THE EFFORTS TO INCREASE STUDENTS ACTIVENESS IN LEARNING MATHEMATICS BY USING COOPERATIVE LEARNING MODELS TYPE TEAM ASSISTED INDIVIDUALIZATION (TAI)

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ABSTRACT

The student activity still low, so it gives the effect of the result in learning mathematics. This research aims to improve student activity in learning mathematics by using cooperative learning models type Team Assisted Individualization (TAI) of VII D grade in SMP Muhammadiyah 1 Yogyakarta in the academic year 2016/2017. The type of research used is classroom action research (CAR) consists of two cycles. The research setting is students of VII D grade in SMP Muhammadiyah 1 Yogyakarta in the academic year 2016/2017 with the implementation of cooperative learning models type of Team Assisted Individualization with the subject of the concept of square and rectangular geometry in problem-solving. The data collection techniques are observation, interview, documentation, test, and triangulation. The data collection instrument is the observation sheets of students and teachers—the analysis data using descriptive qualitative analysis. The result of the research shows that mathematics learning using a cooperative learning model type of TAI can increase the student's activeness in learning mathematics at VII D grade SMP Muhammadiyah 1 Yogyakarta in the academic year 2016/2017. It showed from the result of the observation that learning mathematics has increased in every cycle, such as in cycle I, the percentage of student activeness of 59,27% with sufficient criteria, and in cycle II increase up to 78,76% with good criteria. Also, the outcome of students learning in each cycle increases.

Keywords: students activeness, cooperative learning models, TAI

INTRODUCTION

Technological advances in the world today certainly can not be avoided anymore. Almost all aspects of life have been affected by technological progress. No exception one aspect of life that is very important in a human being is education. Therefore, improvement of the quality of education must always be made so as not to be affected by the negative impact of technological advancements, especially for students. One of the lessons given to students in mathematics is a compulsory subject for students at every level of education. Giving mathematics lessons in junior high should be a fun lesson for students. However, most students feel that mathematics is still challenging to understand.

Teaching mathematics lessons to be fun lessons can be done with various approaches, including the Classroom Action Research (CAR) approach. One of the special characteristics of CAR is the collaboration between practitioners (teachers, principals, students, etc.) and researchers in understanding, agreement on problems, decision-making that ultimately gives birth to similar actions (Arikunto, 2007: 65). In the application of classroom action research, several learning methods can be applied, such as cooperative learning. The learning model used is undoubtedly a learning model that is suited to the conditions of the class and also students. Applying this learning model is to be more active in class so students can play an essential and full role in this learning activity.

Based on the results of observations made by researchers on January 4, 2017, at SMP Muhammadiyah 1 Yogyakarta in the classroom when mathematics learning took place, the activity of students was still low so that it resulted in learning outcomes obtained by students. Students still joke a lot with their peers, so they do not pay attention to the teacher when explaining the subject matter. When the teacher asks students to work on problems in a group way, students still lack cooperation with the group so that from the group only a few group members work on the questions given by the teacher

and also lack of interaction between fellow group members or other groups. Also, when the teacher asks one of the groups to present the results of their group discussion, the other students do not respond to the results of the percentage, which results in students having difficulty concluding the mathematics learning outcomes being discussed which results in students becoming difficult in working on the problems given by the teacher.

To create a working-class in learning can use several ways. One way that can be taken is by applying cooperative learning models where in this learning model, students can exchange opinions and cooperate with other students. One type of learning that can be used in this cooperative learning method is Team Assisted Individualization (TAI). Students will help each other complete their group assignments. Students who are weak in the lesson will be assisted by students who better understand the learning material, so that good cooperation is established and makes students more active in learning. If there are problems in the group that cannot be solved by each group member, the teacher will help solve the problem. According to Shoimin, Aris (2016: 200), Team Assisted Individualization (TAI) has a rationale that is to adapt learning to individual differences related to the ability and achievement of student achievement.

Furthermore, the stages of the TAI learning model, according to Shoimin, Aris (2016: 200) has eight stages in its implementation which are as follows:

a) Placement Test. The teacher gives an initial test to students. This method can be replaced by examining the average daily scores or grades in the previous chapter obtained by students so that the teacher can determine the shortcomings of students in specific fields.

b) Teams. The teacher forms heterogeneous groups of 4-5 students.

c) Teaching Group. The teacher gives a short material before giving group assignments.

d) Student Creative. The teacher emphasizes and creates the perception that the group's success determines each student (individual).

e) Team Study. Students work together on the assignments of the worksheets given in the group. At this stage, the teacher also assists individually with students in need, assisted by students who have excellent academic ability in the group who act as peer tutoring.

f) Fact Test. The teacher gives small tests based on facts obtained by students, for example, by giving a quiz.

g) Team Score and Team Recognition. Teachers score scores on group work and give a degree of appreciation to brilliantly successful groups and groups that are considered less successful in completing assignments.

h) Whole-Class Unit. In the final step, the teacher presents the material at the end of the chapter with problem-solving strategies.

Meanwhile, according to Slavin (2005: 195-200) cooperative learning type TAI consists of 8 components, namely as follows:

a) Teams. Students in TAI are divided into teams of 4 to 5 people.

b) Placement Test. Students are given pre-program tests in the field of mathematical operations at the start of program implementation. They are placed at the appropriate level in the individual program based on their performance in this test.

c) Curriculum Materials. Students work on individual curriculum materials, including addition, subtraction, multiplication, division, number, fraction, decimal, ratio, percent, statistics, and algebra.

d) Study groups. After taking the placement test, students then work on their units in their respective groups according to the provisions.

e) Team Scores and Team Recognition. Counting the number of team scores at the end of the week and awarding criteria built from team performance.

f) Teaching Groups. Provision of material briefly from the teacher before giving group assignments. The purpose of this session is to introduce the main concepts to students.

g) Fact Test. Implementation of small tests based on facts obtained by students.

h)   Entire Class Unit. Providing material by the teacher at the end of learning time with a series of exercises and problem-solving strategies.

According to Shoimin, Aris (2016: 202), the TAI learning model's advantages are as follows:

a)   Weak students can be helped in solving problems.

b)   Smart students can develop their abilities and skills.

c)   There is responsibility in the group in solving problems.

d)   Students are taught how to work together in groups.

e)   It is reducing anxiety.

f)   We are eliminating feelings of isolation and panic.

g)   Replace the form of competition with cooperation.

h)   We involve students actively in the learning process.

i)   They can discuss, debate, or convey ideas, concepts, and expertise until they truly understand them.

j)   They have a caring, a sense of responsibility towards other friends in the learning process.

k)   They can respect ethnic differences, differences in abilities, and physical disabilities.

According to Saifuddin, Asis, and Ika Bardiati (2014: 33), active learning is a learning approach that involves more student activities. The aim is for students to be able to actively gain learning experiences, develop thinking skills, analyze, assess, and apply them in everyday life.

Activities in active learning, according to Asmani, Jamal Ma'mur Asmani (2013: 81) are as follows:

a)   Experience. Activities in active learning students make observations, experiments, reading, interviews, counting, measuring, and making things.

b)   Interaction. Active learning activities of students in interaction are discussed among friends rather than asking questions, asking other people's opinions, and working in groups.

c)   Communication. Student learning activities are active in the communication component by paying attention or commenting on questions that challenge the teacher, then telling and commenting. After all, activities have been carried out, students report verbally or in writing, and students express their thoughts or opinions.

d)   Reflection. Active learning activities of students in the reflection component is to rethink their work or thoughts.

The research objective to be achieved in this research is to increase students' activeness in learning mathematics through Team Assisted Individualization (TAI) type of cooperative learning methods for students of class VII D even semester of SMP Muhammadiyah 1 Yogyakarta Academic Year 2016/2017.

METHODS

This type of research conducted by researchers is classroom action research (CAR).
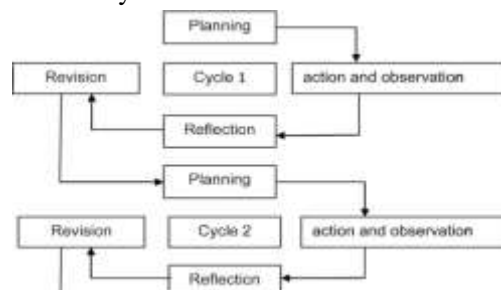
Figure 1. Class action research flow

(Arikunto: 2007)

This research was conducted at SMP Muhammadiyah 1 Yogyakarta. The study was conducted in the even semester of the 2016/2017 school year. The subject of research in this study is a grade VII D semester Junior High School Muhammadiyah 1 Yogyakarta school year 2016/2017, which amounted to

31 students. Meanwhile, the research object is the implementation of the Team Assisted Individualization (TAI) Cooperative learning model using geometry concepts in square and rectangular subjects in problem-solving. The procedure of class action research is described as follows:

1. Cycle I
   a. Planning. This stage of planning is a preparatory stage conducted by researchers to conduct class action research, namely:
      1) Create a Lesson Plan and student worksheets about the material to be taught by the TAI type Cooperative learning model.
      2) Arrange and prepare the observation sheet related to the learning process that will be done.
      3) Create a research instrument in the form of an Evaluation/diagnostic test tool.
   b. Acting. At this stage, the actions taken are the implementation or implementation of the planning that has been made, namely the implementation of a cooperative learning model type Team Assisted Individualization (TAI), which aims to improve or Improve the previous learning model. An outline of the actions performed is as follows:
      1) The teacher provides students with an introduction, direction, and motivation for the material to be discussed using a Team Assisted Individualization (TAI) cooperative learning model.
      2) The teacher gives the preliminary test to the students to observe the average daily value or value in the previous chapter that the student acquired so that the teacher can know the lack of students and can be used as a guideline in the group's division.
      3) Teachers divide the group by test results, placement of each heterogeneous-enabled group, and each group of 5-6 people.
      4) In each group, there is at least one student who is more master of the material so that it can help the other student.
      5) Teachers provide lesson materials briefly.
      6) The teacher shares the student worksheet with the individual working group, and the student worksheet contains the material and several questions relating to the rectangle and rectangle.
      7) The teacher assigned each student to bring each student worksheet results in his group to discuss the work of the individual student worksheet working, teach each other friend, and check to answer each other.
      8) The teacher assigns students who can already work on the problem in the student worksheet to assist students who do not understand because at the end of the meeting will be held a quiz that must be answered by individuals in the group. The group will get the score of each individual's average score.
      9) Teachers travel around the classroom to check and provide individual assistance in a difficult group.
      10) The teacher randomly designates one of the individuals in the discussion group to present the discussion's results and conclude the outcome.
      11) The teacher gave posttests that contain two questions that must be done by each individual.
      12) At the end of each teacher's cycle announces the acquisition of each group's scores and gives rewards.
   c. Observation. Observation or observation is a data recording procedure during the learning process. Observations were carried out by researchers and assisted by other observers, mathematics teachers, and associates who were also conducting observations during the process of learning in progress using the prepared observation sheet. Previous. The observation was conducted to know the learning path by implementing a Team Assisted Individualization (TAI) cooperative learning model. The things that are observed are the

process of learning with the type of Team Assisted Individualization (TAI), the activation of students, and obstacles that are faced during the implementation of the action. This is to know the suitability between the implementation of the action with pre-designed plans.

d. Reflection. This stage is the research phase of the process during the implementation of the Team Assisted Individualization (TAI) cooperative learning model, which is the problem that arises and everything related to the action in the class that has been Done. This reflection activity is conducted by conducting discussions with related parties in the study of mathematics teachers. At this stage, results are obtained at the observation and evaluation phases, which are the daily replay test and the observation results that have been collected and then analyzed. The weaknesses or flaws that occur in this I cycle will be corrected in the next cycle.

2. Cycle II

a. Planning. At this stage, re-planned learning action is based on the results of reflections on the I cycle to fix the weaknesses and increase the I cycle's success.

b. Acting. The implementation of the action on cycle II is not much different from the act of action on cycle I. At this stage also carried out improvements that have been discussed on the reflection cycle I to improve student learning activity.

c. Observation. Observations conducted during the implementation of learning with cooperative learning model type Team Assisted Individualization (TAI) was conducted. At this stage, researchers observe students' activity, the level of mastery of the material by students, and the constraints faced during the learning process. Observations were made using the prepared observation sheet.

d. Reflection. At this stage, the action of reflection is as it does in cycle I. Activities conducted are discussions between researchers with the mathematics teachers concerned about everything that happened at the time of the study during the II cycle Last. If research objectives have not been achieved, then the researcher will proceed to the III cycle. However, if the research objectives are accomplished, then the study is considered complete. Weaknesses and deficiencies in stage II will be corrected in the next cycle.

RESULTS AND DISCUSSION

The following is presented a summary of students active observation:

Table 1. Student-Active score analysis results

No.	Observed aspects	Percentage	
		Cycle I (%)	Cycle II (%)
1.	Enthusiastic students in the following learning	58,06%	77,42%
2.	Student interactions with teachers	59,67%	79,83%
3.	Interaction between students	58,46%	79,03%
4.	Group cooperation	60,08%	79,03%
5.	Active students in groups	58,49%	77,82%
6.	Student participation in concluding discussion results	50,88%	79,43%

In the table, there are six active aspects of the cycle I to cycle II, which has increased in every aspect. On the enthusiastic aspect of students following a learning hike from the cycle, I to cycle II is 19.36%. On the interaction aspect with the teacher, cycle I to cycle II is 20.16%. The aspect of the interaction between students increasing from cycle I to cycle II is 20.57%. The group cooperation aspect of the increase from cycle I to cycle II is 18.95%. The active aspect of students in the increment group from cycle I to cycle II is 19.33%. As well as students ' participation in concluding, the wetting results increased by 28.55%. Students also give a positive response to cooperative learning with Team Assisted Individualization (TAI) learning type. Increased observation results also resulted in the increasing test results of students ' understanding of square and rectangular material.

The cooperative learning method of team-assisted individualization (TAI) effectively improves students' active and understanding of VIID Junior High School Muhammadiyah 1 Yogyakarta. This can be seen from the observation results and the results of the student's understanding of the tests given by the tests at each meeting obtained by the students. Students are eager to follow group learning and discuss with each other with friends. Students also do not feel bored during the study of mathematics and active in the group and appreciate the opinions of his friends both in the group of the respectively or between groups. In learning by using a cooperative learning model type, Team Assisted Individualization (TAI), learning leads to the student center is not a teacher center. Thus this learning model can improve the activity and mastery of the square and rectangular material math concepts. Students can exchange opinions and discuss with their friends during group work as they progress.

Research that is relevant to the research conducted by researchers is research conducted by Yolanda Dian Nur Megawati under the title Model cooperative learning Teaching type Team Assisted Individualization (TAI) in improving student activity And the results of student accounting Learning grade XI IPS 1 SMA 1 Banjarnegara school year 2011/2012 with increased activity of 8.11%. While research conducted by researchers resulted in an increase in activity with the cooperative learning model of type Team Assisted Individualization (TAI) is 19.49%. There may be differences in the increase in the activation of the activity that has been done by researchers is the subject of research, research time, and also the material being taught.

CONCLUSION

Based on the results of research conducted by researchers through research using cooperative learning type Team Assisted Individualization (TAI) with the subject square and rectangular can be concluded that the existence of Increased student activity. This is evident from the results of students active observation on each cycle which has increased in each indicator which includes students enthusiasm in following the lesson on the I cycle of 58.06% increase to 77.42% in cycle II, interaction Students with the teacher at cycle I 59.67% increased to 79.83% in cycle II, the interaction between students in cycle I 58.46% increased to 79.03% in cycle II, group cooperation on cycle I 60.08% increased to 79.03% in cycle II, activity participants Students in the group on the I 58.49% cycle increased to 77.82% in the II cycle, as well as the participation of students in concluding the results of the discussion on a 50.88% I cycle increased to 79.43% on the II cycle. It can be concluded that there is an increase in the activity of mathematics from the I cycle of 59.27% to 78.76% in cycle II. Learning Mathematics using cooperative learning type Team Assisted Individualization (TAI) goes smoothly and gets a positive response from students, students can follow the learning well by using type Learning. This is evident from the results of interviews with students who showed a positive response from students.

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