

# COMPARATION OF STUDENTS' ACHIEVEMENT ON THE TOPIC OF LINEAR EQUATION ON TWO VARIABLES AT SMP NEGERI 19 AMBON

## (A Comparative Study on Learning Models Between Team Assisted Individualization and Think Pair Share)

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### Abstract

This research is intended to find out the differences of students' achievement which taught by using Team Assisted Individualization model and Think Pair Share model. Population of this research are 8th grade students of SMP Negeri 19 Ambon which consists of 10 classes. Research samples are students of class VIII-5 which stated as experiment group I (using TAI model) and students of class VIII-3 which stated as experiment group II (using TPS model). Each experiment group using different learning instruments, especially on students' worksheets. This research is a quantitative research using posttest only group design. Data of this research is analyzed using t-test which supported by SPSS software version 22.0. Result shows that students group which using Team Assisted Individualization model has better achievement compare to Students on Think Pare Share class.

**Keywords:** achievement, team assisted individualization, think pair share

### 1. Introduction

Kemedikbud (2014) stated the objectives of learning mathematics on The Curriculum 2013 for students on SMP/MTs, as follow: 1) improving intellectual abilities, especially students' high abilities 2) forming students' abilities in solving a problem systematically, 3) achieving high achievement, 4) exercising students in communicating ideas, especially in writing scientific project, and 5) developing students' character.

The objectives implied that Indonesian students should have good and characterized mathematical competencies in order to be human resources whom able to count on in various fields in the future. Ironically, the hope which implied in the curriculum is contradictive with reality on the field, which students achievement still unsatisfied.

Niak et al (2018) stated that unsatisfied students' mathematics achievement can be caused by less understanding of the concepts which resembling on difficulties for solving applied mathematical problems. On the other side, students' less participating in learning is affected by conventional model which makes students become passive in learning.

Furthermore, Titahena et al (2019) in their research has found that teachers frequently less in creating enjoyable class situation. The using method during learning is cooperative learning but in traditional form which placing students in groups for solving given problems. Surely this method has limitation for improving students achievement because not focused on students full participation in groups.

Ratumanan (Niak et al, 2018) stated that mathematical learning in these recent days is not focused more on students' activities. Teachers take many parts of learning and role as knowledge resources and knowledge transformer. On the contrary, students are placed to be passive and accepting knowledge transformation from teacher. As result, students' achievement is decreased.

Observing situation on mathematical learning in general, researchers made observation at SMP Negeri 19 Ambon on 9<sup>th</sup> until 11<sup>th</sup> September 2019. The results of observation are: 1) during learning, only some students pay attention to the teacher, 2) theacher too dominated on learning processes, 3) the learning model which used by the teaching is less creativity in triggering interaction among students, 4) teacher solved problems which should be done by the students, 5) students only calm and not possing the questions to



the teacher while having difficulties dealing with problems concepts or problems.

According to observation results which synchronized with interview on mathematics teacher, the researchers assumed that students' achievement can be improved by using learning model which can make student more active in learning. Lekitoo et al (2018) stated that one of the learning models that can be used is cooperative learning, which promoting learning and discussion in group.

There are some types of cooperative learning models, two of those are Team Assisted Individualization (TAI) and Think Pair Share (TPS). Referring to numerous of studies dealing with these two models, there are some recommendations which given by preliminary researchers that these models are better than the other cooperative learning models. Furthermore, these two models can be expanded in various researches in mathematics education.

Slavin (Susilo & Supardi, 2011) stated that Team Assisted Individualization is one of cooperative learning models. Cooperative learning refers to various methods of learning where students placed to small groups in order to help each other to learn topics which given by the teacher. Meanwhile, according to Susilo & Supardi (2011) through Team Assisted Individualization, students are invited to learn independently, trained to optimize their abilities in understanding concepts, explain their findings to other, and solve problems.

The other cooperative learning which applied in this research is Think Pair Share. Tanujaya & Mumu (2019) stated that Think Pair Share is an instructional strategy designed to provide students a topic for thinking about. The learning model is facilitating students to generate opinion individually and share it with others. Through Think Pair Share, then students' participation can be impored totally.

These two types of cooperative learning model are chosen to be compared in the research at SMP Negeri 19 Ambon because considerably effective to increase students participation which can be trigger abilities to improve their mathematical achievement.

## 2. Method

This research is a quantitative research using *Post Test Only Group Design*. Students' achievement on the group which using Team

Assisted Individualization and Think Pair Share are compared in order to find out which one are better than the other. In detail, research design can be shown in the following table:

**Table 1.** Posttest Only Group Design

Group	Treatment	Post-Test
E <sub>1</sub>	P <sub>1</sub>	O <sub>1</sub>
E <sub>2</sub>	P <sub>2</sub>	O <sub>2</sub>

(Adapted from Sugiyono, 2012)

- E<sub>1</sub> : *Team Assisted Individualization* group.
- E<sub>2</sub> : Think Pair Share group
- P<sub>1</sub> : Treatment Using *Team Assisted Individualization* model.
- P<sub>2</sub> : Treatment Using *Think Pair Share* model.
- Q<sub>1</sub> : *Post-test* on *Team Assisted Individualization* group
- Q<sub>2</sub> : *Post-test* on *Think Pair Share* group.

Sampling technique on this research is purposive sampling, which is sampling technique by using certain consideration (Sugiyono, 2012). Population in this research is all 8<sup>th</sup> grade students of SMP Negeri 19 Ambon in academic year 2020/2021 which consists of 10 classes. Among these classes, the researchers took class VIII-5 as experiment group I and class VIII-3 as experiment group II, consider to their similarity average in daily tests. Data of post-test is classified to five levels according to reference assessment which recommended by Ratumanan & Laurens (2015). Levels of students' achievement according to reference assessment are: highest, high, fairly, low, lowest.

Data analysis processes are started by using descriptive statistics in order to count the average of students' daily tests. The next step is using inferential statistics, which are homogeneity and normality test to assure that the two samples have similarity in their basic ability. The last step is hypothetical test using t-test analysis (comparative group tests on the average of students' achievement between the two groups experiment).

There are two hypotheses in this research, which are H<sub>0</sub> (there is no difference on students' achievement between the two groups experiment) and H<sub>1</sub> (there are differences on students' achievement between the two experiment groups). Significant level of hypothesis test is  $\alpha = 0.05$ . The researchers use SPSS software version 22.0 to support all data analysis, in terms of effectively and providing detail result.

### 3. Results and Discussion

#### 3.1 Results

Data of post-test of the two groups experiment shows in the following table.

**Table 2.** Students' Post-test according to Reference Assessment

Qualification	Test Results	Total Number of Students	
		Experiment Group I	Experiment Group II
Highest	$85 \leq x \leq 100$	3	1
High	$70 \leq x < 85$	9	5
Fairly	$55 \leq x < 70$	7	6
Low	$40 \leq x < 55$	5	7
Lowest	$x < 40$	2	7
Total		26	26

According to table 2, then the average of post-test can be shown in the following table.

**Table 3.** Post-test Average

Group	Average
Experiment Group I	65.2431
Experiment Group II	54.3912

Normality test conducted in this research using Sapiro Wilk Method. Normality test intended to assure that data of basic abilities of the experimental groups is normal. The results as shown in table 4.

**Table 4.** Normality Test ( $\alpha=0.05$ )

Group	Sig	Conclusion
Experiment Group I	0.413	$H_0$ Accepted
Experiment Group II	0.163	$H_0$ Accepted

Homogeneity test also used in order to assure that the experimental groups have similarity on basic abilities. Data of homogeneity test is showing in the following table 5.

**Table 5.** Homogeneity Test

Groups	Sig.	$\alpha$	Conclusion
Experiment I and Experiment II	0,410	0,05	$H_0$ accepted

In order to find out the difference between experiment group which using Team Assisted Individualization and Think Pair Share, Hypothesis test is conducted by using t-test. The results as shown in the table 6.

**Table 6.** Hypothesis test

Groups	Sig. (2-tailed)	$\alpha$	Conclusion
Experiment I & Experiment II	0,025	0,05	$H_1$ accepted

#### 3.2 Discussion

Precondition of the two experiment groups considered similar in their abilities according to students' daily tests on these groups. According to normality test for both samples, the results show that both samples have sig values greater than  $\alpha = 0.05$  as they shown in table 4. Sig value for experiment group I is 0.413 and sig value for experiment group II is 0.163. These values mean precondition data has normal distribution for both samples.

Following Normality test, then homogeneity test also conducted for group experiment I which treated by Team Assisted Individualization model and group experiment II which conducted by Think Pair Share model. The results show in table 5, which can be seen that sig value for both groups is  $0.410 > \alpha = 0.05$ . This value means that precondition data for both experiment groups is homogeneous and eligible for hypothesis test.

The result of hypothesis test show that the value of *sig-2 tailed* for both samples is  $0.025 < \alpha = 0.05$ , which means that there is difference between students' achievement between experiment group I and experiment group II.

According to the table of students' achievement which based on benchmark assessment and the table of average values on students' achievement, then can be concluded that the group which applied Team Assisted Individualization in the learning progress is better in achievement than the group which applied Think Pair Share model.

According to the table of students' post-test according to reference assessment (table 2), there can be seen that experiment group which using Team Assisted Individualization is superior on the level highest, high, and fairly, compared to Think Pair Share group. These result describe that students on Team Assisted Individualization have better mastery of concepts than students' which taught by using think pair share model. This phenomenon is similar to research findings of Siregar et al (2018) which stated that TAI gave positive effect towards mathematics learning achievement.

In learning progress, despite both learning models use student worksheet (LKPD), but creativities in making ideas for solving problems is frequently showed. by students on experiment group which taught by using Team Assisted Individualization. This situation caused by the total number of student on each group, which consists of 5 – 6 students that can trigger each student to pose

their idea, eventually there were various ideas can be collected. This phenomenon is contrary to the situation on experiment group which using Think Pair Share that placed only two students in each group. That is why, there were only few creativities that students could provide in learning on each group. Variation of idea or opinion in group experiment which used TAI model automatically can be trained students to improve their reasoning which make positive effect in understanding mathematics concepts. This condition similar to Tauran's (2018) which stated that learning by Team Assisted Individualization can be used as an alternative to mathematics learning in an effort to enhance high school students' mathematical reasoning.

Consider to students' activities and attitudes in learning progress, students on experiment group which used TAI model seemed to be more excited and enthusiastic in group discussion. Every member of groups seemed to be active in explaining their ideas. Communication among students is built in better ways and every students is respect one to each other. This situation can be trained and formed students' interpersonal skills for each students. This phenomenon similar to Siregar et al's findings (2018) which stated that student who obtained better interpersonal skills through learning on TAI model tends to quick in adapting and can be discussed better on group learning.

#### 4. Conclusion

According to data results and discussion regarding to those results, there can be concluded that students' achievement on 8th grade students at SMP Negeri 19 Ambon, which taught by using cooperative learing model on type Team Assisted Individualization (TAI) have better performance than students' on Think Pair Share (TPS) group. TAI's superiority in performance not only showed on post-tes average and hypothesis test but also on students' attitudes and activities during learning progress.

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