

Implementation Of Cooperative Learning Model Type Of Thinking Aloud Pairs Problem Solving (TAPPS) Evaluating From Students' Confidence Attitude At SMP N 2 Baki

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Abstract.

The objectives of this study aim to test and analyze (1) differences in the effect of learning models on students' mathematics learning achievement; (2) differences in the effect of students' self-confidence on students' mathematics learning achievement; and (3) the interaction between learning models and students' self-confidence towards students' mathematics learning achievement. In this study, the writer used quantitative research with a quasi-experimental design. The population and sample in this study were class VIII students of SMP N 2 Baki, and the sampling technique used was cluster random sampling. Data collection techniques used include questionnaires, tes, and documentation. The techniques of data analysis employ a two-way analysis of variance with cells not equal with $\alpha = 5\%$ to obtain the results: (1) There is no difference in the effect of the learning model on students' mathematics learning achievement; (2) There are differences in the effect of students' self-confidence on students' mathematics learning achievement; and (3) There is no interaction between the learning model and students' self-confidence towards students' mathematics learning achievement.

Keywords : *Thinking Aloud Pairs Problem Solving (TAPPS), student self confidence, and students mathematics learning achievement.*

I. INTRODUCTION

Education is critical to the advancement of a nation; with good human resources, the quality of education will also be good. According to the Law of the Republic of Indonesia No. 20 of 2003, Article 1 Paragraph 1 concerning the National Education System, states that "Education is a conscious and planned effort to create a learning atmosphere and learning process so that students can actively develop their potential to have strength in religious spirituality, can control themselves, have a personality, intelligence, noble character, and skills needed in themselves, society, nation, as well as the state." One of the subjects taught in schools is mathematics. Learning mathematics has an important role in improving thinking skills and can shape students' attitudes. However, in reality, mathematics is considered by most of the students as a difficult subject and is even considered a scourge. Based on Barokatin I.W and Nining S (2018) stated, "There are several factors that influence the low learning outcomes of mathematics, namely, internal and external factors." Internal factors include physical (with special needs) and psychological (interests, motivation, thinking skills, reasoning abilities, learning strategies, and others), while external factors include the environment, infrastructure, and others. These factors can be sourced from teachers, students, or both. One factor that comes from students is the ability to think, while what comes from the teacher is learning strategies."

One of the learning strategies or learning models that are believed to be able to improve student learning achievement is the cooperative learning model, according to the opinion of Erwin Putra Permana (2016) stated that "Cooperative learning method or Cooperative Learning, as a series of learning activities in the classroom, which emphasizes the concept of critical thinking, together and working together in a small group (3-5 heterogeneous students), thus student learning outcomes and critical thinking are expected can increase". A cooperative learning model, according to Hamdani (2011: 30), is a series of student learning activities in certain groups to achieve the formulated learning objectives. Type of cooperative learning model Thinking Aloud Pairs Problem solving (TAPPS) is a cooperative learning model that is believed to improve student achievement. The TAPPS type cooperative learning model is one of the learning models using a problem-solving approach that is able to actively involve students in learning.

In Indonesian, Thinking Aloud means *berpikir keras*, Pair means *berpasangan* and Problem Solving means *penyelesaian masalah*. So the TAPPS type cooperative learning model can be interpreted as a thinking technique that is expressed aloud in pairs in problem solving, which is one of the learning methods that can create active learning conditions for students. In this learning model, students are divided into several groups, each group consisting of two people. Based on Lochhead in Pate & Miller (2011), the TAPPS learning model involves two parties in a group; one party becomes a *problem solver* and the other party becomes a *listener*. Based on Pate *et al.* (2004), his research concluded that the use of TAPPS became an important step in developing students' metacognitive skills in solving problems. In addition to the learning models that are considered in improving student achievement, students' self-confidence also needs to be considered. Based on Sheenah Hakim (2005:6) stated that "Self-confidence is a person's belief in all aspects of his strengths, and that belief makes him feel capable of achieving various goals in life."

Based on the description above, the alternative solution offered is a study on the implementation of the Thinking Aloud Pairs Problem Solving (TAPPS), learning model in terms of the student's self-confidence at SMP N 2 Baki, Sukoharjo Regency on the flat side space building material. While the objectives of this research are: (1) To analyze and test the difference in the effect of the Thinking Aloud Pairs Problem Solving (TAPPS) learning strategy on the mathematics learning achievement of eighth grade students of SMP N 2 Baki on the flat-sided geometry. (2) To analyze and test the difference in the effect of students' self-confidence on the mathematics learning achievement of eighth grade students of SMP N 2 Baki on the flat-sided geometry. (3) To analyze and test the interaction between the Thinking Aloud Pairs Problem Solving (TAPPS) cooperative learning model and students' self-confidence towards the mathematics learning achievement of class VIII SMP N 2 Baki on the flat-sided geometry.

II. METHODS

This research is quantitative research with a quasi-experimental design. The research was conducted at SMP N 2 Baki, Sukoharjo Regency in class VIII, even semester of the 2013/2014 academic year. The sampling technique used in this study was cluster random sampling, so that a sample of 64 students was selected from class VIIIA as the experimental class and VIIIB as the control class. Before taking action on the experimental class and control class, a balance test between the classes was first carried out to find out that both classes had a balanced or equal average. The variables of this research are the TAPPS type of cooperative learning model and students' self-confidence as the independent variable (free) and learning achievement as the dependent variable (bound).

The data collection method in this study used a learning achievement test, a student self-confidence questionnaire, and documentation. The test of learning achievement test instruments used were content validity, level of difficulty, discriminating power, and reliability. The questionnaire instrument test used content validity, internal consistency, and reliability tests. The technique of data analysis in this study used a two-way analysis of variance test. Before carrying out the two-way analysis of variance test, the prerequisites for the analysis of variance were first tested, namely the normality test and the homogeneity test. Meanwhile, the hypothesis test uses a two-way unequal analysis of variance. Based on Budiyo (2009: 170-216), states that if the results of the analysis of variance show that the null hypothesis is rejected, then a multiple comparison test is carried out using the Scheffe method.

III. FINDINGS AND DISCUSSION

The study begins by calculating the balance test to find out whether the two samples have a balanced initial ability or not. Based on the results of the balance test calculation, it can be concluded that the experimental class and control class have a balanced initial ability before being given treatment. The research instruments were in the form of learning achievement tests and student self-confidence questionnaires. The learning achievement test questions used in this study consisted of 25 mathematics test questions regarding Build Flat Forms which originally consisted of 35 mathematics achievement test questions. Because this test item is a research instrument, before being used as a measuring tool, validation analysis, level of difficulty, distinguishability, and reliability of this test are carried out first.

Meanwhile, the students' self-confidence questionnaire that was tested in this study consisted of 35 questions. Before the question of self-confidence was used as a measuring tool, validation analysis, internal consistency, and reliability were carried out on this questionnaire. In accordance with the steps in the testing stage of the test instrument, 25 items were selected that met the criteria. After the research was carried out, the writer calculated the prerequisite analysis tests, namely normality and homogeneity tests. The results conclude that (1) the sample comes from a normally distributed population; (2) variance in each independent variable is declared homogeneous or the same. Furthermore, hypothesis testing is carried out using a two-way analysis of variance with unequal cells. The following is a summary of the results of two-way ANOVA calculations with unequal cells:

Summary Table of Two Pathway Analysis of Variance with Dissimilar Cells

Source	JK	dk	RK	Fobs	F α	P
(A)	201,188	1	201,188	1,87	4,01	Accepted
(B)	1879,166	2	939,583	8,737	3,16	Rejected
(AB)	24,898	2	12,449	0,116	3,16	Accepted
(G)	6237,326	58	107,54			
(T)	8342,578	63				

The conclusion based on the table above regarding the results of the two-way analysis of variance with unequal cells is that the calculation of $FA = 1.87 < F \text{ table} = 4.01$ with a significance level of 5%, so that the test decision obtained is H_0 is accepted. So it can be concluded that there is no difference in the effect of the TAPPS type cooperative learning strategy and the conventional learning model on student achievement. Based on the marginal average of students' mathematics learning achievement with the TAPPS type cooperative learning model of 61.04 and the marginal average of students' learning achievement with the conventional learning model of 57.47. The results of the two-way analysis of variance with unequal cells obtained based on the calculations in the table are $FB = 8.737 > F \text{ table} = 3.16$ with a significance level of 5%, so that the decision to test H_0 is rejected. So it can be concluded that there is a difference in the effect of students' self-confidence on students' mathematics learning achievement. Based on the data, the marginal average of mathematics learning achievement of students with high self-confidence is 65.85.

While the mathematics learning achievement of students with moderate self-confidence was 59.42, and the marginal average of mathematics learning achievement of students with low self-confidence was 52.51. So it can be concluded that the higher the student's self-confidence, the higher the student's learning achievement in mathematics. This is in line with research conducted by Hannula et al. (2004), stated that "the learning of mathematics is influenced by a pupil's mathematics-related beliefs, especially self-confidence." which means that mathematics learning is influenced by students' beliefs related to mathematics, especially self-confidence. The study that was conducted by Setyowati, Devi and Widana, I Wayan (2016) also stated that there was a direct effect of self-confidence on mathematics learning outcomes with a way coefficient of 0.300. The results of the two-way analysis of variance with unequal cells obtained based on the table are $FAB = 0.116 < F \text{ table} = 3.16$, so the test decision obtained H_0 is accepted. This means that there is no interaction between the TAPPS type cooperative learning model and students' self-confidence towards students' mathematics learning achievement. The following is a graph of the effect of the learning model variable.

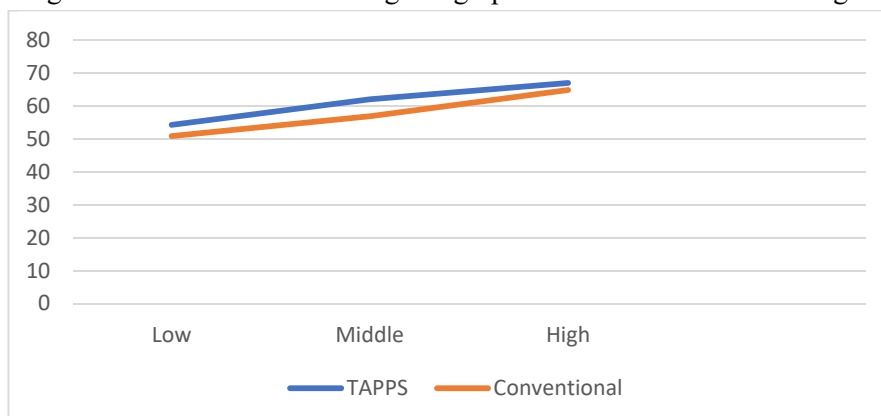


Fig 1. the effect of the learning model variable

Based on the picture above, it can be seen that there is no interaction between the TAPPS type cooperative learning model and students' self-confidence. It can be seen that the average for the experimental class students using the TAPPS type cooperative learning model is always higher than the students in the control class using the conventional learning model, either at low, medium, or high self-confidence.

IV. CONCLUSION

Based on the results of hypothesis testing using a significance level of 5%, it can be concluded as follows:

1. There is no effect between the TAPPS type cooperative learning model and the conventional learning model on students' mathematics learning achievement. This means that the learning process using the TAPPS type cooperative learning model does not have a different effect on students' mathematics learning achievement.
2. There is a difference in the effect of students' self-confidence on students' mathematics learning achievement. This means that students' self-confidence which is categorized as high, medium, and low, has a significant influence on students' mathematics learning achievement. It can be seen from the results taken from the marginal average that the higher the student's self-confidence, the higher the student's learning achievement in mathematics.
3. There is no interaction between the TAPPS type cooperative learning model and students' self-confidence towards students' mathematics learning achievement. Based on the results of hypothesis testing with a significance level of 5%, $F_{AB} < F_{table}$ was obtained, so that there was no interaction between the TAPPS type cooperative learning model in terms of students' self-confidence at high, medium, and lowest levels of student learning achievement in mathematics.

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