

# ANALYSIS OF STUDENT'S CONCEPTUAL UNDERSTANDING OF MATHEMATICS ON SET AT CLASS VII SMP FRATER PALOPO

Muhammad Ilyas<sup>1</sup>, Fahrul Basir<sup>2</sup>

*Universitas Cokroaminoto Palopo*

Muhammadilyas494@yahoo.com<sup>1</sup>, fahrulmail2@gmail.com<sup>2</sup>

This research is a descriptive research with qualitative approach that aimed to describe the ability of students' conceptual understanding of mathematics on the set. Subjects is student of class VII SMP Frater Palopo who have learned the set at school. This research began by taking three research subjects viewed from student grades. The three subjects based of subjects with high ability, middle ability, and low ability. After that, the three subjects were given the test of conceptual understanding of mathematics and then interview to analyze student's conceptual understanding of mathematics based on four indicators 1) Being able to explain verbally about what he had achieved. 2) Be able to implement the relation of concept and procedure. 3) Able to provide examples and non-examples of the concept being learned. 4) Being able to develop a concept that has been learned. Student's conceptual understanding of mathematics of high ability in solving the set of test only meet on indicators able to explain verbally about what he has been achieved (indicator number 1). Student's conceptual understanding of mathematics of middle ability in solving the set meets the indicator of be able to apply the relationship of concept and procedure (indicator number 2). Student's conceptual understanding of mathematics of low ability in solving the set meets the indicator is able to apply the relationship of concept and procedure (indicator number 2). The similarity of Student's conceptual understanding of mathematics of the three subjects in solving test of conceptual understanding present in all indicators remain unfavorable.

Keywords: Analysis, Conceptual Understanding, Set

## INTRODUCTION

Mathematics is a science that has certain characteristics when compared to other disciplines. In addition, the characteristics of the object of study of mathematics is to have an abstract (Soedjadi, 2000). The object consists of basic math facts, concepts, definitions, operation, and principles. The basic object of further developing into other objects. Therefore, learning mathematics should be gradual, sequential and systematic, and based on past learning experience. Mathematics is given to equip students with the ability to think logically, analytical, systematic, critical, and creative. Based Permendiknas No. 22 of 2006 on the Content Standards states that these competencies needed for students to have the ability to obtain and use information in order to survive in a state that is always changing, uncertain, and competitive (Muharram 2015).

According to Rohana (in Muharram, 2015) in understanding mathematical concepts required generalization and abstraction capabilities are quite high. While current students mastery of the content of mathematical concepts is still weak even understood wrong. As noted Ruseffendi (in Muharram, 2015) that there are many learners who after studying mathematics, unable to comprehend even in the simplest, many of the concepts are misunderstood so that mathematics is considered as the science is difficult, complicated, and difficult. Though understanding of the concept is the most important in the study of mathematics as stated Zulkardi (in Muharram, 2015) that "the mathematics courses emphasize the concept of". This means that in the study of mathematics learners must understand a mathematical concept in advance in order to solve the problems and are able to apply the learning in the real world. Concepts in mathematics organized in a

systematic, logical and hierarchical from the simplest to the most complex. An understanding of the mathematical concepts are the basis for learning mathematics significantly.

To achieve understanding of the concept of learners in mathematics is not an easy thing for the understanding of a mathematical concept done individually. Each learner has different capabilities in understanding mathematical concepts. However, an increased understanding of mathematical concepts it is necessary for the success of students in learning. One effort to overcome these problems, teachers are required to professionals in planning and implementing learning. Therefore, teachers should be able to design learning mathematics with methods, theories or approaches that could predispose the student as a subject of study is no longer the object of study.

Teachers must have the ability or skill in mastering the material or mathematical concepts prapembelajaran progress. Because, the learning process will not take place as it should, in the sense of seeking teachers for students to understand mathematical concepts with the aim to solve problems associated with such materials.

## **LITERATURE REVIEW**

### **Conceptual Understanding of Mathematics**

Understanding the concept is very important, because with the mastery of concepts will help students learn math. At each study sought more emphasis on mastery of concepts so that students have the benefit of a good foundation for achieving basic skills such as reasoning, communication, connection and troubleshooting.

According to Sanjaya (2007) say what is the purpose of understanding the concept is the ability of students in the form of mastery of a number of subject matter, in which students not only to know or remember the number of concepts being studied, but 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 its cognitive structure.

Based on the description above, the writer can conclude the definition of understanding of the concept is the ability of a person to bring back knowledge gained both in speech and in writing to the person so that the other person really understand what was delivered.

## **METHOD**

### **Type of Research**

This research is a descriptive research. According to Ilyas (2015: 164) using a qualitative approach aims to describe the characteristics of the students ability of understanding mathematical concepts in the set material.

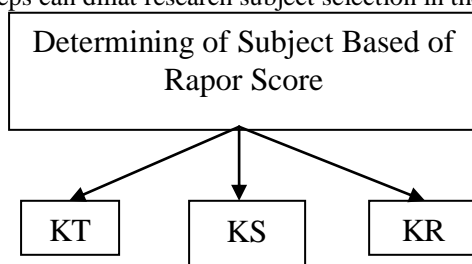
### **Subject**

Steps of determine subjects are:

Subjects in this study is the VII SMP Frater Palopo. The seventh grade students chosen by various considerations:

1. VII grade students have studied the material set.
2. Grade VII has followed a series of sets of material that has been given in schools.
3. Establish 3 subject of research by request of the teacher / homeroom 3 students are capable of high, medium and low, which is viewed by grades / daily test ..
4. Subjects are grouped by ability level, which is capable of high, medium and low. Criteria for grouping students based on grades / daily tests.
5. Subjects who meet the criteria selected and are willing to participate in data collection for the study.
6. Candidates selected subjects used as subjects in this study.

The flow diagram steps can diliat research subject selection in the image below:



Picture I. Determining subject

### Description:

KT	: High Ability
KS	: Middle Ability
KR	: Low Ability

### Focus of Research

Focus of this research is the ability of understanding mathematical concepts students on the material set with the indicator is:

1. Being able to explain verbally about what he had accomplished.
2. Be able to implement the connection between the concept of the procedure.
3. Able to provide examples and non-examples of the concept being studied.
4. Being able to develop a concept that has been studied.

### Instrument

The research instrument is the researcher himself. In this case the researchers is a planner, data collectors, analyzers, data interpretation, and into the reporting of research results. In this study also used other supporting instruments, namely:

#### *Test of Conceptual Understanding*

Understanding of math concepts test given to students is a problem that includes material set that was used to analyze the ability of students' understanding of mathematical concepts.

#### *Interview*

Extracting data through interviews conducted with the incorporation of structured and unstructured interview. Structured interview is wawancara yang telah dipersiapkan sebelumnya dengan pertanyaan-pertanyaan yang telah ditentukan sebelumnya. Sedangkan wawancara tidak terstruktur adalah wawancara yang tidak terencana sebelumnya. Untuk mendapatkan informasi yang lebih mendalam, maka wawancara tidak terstruktur dilakukan. Dalam wawancara tidak terstruktur, pertanyaan-pertanyaan yang diajukan tidak terencana sebelumnya, tetapi disesuaikan dengan situasi dan kondisi yang dihadapi.

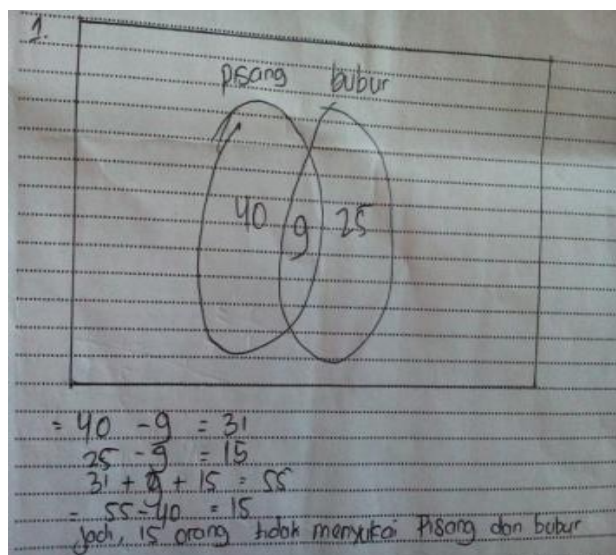
In an unstructured interview, the question is not prepared in advance, but adapted to the circumstances of the unique characteristics of the respondents.

## RESULT AND DISCUSSION

### Understanding Test Results In the Subject Concept Number One Problem Solving and Discussion.

#### *Solution of High Ability (ST)*

1. From 40 children who likes to eat bananas, 25 children like to eat porridge, and 9 children liked both. Then there how many children do not like bananas and porridge?



Based on the results of tests capable of understanding the concept of the subject is high (ST) obtained the following results. The subject of high-ability in solving number 1, it is stated that the completion results are less precise. Because the end result does not correspond to one of the key answers to test understanding of concepts there.

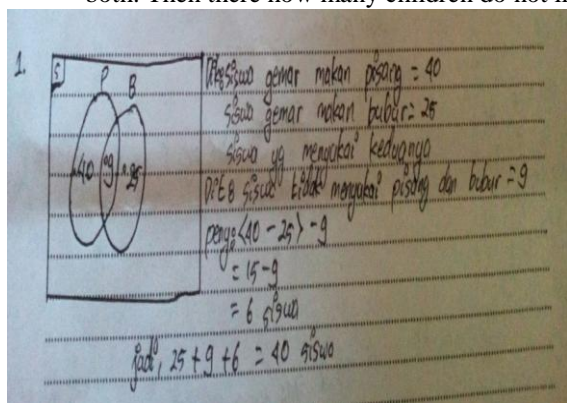
#### *Discussion*

Based on the results of tests understanding of the concept and the interview subject of high caliber (ST) in completing the test understanding of the concept is still not quite right, because the answers were written down wrong. Can be seen between highly skilled subject answers with the answer key test understanding of concepts above. Subject highly capable in completing the test understanding of the concept only meet one of the four indicators, namely indicators number 1 (able to explain verbally about what has been achieved).

Based on the test results of understanding the concept of the subject of high-ability in solving test understanding of concepts does not meet the indicator number 2 (capable of applying the relationship between the concept of the procedure), number 3 (able to provide examples and non-examples of the concept being studied), and the number 4 (capable developed a concept that has been studied). Because it can be seen from the test understanding of the concept at the number 1 answer subjects of high caliber does not meet all three indicators, and the answers are written is not accurate and the results akhirnya wrong. The subject of high-ability in solving number 1 is true do the problems, to write what is known, what is in check and do a settlement, but the solution is wrong and only meet one value score alone. The subject of the new high-ability can be said to fulfill the indicators when they receive a score of 2 if only to abide by the score 1 only, then it can not be said to satisfy.

*Solution of Middle Ability (SS)*

1. From the 40 children who likes to eat bananas, 25 children like to eat porridge, and 9 children liked both. Then there how many children do not like bananas and porridge?



Based on the results of tests capable of understanding the concept of the subject being (SS) obtained the following results. Subjects capable of being in solving number 1, it is stated that the results of the settlement correctly Because the end result matches the key answer comprehension test existing concepts.

*Discussion*

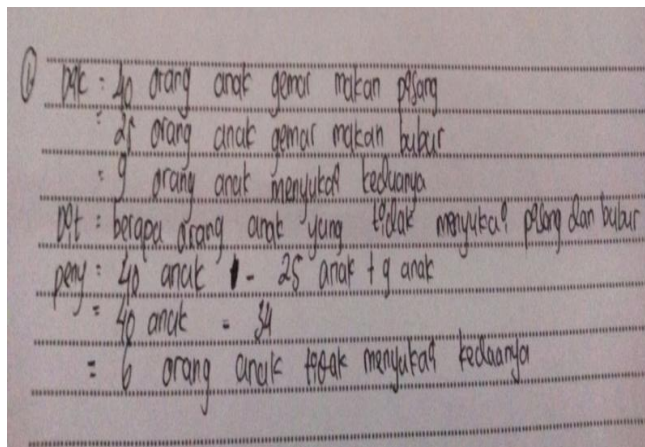
Based on the results of tests understanding of the concept and the interview subject capable of being (SS) in completing the conceptual understanding test well, because the answers are written correctly. Can be seen between the subject answers with the answer key being capable of understanding the concept of the above tests. Subjects completed tests capable of being in the understanding of the concept only meet one of the four indicators, namely indicators number 2 (capable of applying the concept of the procedure). Can be obtained from the results of tests of understanding of existing concepts. Subjects capable of being able to complete the test understanding of concepts correctly and obtain the final results correctly.

Based on the results of the test subjects were capable of understanding the concept of being in solving test understanding of concepts only meet the indicator number 2 (capable of applying the relationship between the concept of the procedure). Because it can be seen from the test understanding of the concept at the number 1 answer subjects capable of fulfilling these indicators, and the answers are written right and the end result is correct. Subjects capable of being in solving number 1 is true do the problems, to write what is known, what is in check and settlement. The subject was not capable of fulfilling the indicator number 1, number 3 and number 4. Subjects were only capable of fulfilling a score of 1 on these three indicators. Subjects capable of being new can be said to fulfill the

indicators when they receive a score of 2 if only to abide by the score 1 only, then it can not be said to satisfy.

#### Solution of Low Ability (SR)

1. From the 40 children who likes to eat bananas, 25 children like to eat porridge, and 9 children liked both. Then there how many children do not like bananas and porridge?



Based on the test results of their poor understanding of the concept of the subject (SR) obtained the following results. The subjects of their poor performance in completing Question 1, it is stated that the results of the settlement correctly Because the end result matches the key answer comprehension test existing concepts.

#### Discussion

Based on the conceptual understanding test results and interviews, the subjects of their poor performance (SR) in completing the conceptual understanding test well, because the answers are written correctly. Can be seen between the subject answers with the answer key of their poor understanding of the concept test. Subjects completed tests of their poor performance in the understanding of the concept only meet one of the four indicators, namely indicators number 2 (capable of applying the concept of the procedure). Can be obtained from the results of tests of understanding of existing concepts. The subjects of their poor understanding of the concept can complete the test correctly and obtain the final results correctly.

Based on the results of the test subjects were capable of understanding the concept of the low in solving test understanding of concepts only meet the indicator number 2 (capable of applying the relationship between the concept of the procedure).

Because it can be seen from the test understanding of the concept at the number 1 answer their poor subjects meet these indicators, and the answers are written right and the end result is correct. The subjects of their poor performance in solving number 1 is true do the problems, to write what is known, what is in check and settlement. The subject was not capable of fulfilling the indicator number 1, number 3 and number 4. Subjects poor performance only meet a score of 1 on these three indicators. The subjects of their poor performance can only be said to fulfill the indicators when they receive a score of 2 if only to abide by the score 1 only, then it can not be said to satisfy.

## CONCLUSION

The ability of understanding mathematical concepts of high ability students in solving the set of test understanding of the concept only meet on indicators able to explain verbally about what he had accomplished.

The ability of understanding mathematical concepts being capable students in solving the set of test understanding of the concept meets the indicator is able to apply the relationship between the concept of the procedure.

The ability of understanding mathematical concepts as less capable students in solving the set of test understanding of the concept meets the indicator is able to apply the relationship between the concept of the procedure.

In completing the test subjects understanding of the concept that high-ability can not finish properly. Instead, the subjects were capable of medium and low was the one who was able to complete the test understanding of concepts correctly.

Equation ability of understanding mathematical concepts in three subjects completed tests pemahaman concept present in all indicators remain unfavorable.

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