

THE EFFORT TO IMPROVE MATHEMATICS LEARNING ACTIVITIES BY APPLYING THE STUDENT TEAMS ACHIEVEMENT DIVISION TYPE COOPERATIVE LEARNING MODEL AT CLASS VII

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ABSTRACT

Learning that uses expository models is teacher-centered learning, make students less actively involved in following the process of learning mathematics. Therefore, there is an effort to do to increase student learning activities. This research aims to improve mathematics learning activities by applying the Student Teams Achievement Division (STAD) in grade VII G in even Semester of State Junior High School (SMP Negeri) 3 Banguntapan Bantul Regency year academy 2019/2020. This research is a class action study consisting of two cycles. This research consists of 32 students of class VII G of SMP Negeri 3 Banguntapan Bantul Regency. The data collection technique used are observations, interviews, and field records. The instruments used are observation sheets, interview guidelines, and Field records. The test instrument used is the content validity test. The analysis of the data used is qualitative descriptive. The results showed that implementing a cooperative learning model of the STAD could increase the learning activity of mathematics in students of class VII G in grade VII G in even Semester of SMP Negeri 3 Banguntapan Bantul Regency 2019/2020. The observation results of students' mathematical learning activities have improved from cycle I to cycle II. In the cycle I, the percentage of students' mathematics learning activity averages 54.58% with moderate criteria. In cycle II the percentage of students' math learning activity averages 72.04% with high criteria. The students' interviews showed that students are interested in learning mathematics using a STAD cooperative learning model.

Keywords: Activity, Learning model, STAD.

INTRODUCTION

Education has a very important role for humans. With education, humans can develop their potential both physically and spiritually at the cognitive, affective, and psychomotor levels.

Based on the Ministry of National Education Law No. 20/2003 defines education as follows: Education means conscious and well-planned effort in creating a learning environment and learning process so that learners will be able to develop their full potential for acquiring spiritual and religious strengths, develop self-control, personality, intelligence, morals, and noble character and skills that one needs for him/herself, for the community, for the nation, and the State.

Based on the Ministry of National Education Law No. 20/2003 defines education as follows:

1. A unit of education means a unit of educational services providing formal, nonformal, and informal education at every level and type of education.
2. Formal education means an educational stream, which is structured and has levels, encompassing primary education, secondary education, and higher education.
3. Nonformal education means education outside formal education, which can be implemented structurally, or in several levels.
4. Informal education means family education and education in the surroundings.

Mathematics is a branch of science that is the basis of other sciences. In Sukardjono's opinion (2007:13), Mathematics is a field of exploration and discovery where new ideas are discovered. Mathematics is a way of thinking used to address all kinds of science, government, and industry. The development of all sciences requires mathematics, especially science, so that mathematics is expected to be learned and mastered by students at all levels of education. However, many students complain about this subject, and they think that mathematics is complicated and boring.

Based on the results of researchers' observations on October 8, 2019, at SMP Negeri 3 Banguntapan, Bantul Regency, students were still less active in the mathematics learning process. Interaction and communication of students with other students and teachers are still not well established. Also, learning that applies in this school still uses expository learning models that do not support student learning activities because it is teacher-centered. Student cooperation in learning is also still not going well. Moreover, the classroom's learning process is less varied, making students feel bored, and student participation in learning mathematics is lacking.

Based on interviews with mathematics teachers, students still find it challenging to accept the teacher's material. Based on the Mid-Term Assessment (PTS) results above, out of 7 classes, only one student reaches the Minimum Completeness Criteria (MCC) set by the school, which is 75. Grade VII G students none reach the MCC subjects mathematics at SMP Negeri 3 Banguntapan, Bantul Regency.

Student mathematics learning outcomes can be improved by maximizing the learning process properly. The teacher must create a pleasant classroom atmosphere, so students become happy and interested in mathematics. The selection and application of the right learning model are important in the learning process. This allows for exciting and fun learning activities. The learning model in question is cooperative.

The application of cooperative learning models in class VII G of SMP Negeri 3 Banguntapan, Bantul Regency is expected to have a student role in the group carried out by discussion because most learning activities are student-centered. There are many types of cooperative learning models, one of which is the STAD cooperative learning model. According to Slavin in Isjoni (2013: 51), the cooperative learning model type STAD represents one type of cooperative that favors students' activities and relationships to motivate each other and help each other in terms of materials obtain benefits.

Learning activities are all students and teachers' activities in the learning process, ranging from physical activities to psychological activities. Activities are important in learning. Without activities, the learning will not go well. According to Rusman (2013: 324), active learning is a learning approach that involves more student activities in accessing various information and knowledge to be discussed and studied in the learning process in class to get various experiences that can enhance their understanding and competence.

Hamalik, Oemar (2017: 171) argue that effective teaching provides opportunities for self-study or self-activity. According to Paul B. Diedrich quoted by Sardiman (2012: 101) explains the types of learning activities as follows:

1. Visual activities, which include reading, watching pictures of demonstrations, experiments, other people's work.
2. Oral activities, such as: stating, formulating, asking, giving advice, issuing opinions, conducting interviews, discussions, interruptions.
3. Listening activities, for example, listening: description, conversation, discussion, music, speech.
4. Writing activities, such as writing stories, essays, reports, questionnaires, copying.
5. Drawing activities, for example, drawing, making graphics, maps, diagrams.
6. Motor activities, which include: conducting experiments, making construction, repairing models, playing, gardening, raising livestock.
7. Mental activities, for example: responding, remembering, solving problems, analyzing, seeing relationships, making decisions.
8. For example, emotional activities are interested, bored, excited, excited, passionate, brave, calm, nervous.

According to the Directorate of High School Development (2010: 57-58), student activities in learning mathematics can be seen from:

1. Enthusiastic students in following the lessons
 - a. Students pay attention to the teacher's explanation.
 - b. Students do not do other work.
 - c. Students spontaneously work if given an assignment.

- d. Students are not affected by situations outside the classroom.
2. Student interaction with the teacher
 - a. Students ask the teacher.
 - b. Students answer the teacher's questions.
 - c. Students use the teacher as a resource.
 - d. Students use the teacher as a facilitator.
3. Interaction between students
 - a. Students ask friends in a group.
 - b. Students answer friends' questions in one group.
 - c. Students ask friends in other groups.
 - d. Students answer questions of friends in other groups.
4. Student interaction with learning resources
 - a. Students read the material in the book/worksheet.
 - b. Students read books/worksheets to answer questions.
5. Group cooperation
 - a. Students help friends in groups who encounter problems.
 - b. Students ask friends for help if they have difficulty.
 - c. Students match the answers/concepts in one group.
 - d. The division of tasks into groups.
6. Student activities in groups
 - a. Students express their opinions.
 - b. Students respond to questions/opinions of peers.
 - c. Students work on group assignments.
 - d. Students explain their opinions/work.
7. Student participation in concluding the results of the discussion.
 - a. Students raise their hands to conclude.
 - b. Students respond to questions/conclusions of friends.
 - c. Students perfect the conclusions expressed by their friends.
 - d. Students value the opinions of their friends.

According to Solihah, Fatimus et al. (2019: 211), student learning interactions are divided into 3, namely the interaction of students asking teachers, interactions between students, and student interactions with learning resources. Student interactions ask teachers, and interactions between students have the same indicators as the directorate of coaching. While in the Directorate of Coaching, there is no interaction between students and learning resources. Indicators of interaction with learning resources are as follows:

1. Students read the material in the book/worksheet.
2. Students read books/worksheets to answer questions.

The learning model is planning the learning process by implementing procedures arranged systematically to achieve learning objectives.

The steps of the cooperative learning model are as follows:

1. Conveying goals & motivation
2. Present information
3. Organizing Students into Learning Groups.
4. Guiding Work and Study Groups
5. Evaluation

According to Slavin in Isjoni (2013: 51) Cooperative learning model, STAD is one type of cooperative that emphasizes activities and interactions between students to motivate each other and help each other in mastering subject matter to achieve maximum achievement.

The steps of cooperative learning type STAD, according to Rusman (2013: 215), are as follows:

1. Submission of goals and motivation
2. Division of groups

3. Presentation from the teacher
4. Learning activities in teams (teamwork)
5. Quiz (evaluation)
6. Team achievement awards.

According to Shoimin, Aris (2014: 189) argues about the advantages and disadvantages of the STAD type of cooperative learning model as follows:

1. Strengths of the STAD learning model:
 - a. Students work together in achieving goals by upholding group norms.
 - b. Students actively help and motivate the spirit to succeed together.
 - c. Actively acting as a peer tutor to further enhance group success.
 - d. Interaction between students, along with increasing their ability to express.
 - e. Improve individual skills.
 - f. Improve group skills.
 - g. Not competitive.
 - h. Do not have a grudge.
2. Strengths of the STAD learning model:
 - 1) Contributions from low-achieving students are lacking.
 - 2) High achieving students will lead to disappointment because the role of smart members is more dominant.
 - 3) Requires more time for students, so it is challenging to achieve curriculum targets.
 - 4) Requires a longer time, so in general, the teacher does not want to use cooperative learning.
 - 5) Requires special abilities so that not all teachers do cooperative learning.
 - 6) Demanding specific characteristics from students, for example, the nature of like to work together

METHODS

This type of research used in this study is Classroom Action Research (CAR). Classroom action research was conducted in cycles. According to Arikunto (2010: 137), in-class action research, four stages need to be done, namely (1) planning of action, (2) implementing the action, (3) observing, (4) reflection.

Data collection techniques used were observation, interviews, and field notes. The instruments used were observation sheets, interview guides, and field notes. The instrument test used was the content validity test. Analysis of the data used is descriptive qualitative.

The formula for calculating the increase in the number of students who play an active role in mathematics learning is as follows:

$$\text{Percent of Student Activity (PAS)} = \frac{\text{score obtained}}{\text{maximum score}} \times 100\%$$

The criteria for evaluating student activity, according to Arikunto, Suharsimi & Safrudin, Cepi (2009: 35), are as follows:

Table 1. Criteria for Student Activity Values

Presents	Criteria
$80\% \leq X < 100\%$	Very high
$60\% \leq X < 80\%$	High
$40\% \leq X < 60\%$	Medium
$20\% \leq X < 40\%$	Low
$0\% \leq X < 20\%$	Very low

RESULTS AND DISCUSSION

Classroom action research was carried out at SMP Negeri 3 Banguntapan, Bantul Regency, on January 10, 2020 - January 20, 2020. SMP Negeri 3 Banguntapan has seven classrooms for class VII, namely class VII A, VII B, VII C, VII D, VII E, VII F, and VII G. The implementation of this class action was carried out in class VII G with 32 students consisting of 16 male students and 16 female students.

In this classroom action research, the researcher acts as a teacher in implementing the learning process applying the STAD type of cooperative learning model and three students who act as observers. The subject of this research is Comparison. This class action research was carried out by applying the STAD type of cooperative learning model in each cycle, including four components, namely planning, implementation, observation, and reflection.

Based on the study results showed that students of class VII G of SMP Negeri 3 Banguntapan, Bantul Regency in the academic year 2019/2020 experienced an increase in mathematics learning activities after being treated in mathematics learning the cooperative learning model type STAD. This can be seen from the observation sheet cycle I and cycle II. There are six stages in this STAD model: delivery of goals and motivation, group division, a presentation from the teacher, learning activities in teams (teamwork), quizzes (evaluations), and awards for team achievement. The learning activities in teams (teamwork) experienced a significant increase, seen from the interaction between students who experienced a significant increase from cycle I to cycle II. This stage makes students become actively working together in achieving learning goals.

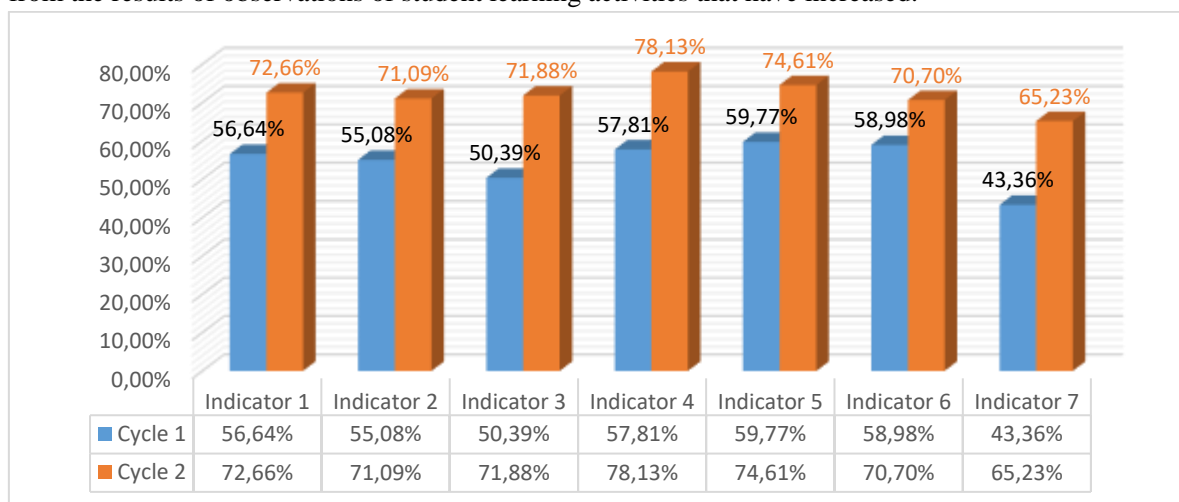
The results of data analysis are shown in the increase in student learning activities from cycle I and cycle II as listed in table 2

Table 2. Increased Student Learning Activities Cycle I and Cycle II

Indicator	Cycle I	Cycle II	Information
Enthusiastic students participate in learning	56,64%	72,66%	Increase
Student interaction with the teacher	55,08%	71,09%	Increase
Interaction between students	50,39%	71,88%	Increase
Student interaction with learning resources	57,81%	78,13%	Increase
Group cooperation	59,77%	74,61%	Increase
Student activities in groups	58,98%	70,70%	Increase
Student participation in summarizing results	43,36%	65,23%	Increase
Average	54,58%	72,04%	Increase

Based on table 2, it can be seen that there is an increase in the average percentage of student learning activities in the first cycle by 54.58% in the second cycle to 72.04%.

The results of classroom action research consisting of cycles I and II in mathematics learning by applying the cooperative learning model type STAD showed increased learning activities. This is evident from the results of observations of student learning activities that have increased.



From the picture above, it can be seen that an increase in the percentage of student learning activities, including student enthusiasm in participating in learning in cycle I by 56.64% increased to 72.66% in cycle II, student interaction with teachers in cycle I amounted to 55.08% increased to 71.09%

in the second cycle, the interaction between students in the first cycle by 50.39% increased to 71.88% in the second cycle, the interaction of students with learning resources in the first cycle by 57.81% increased to 78.13% in cycle II, group cooperation in cycle I by 59.77% increased to 74.61% in cycle II, student activity in groups in cycle I amounted to 58.98% increased to 70.70% in cycle II and student participation in concluding discussion in the first cycle of 43.36% increased to 65.23% in the second cycle.

The average results of student learning activities in the first cycle were 54.58% with moderate criteria. In the second cycle, the average results of observations of student learning activities amounted to 72.04% with high criteria.

Students' responses to mathematics learning by applying the STAD type of cooperative learning model are very good, as seen from researchers' interviews with several students. By applying the STAD cooperative model, mathematics learning can improve and build students' positive attitudes in learning mathematics and foster self-confidence to eliminate students' fear of mathematics. From the research results on student activities in learning mathematics, applying the cooperative learning model type STAD has met the success indicator that is $PAS \geq 60\%$. This research is considered sufficient, so this study stopped in the second cycle.

Overall, learning mathematics by applying the cooperative learning model STAD can increase mathematics learning activities for students of class VII G in the even semester of SMP Negeri 3 Banguntapan, Bantul Regency in the academic year 2019/2020. Thus the action hypothesis can be accepted.

CONCLUSION

The STAD type of cooperative learning model application can improve students' mathematics learning activities in class VII G even semester of SMP Negeri 3 Banguntapan, Bantul Regency, in 2019/2020. In the first cycle, the average percentage of observations of student learning activities was 54.58% with moderate criteria. The average percentage of student learning activities' observations increased to 72.04% with high criteria in the second cycle.

Learning by applying the cooperative learning model type STAD gets a positive response from students. This is evidenced by the results of interviews with students, which is obtained that students become more enthusiastic and enthusiastic in participating in learning mathematics.

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