

THE EFFECTIVENESS OF THE THINK PAIR SHARE OF COOPERATIVE LEARNING MODEL ON THE LEARNING OUTCOMES

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ABSTRACT

This research aims to determine the effectiveness of student mathematics learning outcomes in learning using the Think Pair Share (TPS) method. This research population is all VII grade students of State Islamic Junior High School (MTs Negeri) 1 Yogyakarta in the odd semester of 2019/2020 academic year, consisting of 3 study groups totaling 80 students. Samples were taken from two classes using random sampling techniques. They obtained grade VII C as an experimental class and class VII B as a control class. The instrument used in this study was a test. While the data analysis technique for the prerequisite test uses the normality test with the Chi-Squared formula, the homogeneity test with the Barlet test formula, the hypothesis test uses the t-test. The study results at a significant level of 5% degrees of freedom = 52 indicate that testing of the hypothesis test I results in learning using the TPS learning method effectively against student learning outcomes. $t < t_{1-\alpha;dk}$ which is $4.223199279 > 1.674$, then H_0 is rejected.

Keywords: Effectiveness, Cooperative Learning Model Think Pair Share Type, Student Learning Outcomes.

INTRODUCTION

High-quality and innovative resources are needed to face competition in the field of science and technology. Education is an essential thing to have a person to become a quality human resource. Through education, one can develop the potential in him, and education can grow in line with science and technology advancement. In the 21st century, this school is one of the main places in applying formal education. One of the subjects that must be introduced to students in formal education in mathematics. Many benefits of learning mathematics that can be used in conducting daily life activities. Accordingly, Daryanto and Rahardjo (2012:240) stated that math subjects needed to be given to students to equip them with logical, creative, systematic, analytical, and critical thinking skills and work together.

Based on the etymological meaning in Suherman, Erman et al. (2003:16), the word mathematics means science gained by reason. This does not mean that other science is obtained not through reasoning, but in mathematics emphasizes more activity in the world of ratios (reasoning), while in other sciences emphasizes the results of observation or experimentation in addition to reasoning. According to the mathematicians in Suherman, Erman et al. (2003:16-17), some opinions on the definition of mathematics include the following. (1) James and James suggest that mathematics is a science of logic about form, arrangement, magnitude, and concepts related to each other with numerous amounts divided into three areas: algebra, analysis, and Geometry. (2) Johnson and Rising say that mathematics is a mindset of thinking, organizing patterns, logical proving, that mathematics is a language that uses a carefully defined, clear, and accurate term, its representation with symbols and solid, more symbol language about ideas rather than sound. (3) Reys et al. said that mathematics is a study of patterns and relationships, a path or mindset of thinking an art, a language, and a tool. (4) Kline mentioned that mathematics is not a self-contained knowledge that can be perfect because of itself. However, mathematics is mainly to help people understand and master social, economic, and natural problems. Sukardjono (2004:13) mentions that: Mathematics is a method of thinking and reason. Mathematics can be used to decide whether an idea is right or wrong or a real possibility. Mathematics is an exploration and discovery field. There every day, new ideas are discovered.

Mathematics is a way of thinking to solve all kinds of problems in science, government, and industry. It is a symbolic language understood by all the cultured peoples of the world. The National Council of Teachers of Mathematics (NCTM) (2000:67) establishes five mathematical standards that must be owned by the students, namely problem-solving ability, communication skills, Connection capabilities, reasoning ability, and representation ability (representation). From this statement, it can be concluded that representation is one of the essential skills to develop and must be owned by the Student. However, many schools have not developed the ability of mathematical representation for his students. This also happened in MTs Negeri 1 Yogyakarta.

Based on the results of the interview with the mathematics teacher MTs Negeri 1 Yogyakarta, it is known that the learning outcomes of grade VII students are still relatively low. One factor is that the learning process in MTs Negeri 1 Yogyakarta is still going on conventionally. Teacher learning is more active in delivering materials. However, students are more passive in the learning process. This causes students to have difficulty completing the questions given by the teacher. Therefore, a learning model is required to be active and critical in the learning process.

The Cooperative learning Model has a group learning concept that can make students active and critical in learning. By learning, a group of students will ask about lesson material that he does not know to his friend without a taste Shame. Cooperative learning is known for group learning. However, cooperative learning is more than just learning groups or working groups because, in cooperative learning, there is a structure of encouragement or cooperative tasks to allow open interactions and effective interdependency among group members. A cooperative learning model can develop students' mathematical representations of the Think Pair Share (TPS). Learning with the TPS method encourages students to think independently when they get a question and then discuss their thoughts with friends. Besides, the TPS method encourages students to dare to In front of the class. Because the problem is quite widespread, researchers limit the problem. Problem restrictions are made to avoid the extent of the problems researched. Given the limited time, cost, and opportunity, based on the problems that have been identified above then the researcher focuses the problem to be researched that is about the effectiveness of the cooperative learning model think pair share (TPS) against Result of learning based on the background of the problem, identify the problem and problem limitation above, so it can be made the problem is that the method of cooperative learning is effective TPS type towards students' mathematical learning outcomes MTs Negeri 1 Yogyakarta Odd semester year lesson 2019/2020. Based on the issue above, this research aims to know the effectiveness of models of cooperative learning of TPS type of student mathematics learning results of class VII MTs Negeri 1 Yogyakarta Odd semester year Lesson 2019/2020.

METHODS

The type of research in this study is quantitative research. Sugiyono (2015:14) says that: Quantitative research methods can be interpreted as a research method based on the philosophy of positivism, used for research on specific populations or samples, general sampling techniques Done on a random basis, data collection using research instruments, data analysis is quantitative/statistically to test the predetermined hypothesis. According to Margono, S. (2010:105), quantitative research is a process of finding knowledge that uses numeric data as a tool to find descriptions of what we want to know. According to Suparman (2015:2) that, in quantitative studies can use a sample and population approach. Quantitative research results apply to the population. The research design used in this research is experimental. According to Sugiyono (2015:107), Experimental research methods can be interpreted as a research method used to find the effect of specific treatments on others under controlled conditions. According to Margono, S. (2010:110), Experimental research uses a specially designed experiment to generate the data needed to answer research questions. Suparman (2015:1) also argues that experimental research is a study done by learning something. The experimental design used in the study was with Posttest Only Control Design (Sugiyono, 2015:112). The study uses two

classes, which are practical classes and control classes. The research design used can be seen in table 1.

Table 1. Research Design Posttest Only Control Design

| | Group | Treatment | Posttest |
|---|------------|-----------|----------|
| R | Experiment | X_1 | O_1 |
| R | Control | X_2 | O_2 |

Source: Sugiyono, 2015: 112

Information :

R: Random

X_1 : The treatment uses the TPS learning model

X_2 : The treatment uses the TPS learning model

O_1 : Learning outcomes using X_1 training

O_2 : Learning outcomes using X_2 training

This research will be conducted at MTS Negeri 1 Yogyakarta. Research time is done on the odd semester of lesson 2019/2020 on the subject of numbers. This study's population is a class VII MTs Negeri 1 Yogyakarta year 2019/2020, divided into three classes, namely VII A, VII B, and VII C classes with 80 students. The data collection techniques in this research form a test method. The steps researchers have to collect data on the test methods are as follows: 1) Implementation of learning in the class of Experiment and control classes. 2) Final Test (learning result) in experimental class and control class. The research instrument used is a double-choice test of each of the 17 questions. Test material in the form of questions with mathematics lesson material on MTs class VII odd semester. The data analysis techniques undertaken include 1) test prerequisite analysis on analysis testing, data tested is experimental class learning result data, and control, class. The testing analysis used for learning outcomes is a test of normality and a test of homogeneity. 2) The hypothesis test to test the average difference of student learning results used test-t analysis includes the hypothesis test I used to know that the cooperative learning method is a think pair share effective.

RESULTS AND DISCUSSION

The research results obtained the value of student learning outcomes class VII C (experimental class) and VII B (control class). The value used is the value of learning outcomes.

Table 2. Frequency Distribution Of Experimental Class Learning Outcomes

| No | Interval | f_i | x_i | x_i^2 | $f_i x_i$ | $f_i x_i^2$ |
|----|----------------|-------|--------|------------|-----------|-------------|
| 1 | 52,94 - 60,94 | 3 | 56,94 | 3242,1636 | 170,82 | 9726,4908 |
| 2 | 61,94 - 69,94 | 1 | 65,94 | 4348,0836 | 65,94 | 4348,0836 |
| 3 | 70,94 - 78,94 | 10 | 74,94 | 5616,0036 | 749,4 | 56160,036 |
| 4 | 79,94 - 87,94 | 6 | 83,94 | 7045,9236 | 503,64 | 42275,5416 |
| 5 | 88,94 - 96,94 | 7 | 92,94 | 8637,8436 | 650,58 | 60464,9052 |
| 6 | 97,94 - 105,94 | 1 | 101,94 | 10391,7636 | 101,94 | 10391,7636 |
| | Sum | 28 | 476,64 | 39281,7816 | 2242,32 | 183366,8208 |

Table 3. Frequency Distribution of Control Class learning outcomes

| No | Interval | f_i | x_i | x_i^2 | $f_i x_i$ | $f_i x_i^2$ |
|----|---------------|-------|--------|------------|-----------|-------------|
| 1 | 29,41 - 37,41 | 2 | 33,41 | 1116,2281 | 66,82 | 2232,4562 |
| 2 | 38,41 - 46,41 | 2 | 42,41 | 1798,6081 | 84,82 | 3597,2162 |
| 3 | 47,41 - 55,41 | 4 | 51,41 | 2642,9881 | 205,64 | 10571,9524 |
| 4 | 56,41 - 64,41 | 6 | 60,41 | 3649,3681 | 362,46 | 21896,2086 |
| 5 | 65,41 - 73,41 | 11 | 69,41 | 4817,7481 | 763,51 | 52995,2291 |
| 6 | 74,41 - 82,41 | 1 | 78,41 | 6148,1281 | 78,41 | 6148,1281 |
| | Sum | 26 | 335,46 | 20173,0686 | 1561,66 | 97441,1906 |

Table 4. Description of Mathematics Learning Outcomes

| Class | Parameter | | | |
|-------|-------------------|-------------------|--------------|---------------|
| | Total Student (n) | The highest score | Lowest score | Average Value |
| Eks | 28 | 100 | 52,94 | 80,08285714 |
| Con | 26 | 76,47 | 29,41 | 60,06384615 |

According to the Table1, Table 2, Table 3, and Table 4, in an experimental class consisting of 28 students, the average value of 80.08285714, with the highest value of 100 and the lowest value of 52.94. In the control class consisting of 26 average students – the rating is 60.06384615, with the highest value of 76.47 and the lowest value of 29.41. The calculation of these two average values uses a frequency distribution.

The normality test is performed to determine the value of the normal distribution. Test normality is done with the χ^2 test (Chikuadrat). Calculation of normality test in the experimental class. The summary of the test results of normality in the experiment class and the control class can be seen in the following Table 5:

Table 5. Normality Test Learning Outcomes Value

| Class | dk | Count (χ^2) | Table (χ^2) | Info. |
|-------|------|--------------------|--------------------|--------|
| Eks | 2 | 1,75322 | 5,991 | Normal |
| Con | 2 | 2,963300 | 5,991 | Normal |

The calculations that have been done in Appendix 5.3, the normality test in the experiment class I produced $\chi^2 = 1,753221$. While with a significant level of 5% and $dk = 2$ produce $\chi^2_{(1-\alpha, k-1)} = \chi^2_{(1-0,05, 4-1)} = \chi^2_{(0,95, 3)} = 5,991$. Based on the chi-squared formula's rejection region, when $\chi^2 \geq \chi^2_{(1-\alpha, k-1)}$, H_0 is accepted. The calculation result obtained $\chi^2 > \chi^2_{(1-\alpha, k-1)}$ is $1,753221 < 5,991$ as Chi-squared counts more than the chi-squared table H_0 is accepted so that the value of the final capability can infer it in the normal distribution class.

Calculations that have been done in Appendix 5.4, testing the normality in the control class, resulted in $\chi^2 = 2,963300$. While with a significant level of 5% and $dk = 2$ produce $\chi^2_{(1-\alpha, k-1)} = \chi^2_{(1-0,05, 3-1)} = \chi^2_{(0,95, 3)} = 5,991$. Based on the chi-squared formula's rejection region, when $\chi^2 \geq \chi^2_{(1-\alpha, k-1)}$, then H_0 is rejected. The calculation result obtained $\chi^2 < \chi^2_{(1-\alpha, k-1)}$ is $2,963300 < 5,991$, as Chi-squared calculated less than the Chi-squared table the H_0 received. So it can be deduced the value of learning results in the normal distribution control class.

Summary of the test result homogeneity of the Result of learning results seen in Table 6.

Table 6. Summary of test result homogeneity value of learning results

| χ^2 | χ^2_{tab} | T- Sig | Info. |
|----------|----------------|--------|-------------|
| 0,08906 | 3,81 | 5 % | homogeneous |

Based on homogeneity tests conducted in class VII C and class VII B with $df = 1$ and a significant level of 5%, it can be seen that the $X_{count}^2 = 0,08906$ and $X_{table}^2 = 3,81$. Because $X_{count}^2 < X_{table}^2$, the second class is class VII C (experimental class), and class VII B (control class) has the same variance (has homogeneous variance).

Hypothesis Test, The average similarity test on learning outcomes is carried out to determine whether there are differences in student learning outcomes between the control class (VII C) and the experimental class (VII B).

Tabel 7. Summary of Hypothesis Test Results Learning Outcomes Value

| t_{count} | t_{table} | T-Sig | df | Info. |
|-------------|-------------|-------|----|-------------------------|
| 4,223199279 | 2,008 | 5% | 52 | H ₀ rejected |

Based on Table 7, the analysis results on the hypothesis test I with a significant level of 5% and degree of freedom = 52, then obtained the value of $T_{hitung} = 4.223199279$ and this = 2.008. Because $T_{hitung} > T_{tabel}$, then H₀ rejected. This means a difference in student learning outcomes using cooperative learning methods of think pair share in class VII MTs Negeri 1 Yogyakarta year lesson 2019/2020.

Based on the calculation result, the learning result value in the experiment class is higher than the control class's learning result value. The experiment class learning results' average value is 80.08285714, while the control class's learning result value is 60.06385. The calculation result using the normality test, and the Barlet test results in normal distribution and homogeneous classes. Next. Calculation analysis using t one-party test. Through the calculation result, produce learning result value with an effective TPS learning method. The explanation above shows that learning influence using TPS learning methods is very effective towards student learning outcomes. The research is in line with the corresponding cited by Arends in Trianto (2007:61) that think-pair-share is an effective way to make variations in the mood of the discussion pattern and give students more time to think, to respond, and help each other.

CONCLUSION

Based on the research results and discussion on experimental studies in class, it can be concluded that the think pair share (TPS) is effective against students' mathematical learning outcomes for learning outcomes with cooperative learning methods. Significant 5% and degree of freedom = 52 then obtained the value $t_{count} = 4.223199279$ and $t_{table} = 2.008$. Because $t_{count} > t_{table}$ then H₀ rejected, and H₁ accepted. Thus, through a cooperative learning method of TPS to students' learning outcomes in learning mathematics in class VII MTs Negeri 1 Yogyakarta, learning type TPS is effective.

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