematics just to know, not to understand and apply. Students know a concept, but students do not understand how that concept and when it could be used. Students know the answer to a problem, but students do not understand the process to get those results. The knowledge obtained only from knowing it would be very shallow when compared with those obtained from understanding and applying.

In this regard, it is necessary to reflect and think about the next acts in order to improve students' understanding of the concept. Development of students' understanding of the concept is considered optimal when the teacher is able to provide a learning process that put more emphasis on understanding not just the rote.

Hypothesis testing results show that teachers' understanding of mathematical concepts contribute significantly to students' understanding of mathematical concepts. Regression line obtained, $\hat{Y} = 0{,}431X + 19{,}115$, indicating that increasing teachers' understanding of mathematical concepts by ten units, then the students' understanding of mathematical concepts will increase 4.31 units. While the contribution of teachers' understanding of mathematical concepts to students' understanding of mathematical concepts is 25.3%. It means that approximately 25.3% of the variation in students' understanding of a concept can be explained by teachers' understanding, while the remaining 74.7% is determined by other variables that are not investigated.

CONCLUSION

Based on the analysis and discussion, we can conclude several things: 1) Teachers' understanding of mathematical concepts in third grade elementary school in Buleleng Subdistrict classified as good, with an average value of 66.67. 2) Students' understanding of mathematical concepts in third grade elementary school in Buleleng Subdistrict classified as quite goodl with the average value of 47.87. 3) There is a significant contribution of teachers' understanding of the mathematical concepts to students' understanding of mathematical concepts by 25.3%.

As for some suggestions that can be submitted as a follow-up to the results of this study are as follows. 1) The results of this study prove that teachers' understanding of mathematical concepts contribute to students' understanding of mathematical concepts (25.3%). Moving on from these findings, teachers should continue to improve the understanding of mathematical concepts in the learning process so that the teacher can present mathematical concepts correctly, interesting and appropriate to the developmental level of students. 2) The results of the analysis of the value of students' understanding of mathematical concepts showed that the results obtained by the students is still not satisfactory. Many students still do not understand the concepts in mathematics. Therefore, the teacher as a facilitator in the learning process should be started to place more emphasis on understanding the concept, since by understanding of concepts students will have a good basic provision in order to achieve the basic abilities such as reasoning, communication, connection and problem solving.

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