

EFFORTS TO IMPROVE THE STUDENTS' LEARNING OUTCOMES IN MATHEMATICS BY USING TGT COOPERATIVE LEARNING MODEL OF SMAN 10 PEKANBARU

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Abstract. Mathematics is a tool to develop humans' ways of thinking and this science facilitates a framework logical thinking. However, to practice this logical thinking is not such an easy way to implement for students. In addition, the Students' motivation is also very low to learn mathematics. Teams Games Tournament (TGT) Cooperative learning will foster students' enthusiasm and motivation learning Mathematics. The goal of the research is to improve the student learning outcomes mathematics of class X-2 SMAN 10 Pekanbaru through the application of the cooperative learning TGT. The study include the type of classroom action research with subject of students class X-2 in SMAN 10 Pekanbaru. The research instrument used is to test and observations. The test results are said to have improved student learning outcomes if there is an increase in the average class scores in each cycle. After conducting research with two cycles, the application of the cooperative learning teams games tournament (TGT) can improve student mathematical learning outcomes in the staple of mathematical logic where there was an increase in the average class scores before the action from 66.70 to 74.87 in the first cycle and then increased again in the second cycle to 80.13. Based on these results can be concluded that cooperative learning TGT can improve student mathematics learning outcomes in the class X-2 of SMAN 10 Pekanbaru.

Keywords : *Team Games Tournament (TGT) ; Mathematics Learning Outcomes.*

1. INTRODUCTION

Mathematics is one of difficult subject that is considered by the students. As well as mathematics lesson in class X-2 SMA 10 Pekanbaru. Based on test the learning outcomes done by students of class X-2 during one semester, only 20 students who scored above 78 on the first test and 27 students on the second test. The average value is still below 78. The value doesnt fulfilled the Minimum Exhaustiveness Criterion (KKM) that is 78 for mathematics. Mathematics is a tool to develop someone's thinking and mathematics is also a branch of knowledge which facilitates logical thinking possessed by human beings. Besides, this logical science has important role towards development of various other disciplines. That is why Mathematics is called as a *King and a Good Servant* as well. However, mathematics is considered as an abstract formula, frightening subject for learners. As a result, the learners' output is at low level in mastering this subject. In line with this, learning process of Mathematics at State Senior High School No. 10 Pekanbaru is also challenging, or it is still far from the expected scores. This condition is due to learners' less focus when the teacher is explaining. In addition, once the learners are given the assignments, they tend to copy paste from other peers.

The teacher as an educator has the main goal in learning activities at school that is creating a pleasant learning atmosphere, can attract students' interest and enthusiasm and can motivate students to always learn well and spirit, because with a pleasant learning atmosphere will have a positive impact in achieving learning outcomes the optimal.

Learning Outcomes are not separate from the learning process itself because learning outcomes arise due to learning activities. In other words learning outcomes are goals to be achieved from learning activities. [19] states "learning outcomes are patterns of actions, values, understandings, attitudes, appreciation and skills". Soedijarto [12] states "learning outcomes are the level of mastery achieved by students in following the teaching and learning process in accordance with established educational goals". In line with this opinion [21] states "learning outcomes are changes in behavior that is relatively settled in a person as a result of one's interaction with their environment". According to these opinions it can be concluded that learning outcomes are changes in student behavior achieved after implementing the learning which the behavior changes include affective, cognitive and psychomotor aspects. The behavior change is due to the achievement of mastery over some materials provided in the learning. Achievement is based on learning goals that have been set. To achieve this goal teacher's role is very decisive. According to [15], "Competent teachers are teachers who are able to manage teaching and learning programs". Managing has a broad meaning concerning how Teachers are able to master teaching skills, also how teachers apply strategies and carry out conducive learning. A similar opinion was put forward by Roestiyah [1] that the teacher must be able to choose a learning strategy so that students can learn effectively and efficiently, and achieve expected goals. Meanwhile according to Wina [13], the teacher's role is: "as a learning resource, facilitator, manager, demonstrator, mentor, and evaluator". As a motivator, the teacher must be able to generate student motivation so that student activities in the learning process work well. One way to generate student activity in the learning process is to change the method or learning model to be more interesting. The teacher-centered learning paradigm should be changed to student-centered learning [2]. The best teaching and learning process is when students are actively involved in learning activities in the classroom [8]. If students are active in learning activities, then student learning outcomes will also be good. [11] revealed that in cooperative learning there are various methods such as Learning Together, Constructive Controversy, Group Investigation, Jigsaw, and Teams-games-tournament. Slavin [5] has stated that if cooperative learning model is not properly designed, then it will cause some students are not responsible towards their group works. Besides, some other learners who lack of capabilities are considered as neglected memberships within their group. The application of the cooperative learning TGT which contains academic games can encourage all group members to be involved in working on their group assignments. This happens because students feel more relaxed and happy when learning and discussing with their friends.

According to [9], "Teams Games Tournament (TGT) is a type or method of cooperative learning that is easy to apply, involves the activities of all students without having to have differences in status, involves the role of students as peer tutors and

contains elements of the game". Meanwhile, according to [10]: "Teams Games Tournament (TGT) is a type of cooperative learning that places students in study groups consisting of 5-6 students who have different abilities, gender and ethnicity/race". Through Team Games Tournament (TGT) by using game tournaments where students compete with other team members, it will foster motivation and enthusiasm learning. If they already have strong motivation and feel happy, students can be active so that they show interest, activity, and participation in participating in learning activities that are being carried out. Likewise in learning mathematics, if students have strong motivation and can be active in learning, mathematics will not be the most frightening subject anymore. Thus, through this learning model, it is expected that students to improve their learning outcomes.

Based on problems that have been stated above, the goal of this research is to improve students' mathematics learning outcomes of X-2 grade students of Senior High School No. 10 Pekanbaru on the subject of mathematical logic through the learning model of Team Games Tournament (TGT). "In TGT each student is placed in a group consisting of several students with low, medium and high ability" [6]. Through this learning model, students with low ability can play an active role in learning through their groups, while those with high ability can help other students who have lower ability than themselves in the group. According to Slavin [18], in this type of learning model after students learn and work cooperatively, students are invited to an academic game called Teams games tournaments. In this game, the first thing to do is to place students as tournament participants on tournament tables. The students represent their respective groups. The research is expected to be useful for mathematics teachers as well as for students of SMAN 10 Pekanbaru.

2. RESEARCH METHOD

The research is a Classroom Action Research (CAR) conducted by teacher concerned, the researcher himself. Wina [14] states "Classroom Action Research (CAR) can be interpreted as a process of studying learning problems in the classroom through self-reflection in an effort to solve these problems by carrying out various planned actions in real situations and analyzing each effect of treatment the ". The subjects this study were students of class X-2 of SMAN 10 Pekanbaru in the 2016/2017 school year, with the number of students in one class consisting of 47 people consisting of 20 men and 27 women. This research will be applied to Mathematics subject subject to Mathematics Logic in the even semester of the academic year 2016/2017. The time of this study is from February 13, 2017 to April 12, 2017. The research was conducted in 2 cycles, each cycle consisting of 4 stages namely: 1) planning, at this stage the researcher compiles learning tools consisting of Lesson Plan, Syllabus, providing Worksheets, planning learning outcomes tests in the form a grid of daily questions I and daily tests II and questions Daily test I and daily test questions II along with alternative answers, and prepare observation sheets. 2) implementing actions, implementing actions carried out in a structured learning process in accordance with the Lesson Plan, syllabus, providing Worksheets by applying TGT learning model. 3) observation, observations made on the activities, interactions and learning progress of students during learning takes place. 4) reflection, reflection is done

after the action of each cycle ends which is a reflection for the teacher or researcher on the impact of the learning process carried out. Data collection techniques used in this study were observation and achievement test. Observations were made during the teaching and learning process while the learning outcomes test was carried out after each cycle I and II. The test used in this assessment is a daily test. According to Endang Mulyatiningsih (2011: 25) "Tests are methods of collecting research data that serve to measure one's ability". The instrument in the form of a test is used to find out the mathematics learning outcomes of students after the teaching and learning process which will be analyzed descriptively quantitatively by calculating the average. The average class obtained in each cycle is calculated the difference to find out the increase in student learning outcomes. Data from observations showing the implementation of the Teams Games Tournaments (TGT) type of cooperative learning model will be analyzed descriptively qualitatively by explaining the results of observations through words. The data is compared to show the implementation of the cooperative learning model that was applied before the action, cycle I and II.

3. FINDINGS AND DISCUSSION

A. FINDINGS

Data was obtained from field explained that the implementation of cooperative learning using the Teams Games Tournament (TGT) can improve mathematics learning outcomes of Class X-2 of SMAN 10 Pekanbaru. This means that an increase in the average value of the class that is at the time before the action 66.70 increased to 74.87 the first cycle and then increased again in the second cycle to 80.13. Improved student learning outcomes occur because in the Teams Games Tournament (TGT) students are more motivated and active. The research result are presented in the Table 1:

Table 1. Result of The Cycle I

No.	Completeness	amount	%
1	Complete	32	68,09%
2	Not finished yet	15	31,91%
Amount		47	100%
The highest score		90	
Lowest Value		45	
Average value		74,87	

Based on the results of test after the first cycle action can be known the average value test using TGT cooperative model after the first cycle action has increased by 8.17 points compared to the initial test, from 66.70 to 74.87. The table also shows that the number of students who have completed has risen from 22 to 32, although the percentage is still low at 68.09%. the grade average is still below the specified KKM of the school which is 74.87 while the KKM of the school is 78. Therefore it is necessary to take action in cycle II. The results of Cycle II are average of the evaluation values that have been carried out at each meeting in Cycle II. Cycle II results if described in Table 2.

Table 2. The Results of Cycle II

No.	Completeness	amount	%
1	Complete	38	80,85%
2	Not finished yet	9	19,15%
Amount		47	100%
The highest score			98
Lowest Value			50
Average value			80,13

From the results of the test after the second cycle of action can be known the average value of the test using TGT cooperative model (Teams Games Tournaments) after the second cycle of action has increased by 5.26 points compared to the test after the first cycle, namely from 74.87 to 80.13 . it means that the average grade of the class is above the school KKM value set at 78. The table also shows that the number of students who have completed has gone up from 32 people to 38 people, and the percentage of students who have completed is 80.85%. Increased average acquisition after the first cycle of action with after the Cycle II if described in tabular form as follows

Table 3. Comparison of The Value In Each Cycle

No.	Completeness	Pre-cycle	Cycle I	Cycle II
1	Complete	22	32	38
2	Not finished yet	25	15	9
Amount		47	47	47
The highest score		80	90	98
Lowest Value		30	45	50
Average value		66,70	74,87	80,13

From the table above the number of students who completed the pre-cycle was only 22, up to 32 students in cycle I and in cycle II it rose to 38 students. The average value also increased from 66.70 before the first cycle action to 74.87 after the first cycle, and rose again after the cycle II to 80.13. Thus learning using TGT is said to able to improve student learning outcomes.

B. DISCUSSION

Based on observations of learning outcomes before the actions taken by researchers, data obtained an average grade of 66.70. These results illustrate that student mathematics learning outcomes are still low. This is due to the use of inappropriate learning models. Learning activities still apply the learning model whose activities are centered on the teacher, so students are less active. This contradicts opinion of [19] stating that "knowledge is the result of construction of a person's activities or actions so that knowledge should be constructed (built) rather than directly perceived by the senses". On the other hand mathematics is a lesson that requires extra hard thinking so that teachers should use learning strategies that are fun in order to reduce the tension of children's thinking. One of the fun learning methods is to use a cooperative learning model, one of which is the Teams Games Tournaments (TGT) type, where there are academic games that are liked by students. [16] stating that TGT concepts were academic tournaments, quizzes

and individual progress score systems, where students compete in their team as representatives each of team in the classroom. Through academic tournaments, quizzes and awards for the team that gets the highest score makes TGT a fun learning model for students. With this fun learning, students can easily understand the subject matter quickly so that students' learning outcomes can improve. Therefore, mathematics learning should be use TGT . In learning using, the increasing of learning outcome happened maximally. This can be seen from student learning outcomes which increased from 66.70 at the time before the action increased to 74.87 in the first cycle then increased again to 80.13 in the second cycle. Improved student learning outcomes in the first cycle, caused by teachers using TGT.

TGT type of cooperative learning model requires students to be active in learning activities. In addition, the existence of an academic game makes students enthusiastic in participating in learning activities. Classroom action research in cycle I there are still some obstacles. For this reason, the research continues to cycle II by looking at important notes which still need to be reflected again for the next learning. Actions taken in cycle II still use TGT based on reflection of cycle I. In cycle II the teacher conditions students and motivates and guides students in group activities so that there are no students who are passive in group activities In cycle II, learning outcomes increased again when compared to cycle I. This can be seen from the increase in the average class from the first cycle of 74.87 to 80.13 in the second cycle. Improving student learning in cycle II, shows that the use of cooperative learning models Teams Games Tournament (TGT) in Mathematics can improve student learning outcomes. The actions in the second cycle are quite effective in applying TGT type of model in learning and are more optimal for improving student mathematics learning outcomes. With the existence of the Teams Games Tournaments (TGT) type of cooperative learning model, students can be more active in classroom learning so that it affects the improvement of student learning outcomes. Existing data illustrates the increase in student mathematics learning outcomes before conducting learning activities using the Teams Games Tournaments (TGT) cooperative learning model and after using the TGT type cooperative learning model, so the research was carried out only until the second cycle.

From the results of the study, it was proven that the use of the Teams Games Tournaments (TGT) type of cooperative learning model was considered successful and could improve student learning outcomes. This is in accordance with the theory contained in chapter II, namely Mathematics is a lesson that requires extra hard thinking so that teachers should use learning strategies that are fun in order to reduce the tension of children's thinking.

Based on the description above, it can be said that the use of the TGT learning model can improve students' mathematics learning outcomes. This statement is supported by research conducted by [17], stating that the TGT learning model has an influence on students' mathematics learning outcomes on the subject of two dimensions. This can be seen from the mathematics learning outcomes of students who are taught TGT are higher than students who are taught using the STAD learning model. Furthermore, research

conducted by [4] states that the use of the Teams Games Tournament (TGT) type of learning model can increase learning activities which have an impact on increasing student learning outcomes. This is in line with [3] Team Game Tournament (TGT) learning can increase student activity and student learning outcomes in learning mathematics. This increase can be seen from the indicators of student activity and student learning outcomes in learning mathematics.

4. CONCLUSION

Based on the results and discussion, it can be concluded that the use of the Teams Games Tournament model can improve mathematics learning outcomes for Mathematics Logic in class X-2 of SMAN 10 Pekanbaru. This is indicated by an increase in the average value of the class that is at the time before the action 66.70 increased to 74.87 in the first cycle and then increased again in the second cycle to 80.13. Improved student learning outcomes occur because in cooperative learning model Teams Games Tournament (TGT) students are more motivated and active.

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