Application of TPS Type Cooperative Learning in Improving Students' Mathematics Learning Outcomes

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Abstract

The purpose of this research was to determine the improvement of students' learning outcomes by applying cooperative learning of *Think Pair Share* (TPS). The population was the whole grades of VII, the sample was the students of grade VII-1 as lots of as 32 students. From the research results could be seen that the *pre-test* of grade VII-1, the classical completeness was 12.5% (4 students). After giving the action by using cooperative learning of *Think Pair Share* (TPS), the test results of students in the first cycle was 40.63% (13 students). Meanwhile, after revising of the first cycle, the second cycle test results were obtained the learning outcomes II *(Post-test)*, the percentage of classical completeness was gained 87.5% (28 students), so that after revising of the action on the second cycle was improved to be 46.87%.Based on the results of the class action, the researcher concluded that the students' learning outcomes by using cooperative learning of *Think Pair Share* (TPS) was improved.

Key words: Learning Outcomes; Think Pair Share.

1. Introduction

To improve the quality of education in Indonesia, the Minister of Education always does the development of the educational curriculum.

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Setting the standards of competence and basic competence were expected to improve the ability and skills of learners. One of the subjects was used as a benchmark of power and the learners' skills of national level is math. Mathematics is a basic science which plays an important role in the development of science and technology. It is one of the subjects in school that considered an important role in shaping the students to be qualified, because mathematics is a medium to study and to think something logically and systematically.

Nevertheless, the fact that has obtained in the field that the students' mathematics outcomes was still in the low category. This matter was due to various factors; including the lack of the students' interest in learning this lesson that absolutely made the students' mathematics learning outcomes was low, as expressed by [1] "The teacher generally saw all students who received low learning achievement as students who had learning disabilities". The Low score of the students' learning outcomes reflected that the students had difficulty in learning mathematics in both of understanding of the concepts, implementation and problem solving. The usage of appropriate learning and varied would be used as ateacher's success key in the learning process in schools. Therefore, every teacher was also required to apply appropriate learning in the learning process, so that the learning objectives could be achieved.

To know the learners who had the learning difficulties, Sugihartono outlined some steps diagnose of students' learning difficulties as follows: (a) identify the learners who are expected to have learning difficulties; (b) localize the layout of learning difficulties; (c) determining the causes of learning difficulties; (d) estimate the alternative of tire-master; (e) establish a possibility of the solving way; and (f) follow-up [2].

The participants said to be succeed in learning when the students achieved the learning objectives. In the world of education, the learning outcomes associated with changes in self-esteem, involving cognitive, affective and psycho-motor. Susanto [3] categorized the learning outcomes in three parts; *First,* understanding the concept (cognitive) is an ability to explain and interpret something. So, not only knowing but alsotruly understanding by writing the description, the examples, and the explanations. To be able in measuring the students' learning outcomes in the form of conceptual understanding, the teacher could evaluate the product.

Classrooms are a pedagogical environment where the communication ongoing between the teachers and the students. An Effective classroom management has two aims. *First:* to help the students spending the learning time and reducing the activities time that are not oriented towards the goal. *Second:* prevent the students who experience academic problems and emotional problems [4]. In the learning process is needed a special skill in carrying out task to educate the learners, the expertise in carrying out the tasks is often known by competency. Competence is capabilities, or applied capabilities to yield a good performance. These capabilities inherent on individuals [5].

The learning model is a plan or a pattern that can be used to shape the curriculum (long-term learning plan), design the learning materials, and guide the learning in the classroom or the others [6]. According to Suprijono, the learning model is a model in planning the learning in the classroom and tutorial [7]. The learning model can be defined as a conceptual framework that describes a systematic procedure for organizing learning experiences to achieve the learning objectives.

There are several models of learning that can be used to activate the students, one of them is implementation of cooperative learning. Cooperative learning is a learning that currently widely used to make the teaching and the learning activities centered on the students *(student-oriented).*Vygotsky argued in Trianto's book that the students learn through interaction with adults or peers who are more capable [8]. Based on this theory, the cooperative learning is developed that the students will easier find and understand the difficult concepts if they discuss the issue with friends.

According to Hamzah, the *Cooperative* learning model is a model of group learning that involves the students to learn collaboratively in achieving the objectives. There is a process of creating a classroom learning environment that allows students to work together, focused on the goal of learning in small groups consisting of 4-5 heterogeneous people. Heterogeneity is considered from the gender, the ethnicity, the academic achievement and the social status [9]. Benefits of the cooperative learning application is to reduce the educational gap, especially in the form of the individual level input. In addition, cooperative learning can develop social solidarity among the students. With cooperative learning, it is hoped, one day it will emerge a new generation who has an excellent academic achievement and a strong social solidarity.

With the learning groups, the learners will be able to express their ideas to other learners in a discussion group, which will indirectly increase the creativity of learners in understanding mathematical concepts and problem solving, in order to improve the students' learning outcomes. The cooperative learning has a lot of types of cooperative learning that serve learning groups with the different strategy and the different techniques. One type of cooperative learning is Think Pair Share (TPS).

Relating to the above statement, Reference [10] stated that the Think-Pair-Share type of cooperative learning method is one strategy that requires the students doing interaction with their partners by sharing individual ideas in solution after a period of individual thinking time. The Think-Pair-Share strategy is designed to differentiate instruction by providing students time and structure for thinking on a given worksheets, enabling them to formulate individualized Reviews these ideas and share ideas with a partner.

2. Research Methodology

The type of this research was a classroom action research that was conducted in the classroom when the learning took place, the purpose of the research was to repair or to improve the quality of teaching practice. Classroom action research was a activity form of self-reflection by the rest of education in an education situation to improve the rationality and justice of: (a) practices of their educational, (b) their understanding of these practices, and (c) situations where the practices will be implemented.

The research aimed to determine the students' achievement level after being taught by the Cooperative Learning of *Think Phare Share* at grade VII MTs Sei Rotan Madinatussalam Tembung of 2014/2015. The instruments of this research were test, interview, and observation sheet. The test was given in the form of essay test, they were the pretest and the posttest to measure the students' learning outcomes. The observation was conducted an examination of all activities and all changes that occurred at the action administration time. The interviews were

conducted to be more focused on the test of the students' results. The questions that have been given at the interview more intended to determine the students' difficulties in learning.

To analyze the data that has been obtained from the test results could be seen through the individual and classical completeness criteria.

According to Purwanto, the students' mastery categories are as follows [11].

0% - 54% The level of mastery is Very Low

55% - 64% The level of mastery is Low

65% - 79% The level of mastery is Average

80% - 89% The level of masterey is High

90% - 100% The level of mastery is Very High

According to Usman, the completeness criterias of natural and classical are as follows [12]:

a)   Absorption of the Individuals

A student was called to be passedin the learning when the student has reached a score of 75% or 7.5. To determine the percentage of students' absorption (PDS) or individual, it was used the following formula:$PDS = \frac{a\ score\ that\ obtained\ by\ the\ students}{the\ students'maximum\ score} \times 100\%$

with the following criteria:

0% ≤ PDS <75%   The students have not passed in the learning.

75% ≤ PDS ≤ 100%   The students have passed in the learning.

Each student was said to be passed in the learning (individual completeness) if the learning outcomes ≥ 75%.

b)   Completeness ofLearning Classical

A class was called to be passed in the learning if the class achieved a minimum score of 85% which has reached ≥ 75% absorption. To determine the percentage of classical completeness, it was used the following formula:$PKK = \frac{X}{Y} \times 100\%$.

The descriptions:

PKK   = Completenessof Classical Achievement

X   = Number of students that acquired by the PDS ≥ 75%

Y   = Number of the research subject

With the following criterias:

85% ≤ PKK ≤ 100%   Class that has already passed in the learning

0% ≤ PKK <85%   Class that has not passed in the learning

The students' learning outcomes was said to be passed if the PDS ≥ 75%, whereas in the students' learning outcomes classically was said to be passed if the PKK ≥ 85%.

3. Results and Discussions

3.1 The research results

Before doing the research, it has given a pretest that aimed to determine the ability of students' learning outcomes before giving the action. Based on the results of initial tests of 32 students, the data showed that out of 32 students; two students who received very high category (6.25%), 1 students who received high category (3.13%), 4 students who got average category (12.5%), 7 students who got low category (21.87%), and 18 students who got very low category (56.25%).

Table 1: The Pretest Result of the Students' Mastery Level

The students' mastery level	Number of the Students	Percentage	Category
0% - 54%	18	56.25%	Very low
55% - 64%	7	21.87%	Low
65% - 79%	4	12.5%	Average
80% - 89%	1	3.13%	High
90% - 100%	2	6.25%	Very high

Table 2: The Completeness Level Classically in the Pretest

The Students' Learning Completeness	Category	Number of the Students	Percentage
0% ≤ PKK < 85%	Failed	28	87.5%
85% ≤ PKK < 100%	Passed	4	12.5%

From the pretest, it was obtained that 4 students passed classically (12,5%), then 28 students failed classically

(87.5%) with the average of 54.25%.

Table 3: Result of the Test Mastery Level in Cycle 1

The Students' Mastery Level	Number of the Students	Percentage	Category
0% - 54%	4	12.5%	Very low
55% - 64%	5	15.63%	Low
65% - 79%	15	46.87%	Average
80% - 89%	6	18.75%	High
90% - 100%	2	6.25%	Very high

Table 4: The Completeness Level Classically in Cycle 1 Test

The Students' Learning Completeness	Category	Number of the Students	Percentage
0% ≤ PKK < 85%	Failed	19	59.37%
85% ≤ PKK < 100%	Passed	13	40.63%

From the test results of the first cycle, it was obtained that 13 students passed classically (40.63%), while 19 students failed classically (59.37%) with the average of 68.75%.

Thus, it could be said that the learning activities in the classroom increasingly improved based on the test results of cycle 1 with the the students' average of 68.75 with the details of 13 students (40.63%) reached a level of learning mastery, while 19 students (59.37%) have not reached a level of learning mastery, in cycle 2, the students' average was 78.12, with the details of 28 students (87.5%) reached a level of learning mastery, while 4 students (12, 5%) have not reached a level of learning mastery.

The achievement of the learning process that conducted by the teacher in the excellent category indicated that the learning application cooperative learning of TPS has already been ongoing effectively in the class. Then, the students in the class could be said studying actively. In addition, it could be seen that the percentage of the students' completeness classically in cycle 1 was 46.8% improved to be 87.5% in the second cycle, the completeness classically has already been above 85%. So, the students in the class could be stated passed in the learning process by using TPS learning model.

3.2 Discussions

Based on the pretest results were known the students' ability in understanding the rectangle and square materials were very low, it could be seen from 32 students, there were 28 students who did not pass. The pretest results of this students would be served as a guidance for designing how that learning would be able to apply effectively

and in accordance with desired which could improve the students' mathematics learning outcomes. In the first cycle, it was conducted the learning with rectangle and square materials. in each meeting, it was done observation to the learning process and the students' learning activities. At the third meeting, it was given a test of the cycle I to the students. The test contained questions related to the material of rectangle and a square. At the end of the test in the first cycle, the students who passed improved to be 13 students and the failed student were 19 people. Based on observations of the learning, it was known that the learning in cycle I was good category with the average of 3.24. Although the category of learning was undertaken by the researcher in good category, but there were still the weaknesses of the researcher in managing the class. Thus, the classroom situation was less conducive when the learning took place. Therefore, the learning was continued in the second cycle. In the second cycle, the researcher revised the learning process so that the classroom management became better, score of the learning observation improved to be 3.61 with very good category. Similarly at the end of the test could be seen that the students' improvement who passed in the learning were 28 students and 4 students more have not passed. Since given the pretest to the students till the end of the test on the second cycle, the fourth students were only slightly improved, the students have not passed due to they have not achieved the determined KKM.

Based on the results of tests, there were an improvement of students' learning outcomes, where the average value of the class of pretest was about 54.25, it has improved about 14.5, 54.25 to be 68.75. At the end of the first cycle test then improved about 9.37 became 78.12 in the second cycle. From the results of these tests also showed an improvement in the number of the students who achieved the learning mastery. That was in the first cycle was 13 students and in the second cycle increased to be 28 students. So, it meant from the first cycle to the second cycle improved about 15 students, who have reached the learning mastery.

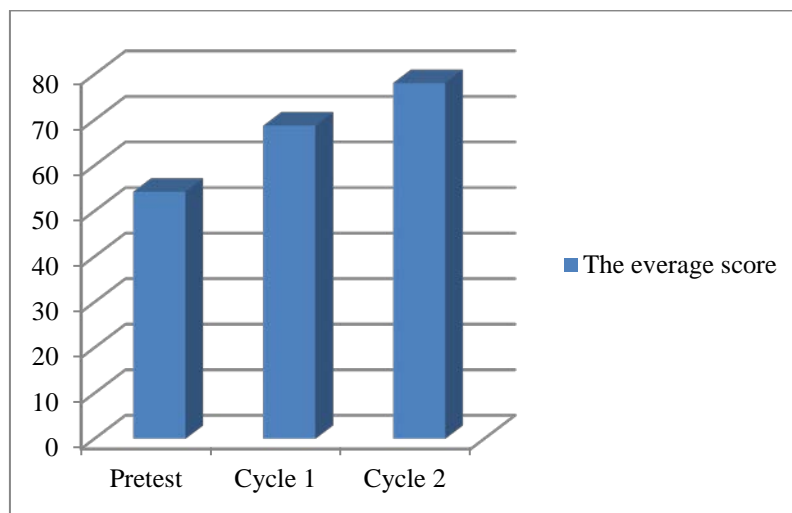It could be seen more clearly in the diagram below:

Figure 1: Diagram of average score

The results and the discussions that have been described above , the research stated that there was an improvement of the students' learning outcomes and the implementation of cooperative learning of TPS

provided a new atmosphere in the classroom, where the students' learning process were given an opportunity to share each other. The learning by using TPS could improve the students' learning outcomes at grade VII-I MTs Madinatussalam Tembung Sei Rotan. A relevant research result of previous studies that are semilar to the research to be performed. Based on the research results [13] that has been done at grade XI IPS SMA Negeri 2 Padang Panjang could be concluded that the results of the students' mathematics learning by using Cooperative Learning of *Think Pair Share* model was better than the students' mathematics learning outcomes by using conventional learning at grade XI IPS SMA Negeri 2 Padang Panjang.

A research who carried out by Rahadian and his friends [14] that the results of the students' mathematics by using a cooperative learning of *Think Pair Share model* with the help of the students' worksheet was better than the students' mathematics by using conventional learning and the students' learning activities of the experimental class by using a model of cooperative *Think Pair Share* with the help of the students' worksheet tended to increase a quite good category. Based on the results of Safa'ahLailatul's research and the discussions [15], it could be concluded that there were the significant learning strategies of TPS on the students' motivationinsets operations material at grade VII SMP Negeri. I Tanggulangin of 2014/2015. [16] The conclusions of this study are: (1) there were effects of interaction between cooperative learning models (TPS and NHT) and learning motivation on mathematics learning achievement, (2) the mathematics learning achievement of students with high level of learning motivation who were taught using TPS model is higher than those who were taught using NHT, and (3) the mathematics learning achievement of the students with low level learning motivation who were taught using TPS model is insignificantly different than those who were taught using NHT. [17] Students involved in this study had a higher achievement after being taught using the think-pair-share strategy compared to those taught using conventional approach. Similarly, those taught using the think-pair-share strategy had a higher academic self-esteem compared to those taught using the conventional approach. When an appropriate strategy, coupled with well-structured lesson plans are involved, students will be in a better position to perform better in fraction as this will help increase their level of self-esteem.

4. Conclusions and Suggestion

4.1The conclusions

Based on the research that has been conducted, the researcher concluded that the usage of cooperative learning was TPS was proved to improve the students' learning outcomes in rectangle and square materials in the two cycles of six meetings. Before the implementation of the cooperative learning using TPS model, the researcher provided *pretest* to the students and has been found the level of the students' learning mastery, only 4 students (12.5%) that passed in rectangles and square materials from 32 students, and 28 students (87.5%) that have not passed in the materials. The case was included in the very low category and it was a condition that had to be overcome by using cooperative learning of TPS.

The learning outcomes after giving the *post test* of the first cycle has improved with 13 students (40.63%) have mastered the rectangles and square materials from 32 students, and 19 students (59.67%) have not mastered the materials. Then, classically the students' mastery level of the materials has not been achieved, because the

classical completeness has not reached of 85%, it still needed to be optimized in cycle II.

The application of cooperative learning using TPS model was very effective used because it could improve the students' learning outcomes in cycle II with a percentage of the students' learning completeness (87.5%), it was 28 students have passed in a rectangle and a square materials, and four students (12.5%) have not passed in the materials from 32 students. So, this research was not continued to the next cycle, because the students' learning completeness classically has been reached, that was already more than 85% of students who got score ≥ 75.

4.2 Suggestion

Based on the research results and the conclusions in this research, learning by using cooperative learning of TPS can be used as one of the alternatives in improving learning outcomes, so that, the students do not find and feel a boring learning atmosphere.

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