International Journal of Trends in Mathematics Education Research
Vol. 2, No. 1, February 2019, pp. 31-33
Available online at http://ijtmer.com

E-ISSN : 2621-8488

RESEARCH ARTICLE

Effect of Thinking Aloud Pair Problem Solving (TAPPS) Method with Audio Visual Media for Students' Critical Thinking Ability

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How to Cite: Anggraeni, R., Andriani,S., & AD, Yahya. (2019).Effect of Thinking Aloud Pair Problem Solving (TAPPS) Methodwith Audio Visual Media for Students' Critical Thinking Ability. *International Journal of Trends in Mathematics Education Research, 2*(1), 31-33. DOI: **http://dx.doi.org/10.33122/ijtmer.v2i1.58**

ARTICLE HISTORY

Received: 14 January 2019
Revised: 25 January 2019
Accepted: 11 February 2019

KEYWORDS

Application
Ability to Understand Concepts
Educational Monopoly Math Game

ABSTRACT

The study aimed to find out the effect of the Thinking Aloud Pair Problem Solving (TAPPS) learning method with Audio-visual media, Thinking Aloud Pair Problem Solving (TAPPS) learning methods and expository learning models on students' critical thinking skills conducted by researchers at the VIII SMP Middle School Bandar Lampung students. The method used in this study is a quantitative method with a type of quasi-experimental design. The population in this study were all eighth grade students of Bandar Bandar Junior High School and the samples were students of class VIII C, VIII D, VIII E. Class VIII C and VIII D as the experimental class and class VIII E as the control class. Data collection uses tests, observation, documentation and interviews. The data analysis technique used is the normality test, homogeneity test, hypothesis testing using one-way analysis ANOVA. Calculation of data was analyzed using inferential statistics with the help of SPSS 16.0 software application. Based on the results of the calculation of research data obtained that the value of sig <α, α = 0.05 where the significance value of 0.049 H0 is rejected. Shows that the Thinking Aloud Pair Problem Solving (TAPPS) method with Audio-visual media is more effective than learning using the expository model on students' critical thinking abilities.

1. INTRODUCTION

The education system in Indonesia turns out to have undergone many changes. Changes occur because various efforts have been made in the renewal of education. As a result of this influence education has progressed. In line with these advancements, now education in schools has shown a very rapidly. Allah SWT privileges those who have faith and knowledge as He-says in the Quran Al-Kahfi letter verse 66.

قَالَ لَهُۥ مُوسَىٰ هَلْ أَتَّبِعُكَ عَلَىٰٓ أَن تُعَلِّمَنِ مِمَّا عُلِّمْتَ رُشْدًا

Meaning:
"Musa said to Khidir "May I follow you so that you teach me true knowledge among the sciences that have been taught to you?"

The verse explains that humans are creatures of Allah SWT who have knowledge, therefore Allah will privilege and elevate the degrees of knowledgeable people and education can be obtained anywhere. Basically learning is a communication process with the aim of delivering messages or information so that it can stimulate the thoughts, feelings, and interests as well as the attention of students. In order to develop the ability of students, one of them in the field of mathematics.

In 2015, the Trends in the International Mathematics and Science Study (TIMSS) showed that the mathematical ranking of -- VIII grade junior high school students in Indonesia ranked 36th out of 49 participating countries. TIMSS also measured students' attitudes towards mathematics, the results obtained showed that 20% of Indonesian students liked learning mathematics, 10% did not like learning mathematics, and 70% were normal.

Mathematics has a very important role for science and technology, but it is often considered a very difficult lesson and even becomes a scary thing in every teaching and learning activity. The selection of the right learning model will help students be more active in learning, so that the process and learning outcomes of students are expected to foster good mathematical thinking skills.

Based on the results of observations on February 19, 2018 in class VIII Taman Siswa Junior High School was seen when mathematics learning the teacher did the learning still using the expository model or what is known as the lecture method made the learning activities of the students not satisfying. Interactions between students and teachers or between students are rare. All activities of students depend on the teacher's orders.

2. RESEARCH METHOD

The method used for this research is Quasy Experimental Design. This design has a control group, but it cannot be used to control external variables that enhance the implementation of the

experiment.

The research using Quasi Experimentation Design in this study was carried out in the form of Post-testOnly Control Design. The design of this study involved three classes, namely the experimental class 1 which learning using the Thinking Aloud Pair Problem solving (TAPPS) learning method with Audio-visual media, the experimental class 2 which learning using Thinking Aloud Pair Problem Solving (TAPPS) learning methods, and the control class which uses expository learning. The design of this study is in table 2.1, namely as follows:

Tabel 1. Research Design

Group	Treatment	Posttest
Experiment 1	X1	O1
Experiment 2	X2	O2
Control	X3	O3

Information :
O1: Posttest mathematical thinking ability in experimental class 1
O2: Posttest mathematical thinking ability in experimental class 2
O3: Posttest mathematical thinking ability in the control class.
X1: Learning uses the learning method Thinking Aloud Pair Problem solving (TAPPS) with audio visual media
X2: Learning uses the learning method Thinking Aloud Pair Problem solving (TAPPS)
X3: Expository learning.

The independent variable in this study is method Thinking Aloud Pair Problem solving (TAPPS) with audio visual media symbol X1. method Thinking Aloud Pair Problem solving (TAPPS) with symbol X2. The dependent variable in this study is the understanding of the students' critical thinking skills with symbols (Y). The population in the study were all eighth grade students who were in SMP Taman Siswa Bandar Lampung Academic Year 2017/2018. The techniques used to collect data are the Test Instruments given after (Posttest) the learning process in the experimental class 1, experimental class 2 and the control class.

The instrument used to measure student's ability data is by giving the question of instrument test which amounts to 10 questions in essay form. Furthermore, the test instrument of first learning outcomes in validation, in the reliability test, calculate the level of difficulty.

The technique used to collect data in this study is interviews, documentation and tests. Then before the hypothesis is issued first in the data normality test and homogeneity. Furthermore, the data were analyzed, to test the hypothesis of the researcher using one-way anava analysis with the same cell. This test uses the Barlett test.

The Barlett test formula is as follows:

$$X^2_{hitung} = \text{Ln}\,(10)\left\{B - \sum_{i=1}^{k} dk \log S^2\right\}$$

$$X^2_{tabel} = X^2\,(\alpha, k-1)$$

Hypothesis:
H_o = Homogeneous data
H_1 = Data is not homogeneous

3. RESULT AND DISCUSSION

After the data from the experimental class 1, experiment 2 and the control class were collected, then a normality test was conducted to determine whether the class had a homogeneous variant. Descriptions of posttest data on students' critical thinking skills are summarized in the table below:

Tabel 2. Description of Posttest Results Data Critical Thinking Ability

	Range	Min.	Max.	Sum	Mean	
	Statis-tic	Statistic	Statis-tic	Statistic	Statis-tic	Std. Error
Con-trol	27.00	53.00	80.00	1382.00	62.818	2.039
Exp1	35.00	50.00	85.00	1576.00	68.521	2.429
Exp 2	30.00	50.00	80.00	1355.00	61.590	1.708

Based on the table above it can be seen that the value of the learning post test results with the highest score in the experimental class one is 85, the lowest value is 50, the average class is 62.81, the experiment two highest values is 80, the lowest value is 50, the average the class average (mean) is 68.52 and the highest control class is 80, the lowest value is 53. the class average (mean) is 61.59.

After the posttest data from the experimental class and from the control class were collected, tests for normality and homogeneity were held. Homogeneity tests are conducted to determine whether the class has a homogeneous variant. Furthermore, after the normality and homogeneity tests were submitted, followed by hypothesis testing using a one-way Anava test with cells not the same to find out whether there was an effect of the Thinking Aloud Pair Problem Solving (TAPPS) method on students' critical thinking abilities.

Hypothesis testing is done after the data is known to be normally distributed and homogeneous. The researcher used the SPSS 16.0 software application with a significant level of 0.05. The summary calculation of one-way variance analysis with non-equal posttest cells is presented in the following table.

Tabel 3. Summary of Analysis of One-Way Variance Not the Same

ANOVA

Data	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	619.342	2	309.671	3.167	.049
Within Groups	6258.330	64	97.786		

Based on the final test or posttest hypothesis test students' critical thinking skills in the material relations and functions can be seen that the Sig of 0.049 with a significant level α = 0.05 states that H0 is rejected because the value of sig <α, and H1 is accepted, which means that learning uses Thinking Aloud Pair Problem solving (TAPPS) learning methods with Audio-visual media, learning using Thinking Aloud Pair Problem Solving (TAPPS) learning methods and using expository learning have different influences on students' critical thinking skills at Teluk Betung Junior High School Bandar Lampung. It can be concluded that there is the influence of

learning using the Thinking Aloud Pair Problem Solving (TAPPS) method with audio-visual media compared to the expository model of students' critical thinking skills in SMP Taman Bandar Lampung.

4. Conclusion

Based on the results of the analysis and discussion of the data, it can be concluded that there is an effect of learning using the Thinking Aloud Pair Problem Solving (TAPPS) method with audio visual media rather than using the expository method.

The application of the Thinking Aloud Pair Problem Solving (TAPPS) method with audio visual media went well and had a positive effect on the critical thinking skills of class VIII students at SMP Taman Siswa Bandar Lampung Student School.

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