Understanding Mathematic Concept in Relation and Function Method through Active Learning Type Group to Group Distributed LKS

F Kudri¹, R Rahmi², Y Haryono²
¹Student of Mathematics Education Study Program STKIP PGRI SUMBAR
²Lecturer of Mathematics Education Study Program STKIP PGRI SUMBAR

Abstract. This research is motivated by the lack of understanding of mathematical concepts students and teachers have not familiarize students discussed in groups. This research aims to determine whether an understanding of mathematical concepts junior class VII SMPN 2 in Ranah Batahan Kabupaten Pasaman Barat by applying active learning strategy group to group types with LKS better than conventional learning. The type of research is experimental the design of randomized trials on the subject. The population in the study were all students VIII SMPN 2 Ranah Batahan Kabupaten Pasaman Barat in year 2012/2013 which consists of our class room experiment to determine the grade and control class with do nerandomly, so that classes VIII1 elected as a experiment class and class VIII4 as a control class. The instruments used in the test empirically understanding mathematical concepts are shaped by the essay with rt= 0,82 greater than rt=0,468 means reliable tests used. The data analysis technique used is the test with the help of MINITAB. Based on the results of the data analisis known that both of the sample are normal and homogenity in real rate α = 0,05, so the hypothesis of this research is received. So, it can be concluded students’ understanding mathematical concept applied the active Group to Group learning strategy with LKS is better than the students’ understanding mathematical concept with Conventional Learning.

1. Introduction
Mathematics is a universal science that underlies the development of modern technology. The importance of the role of mathematics is seen in the implementation of education, where mathematics is a subject studied by every level of education. The importance of mathematics also shows that the mathematics lesson is one of the subjects that determine the students' passing during the national examination. Given the importance of mathematics lessons, teachers are expected to be able to educate and teach students that the objectives of mathematics learning in schools can be achieved optimally.

Mathematical learning will give good results if goals can be met. The ability that must be possessed by the students so that the learning of mathematics runs in accordance with the objectives of the ability of conceptual understanding, communication, and problem solving. One of the skills that determine the success of students in learning mathematics is the ability of conceptual understanding, where the ability of conceptual understanding requires students to be able to define concepts, identify and give examples or not examples of concepts. To that end, the government has done a lot of efforts, including improving the curriculum, improving education facilities and infrastructure, providing training for teachers, providing opportunities for teachers to continue their education, as well as improving the quality of teachers through certification.
Based on the results of observations and interviews conducted in SMPN 2 Ranah Batahan Pasaman Barat Regency on May 8, 2012 note that the process of learning mathematics students are still dominated by teachers. Students are not active during the learning, it can be seen still low motivation of students to ask, teachers have not familiarized the students discussion group so that smart students do not want to help students who are not smart in learning, students do not dare to convey their ideas when given question.

One of the alternatives to overcome these problems is to apply group-to-group active learning strategy with Student Activity Sheet (LKS) that can help students and teachers in learning process to run well and can develop students' mathematical concept understanding.

According to Silberman (2007: 166) "on the Group to Group active strategy, different tasks are assigned to different groups of learners. Each group teaches what has been learned for the rest of the class ". Student Activity Sheets are worksheets that have to be done by Prastowo students, 2011: 203).

This study aims to determine the understanding of mathematical concepts of students who applied the active learning strategy of Group to Group with LKS is better than understanding the mathematical concepts of students by applying conventional learning to students of class VIII SMPN 2 Ranah Batahan.

Relevant research with this research is Nurhasanah (2009). The result of this research is the result of student learning using active learning strategy of Group to Group Exchange with LKS better than student learning result using conventional learning.

2. Research Methods
The type of this research is experimental research with Random Against Subject design, based on Arikunto (2010). In this study, samples were randomly selected as experimental and control class. The population in this study is the students of class VIII SMPN 2 Ranah Batahan. Selected class VIII.1 as experimental class and VIII.4 as control class.

The independent variable in this research is mathematics learning by using Group to Group strategy with LKS in experiment class and conventional learning in control class. The dependent variable in this research is the understanding of the mathematical concept of the students of the sample class.

The instrument used is a test of understanding of mathematical concepts in the form of essays and rubric scoring concept understanding used is a holistic rubric, based on Iryanti (2004).

The material tested is relation and function. The instrument used is the comprehension test of mathematical concept in the form of essay with r11 = 0.82 bigger than rt = 0.468 means test question used reliabel. Data analysis techniques in hypothesis testing using t test with the help of MINITAB. Testing is done to find the hypothesis accepted or rejected.

3. Research Result
Based on the results of data analysis obtained a description of students' understanding of mathematical concepts of sample classes that can be seen in Table 1 below.

| Sample Class | \( \bar{X} \) | S | \( X_{\text{max}} \) | \( X_{\text{min}} \) |
|--------------|--------------|---|----------------|----------------|
| Experiment   | 66, 1        | 13,89 | 97 | 37 |
| Control      | 42, 2        | 17,82 | 87 | 18 |

In Table 1 it can be seen that the average value of the students in the experimental class is greater than the average value of the control class, whereas the experimental standard deviation is lower than the control class, meaning that the control class has different values than the experimental class.

The data of both sample classes are normally distributed and have homogeneous variances. Therefore, hypothesis testing is done by using one party t test, obtained P-value 0.000 at 95%
confidence level. Since P-value is smaller than the specified α, then the hypothesis is accepted. So it can be concluded that the learning outcomes of mathematical concepts of students who applied the active learning strategy of Group to Group with LKS is better than the understanding of mathematical concepts of students applied conventional learning in grade VIII SMPN 2 Ranah Batahan students.

4. Discussion

Understanding the concept is one of the aspects assessed in the learning outcomes, in conceptual understanding there are six indicators. However, in this study only seen three indicators that is, presents the concept in various forms of mathematical representation, re-state a concept and apply the concept or algorithm solving the problem.

Based on the observation during the research, the students in the experimental class are more eager to learn. This can be seen at each meeting from the first meeting until the fourth meeting.

The first meeting of students’ enthusiasm for group learning has not been seen because teachers have not used the students to learn the previous group. At the time of distributing LKS class atmosphere a bit noisy because students are afraid not get LKS. At the time of discussion there was no visible cohesiveness between groups. The appointed spokesperson presented the results of the group discussion still afraid to speak in front of the class, as well as the groups who responded were still shy to ask.

Subsequently at the second meeting, for this meeting each representative of the group distributed LKS to members of his group. At the time of responding the students have begun to dare to ask this matter seen students who responded to more than one person and there are also from other groups who obtained the material is not the same.

Student group learning spirit was also seen at the third meeting. At this meeting, learning with the Group to Group strategy runs better when compared to the first and second meetings.

While at the fourth meeting the spirit of student learning with Group to Group strategy has been better, At this meeting at the end of the learning the researcher gives the opportunity back to the students to ask about the material that is still not understood from the first meeting until the fourth meeting before the final test. in this session there are some students who ask about the problem that has not been understood. The fifth meeting held the final test for both sample classes.

Based on the final test and analysis that has been done can be concluded that the understanding of mathematical concepts of students by applying Group to Group learning strategy with LKS better than the understanding of mathematical concepts of students with conventional learning. This can be seen from the achievement of indicators of students’ mathematical concepts that are visible from several pieces of final test answers given to the two sample classes.

1. Given \( P = Q = \{0, 1, 2, 3\} \)
   a. Draw an arrow diagram that states the relation "over" from the set \( P \) to the set \( Q \)
   b. Express the relation as a set of consecutive pairs!
   c. Also state the relation with cartesius diagram!

![Answer sheets about the 2 students of the experimental class](image)

**Figure 1.** Answer sheets about the 2 students of the experimental class
The answer of the experimental class students in Figure 1 shows that the students have been able to understand and do the problem correctly, where the students have been able to present the concept in various forms of mathematical representation in accordance with the indicator expected in question number two. But some students still make mistakes and do not answer, examples of mistakes that students still do on the control class are as follows:

![Figure 2](image)

**Figure 2.** Example of a no.2 error made by a student in a control class

Students’ answers in Figure 2 students are not able to understand the problem, it is seen that students do not answer about number 2b this shows the students are not able to present the concept in various forms of mathematical representation in accordance with the expected indicators on problem number two. when compared with student experiments there are still many control class students who make mistakes.

Analysis of the description of students’ answers to the experimental class can be concluded that the indicators of students’ concept concepts of experimental class is better than the control class students.

5. **Conclusion**

Based on the results obtained after the analysis and discussion of the problems that have been raised in this study, it can be concluded that the understanding of mathematical concepts of students by applying Group to Group strategy with LKS is better than the understanding of mathematical concepts of students by applying conventional learning grade VIII SMPN 2 The domain of Batahan Pasaman Barat Regency.

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