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Application of a Cooperative Learning Model of Student Teams Achievement Division Type to Improve Student Achievement in Mathematics Lessons

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Abstract
The low mathematics learning achievement of students is due to the fact that conventional learning methods are still applied so that students are less active and less motivated in the teaching and learning process. The aim of this research is none other than to improve student learning achievement with the student teams achievement division (STAD) type cooperative learning model. This research is classroom action research. The research consists of two cycles and begins with a pre-cycle where the cycle stages consist of planning, implementation, observation and reflection. The subjects of this research were class X12 students at SMA N 1 North Kuta, totaling 45 students. The instrument used in this research was a learning achievement test. The results of the research carried out were that in Cycle I the percentage of students who completed it was 53%, then there was an increase in Cycle II to 78%, because they had met the specified classical completeness, namely 75% of the total number of students, the researcher stopped in Cycle II. Based on these results, it can be concluded that there has been an increase in student learning achievement in Mathematics learning by implementing the Cooperative learning model of the Student Teams Achievement Division (STAD) type.

Keywords: learning achievement, STAD type cooperative

INTRODUCTION

There are two synergistic learning activities, namely teacher and student activities. Teachers teach how students should learn. Meanwhile, students learn how they should learn through various learning experiences until changes occur in themselves, both in terms of cognitive, affective and psychomotor aspects. The problem is how to teach students so that students get good achievements, especially in Mathematics subjects.

Mathematics is a branch of science that has quite a large influence on society. This can be seen from the use of mathematics in everyday life, but the importance of mathematics is not followed by the attitude of students who tend to view mathematics as their own enemy. From this picture, it is natural that mathematics receives more serious attention from education so that it can be more attractive to students, because mathematics education has great potential to play a strategic role in preparing human resources (HR) to face the era of globalization.

Several factors influence low learning achievement, especially mathematics, including: schools as places where education is carried out, teachers as implementers of education, and students as participants in education. The success or failure of an educational process will be greatly influenced by the factors above. These factors can become less meaningful even though they have been well prepared, if the teacher uses inappropriate methods when delivering lesson material. To obtain learning results that are in line with the objectives, it is necessary to select appropriate learning strategies. For this reason, teachers must determine how to organize students' learning environments so that they have learning experiences that can direct them to achieve the desired learning outcomes. Therefore, in the teaching and learning process teachers should be able to choose a variety of teaching strategies so that learning becomes more effective. Choosing the right strategy really determines the learning achievement that will be obtained, for example the learning achievement of class X12 students at SMA N 1 North Kuta.

In Class This can be seen during observation activities, only a few students are active in learning activities. Teachers only convey points through teaching materials and students study independently so that students with less ability find it difficult to understand the material provided. With the cooperative learning model, students can gain understanding from other friends through group discussions (peer tutors) and can increase motivation by studying together. To overcome the above problems, what has been done is to improve the learning process by implementing the Student Teams Achievement Division (STAD) type cooperative learning model, especially in Mathematics lessons to improve student learning achievement.

Cooperative learning is a learning technique and also a learning philosophy that encourages students to work together to maximize themselves and their learning with their peers (Anita Lie, 2008). Apart from that, according to Jenni & Sujarwo (2022), through cooperative learning, learning becomes more fun and less passive, students become more confident in giving opinions and help each other motivate other students to understand the lesson material more easily. Student Teams Achievement Division (STAD) type cooperative learning is the simplest method of cooperative learning which is expected to be suitable for use in mathematics learning. The cooperative learning model is one strategy that has recently been widely used to further activate students. Cooperative learning is a type of student-centered learning.

RESEARCH METHODS

This research is classroom action research (PTK) with the aim of improving student learning achievement. This research was conducted at SMA N 1 North Kuta with class X12 as the research subject. The subjects taken were all students in the class, namely 45 students with 24 female students and 21 male students. The object studied is related to the use of STAD type cooperative learning to increase student learning achievement in class X12. Classroom action research consists of several stages, namely planning, implementation, observation and reflection (Cahyadi, 2014). All these stages are arranged in an iterative cycle until the research

objectives are achieved. This research was carried out in two learning cycles, namely starting with the pre-cycle, then Cycle I and Cycle II. Each cycle is carried out in three meetings to maximize the process in each cycle. The data in this study was collected using written test techniques. This data is obtained from the results of test evaluations at the end of each cycle. The instrument used in this research is a learning achievement test taken from the question bank so that there is no need to carry out expert tests and it is adjusted to the learning achievement indicator grid. The data obtained was then analyzed using descriptive quantitative analysis, referring to the achievement of Minimum Completeness Criteria (KKM) per individual of 75.

Table 1. Criteria for Completeness of Student Mathematics Learning Achievement

No	Score	Qualification
1	X 65≥	Complete
2	X < 65	Not Completed

Research is said to be successful if the percentage of students who complete it is more than or at least 75% of the total students.

RESULT AND DISCUSSION

1. Condition Description

At the time of the initial observation activities, students who were active in the learning process could be said to be only half the number of students in the class. There are some students who ask or answer questions from the teacher. But some students feel embarrassed and prefer to ask smarter friends when the teacher explains the material. It can also be seen that in the learning process, the teacher presents material with lectures and example questions. When students work on practice questions, teachers sometimes apply the discussion method with their classmates but the implementation is not as expected. Students tend to work individually so that there is no interaction between discussion members.

2. Cycle Implementation Research Results

At the end of each cycle students will be given a learning achievement test to measure student achievement during that cycle. The results of the analysis of learning achievement tests in each cycle showed that the percentage of students who were in the complete category or met the Minimum Completeness Criteria (KKM) score was 75. The following is a summary of the research results presented in table form.

Table 2. Summary of Research Results

Aspect	Pre Cycle	Cycle	
		I	II
Many Students	45 people	45 people	45 people
Completed Students	16 people (35%)	24 people (53%)	35 people (78%)
Students have not finished yet	29 people (65%)	21 people (47%)	10 people (22%)
Highest student score	92	94	97.5
Lowest student score	25	25	45
Number of values	2351	3062	3654
Average	52.24	68.04	81.2

3. Discussion

Cycle I begins with planning according to the problems found. The planning stage begins with an analysis of the Learning Outcomes that students must achieve in the Quadratic Function material. The results of the CP analysis are then reduced to learning objectives. Assessment planning at the beginning of the activity aims to make it easier to organize the flow

of the activities or learning process being carried out. Through the preparation of this assessment, the picture regarding what students must successfully achieve will become clearer so that the learning flow that is formed will be systematic. The final activity is to determine the flow of learning activities so that they are in line with achieving learning objectives. The learning flow is structured in such a way that learning is student-centered so that it makes it easier to develop their own understanding. After planning is complete, the next stage is implementing learning in Cycle I.

At the implementation stage, mathematics learning was carried out for Quadratic Function material. The main topic of discussion in Cycle I is Quadratic Equations and Characteristics of Quadratic Functions. The researcher as a teacher is assisted by a model teacher as an observer to observe and record students' activities during learning using the Student Teams Achievement Division (STAD) type cooperative model. In the learning process at the first meeting, it was seen that the students were still not active in interacting with the teacher. They focus more on doing practice questions on the LKPD provided. At several moments they finally interacted with the teacher but it was still only a technical problem such as whether the answer to the question was correct or not. Interaction began to occur at the second meeting. Students look more active in responding to teacher questions when conducting apperception. Even though there are only a few students, these results show that the students are becoming more familiar with the teachers who teach. Until the peak, namely at the third meeting, students and teachers already know each other well. At the end of the cycle, a learning achievement test I is given.

In Cycle I, there were 24 students who completed the test out of 40 students who took the test so that the completion percentage was 53%. When compared to the pre-cycle, student learning achievement has increased quite well. This increase was influenced by group activities by working on LKPD and there was quite good discussion interaction between each group. Apart from that, the existence of rewards in the form of additional grades based on the results of individual evaluations also encourages students' enthusiasm to be more active when conducting group discussions and solving problems. Besides that, LKPD can also be accessed even after the learning process is complete. With this, students have time to study independently and organize the knowledge they have gained at school.

Even though in Cycle I there has been an increase, the percentage of student learning achievement is still less than the classical completeness set at 75%. Incompletion in Cycle I was closely related to the group that was formed not being completely heterogeneous. The grouping of students in Cycle I still shows students with more cognitive abilities still gathering. Apart from that, some students are still embarrassed to ask the teacher or even their group friends and cooperation between groups is still not optimal. This causes them difficulty in carrying out discussions because no one is able to solve the confusion they experience apart from the teacher who teaches. Apart from that, students also asked for more practice questions rather than presenting the material. They easily understand the material and concepts, but sometimes they experience a little difficulty in implementing their understanding when solving the problems given. Considering this, improvements are needed to overcome the problems that occurred in Cycle I so that the research continues to Cycle II.

Cycle II begins with planning based on the results of reflection from Cycle I. The division of groups is revised to be more heterogeneous in terms of students' cognitive aspects. In addition, to maximize discussions, one of the group members will become a mentor. The group mentor is tasked with leading the discussion as well as facilitating other members if someone does not understand. When all group members experience difficulties, the group mentor can hold discussions with the teacher so that learning becomes more focused and systematic. In this way, the time for carrying out group discussions will be more efficient so that later they will have enough time to explore their understanding during presentation sessions between groups.

The material in Cycle II is Constructing Quadratic Functions and Solving Problems with Quadratic Functions, each held in one meeting. In Cycle II, the researcher acted as a teacher and was assisted by a model teacher to observe students' activities during learning using the Student Teams Achievement Division (STAD) type cooperative model. The learning process in Cycle II looks better than the previous Cycle I. Each group mentor together with its members seemed to work hard in solving problems on the LKPD provided. Here it is easier for teachers to facilitate groups that really need guidance in solving existing problems because groups with mentors who have more cognitive abilities are able to facilitate their friends well. At the end of the cycle, an evaluation is carried out by giving a learning achievement test II.

In Cycle II, there was another increase in the number of students who completed the test, namely from 24 students to 35 students from 40 students who took the test. The percentage of completeness in cycle II was 78%, which was said to have met the classical completeness set at 75% of the number of students, so the research stopped in Cycle II. Success in Cycle II is closely related to the role of the group mentor in managing the course of the group discussion. Mentors also play a role in dividing the tasks of each group member, where this distribution is expected so that each group member has tasks that are in accordance with their abilities. Apart from that, the number and time allocation for solving questions was also increased according to student requests. With this technique they have enough time to familiarize themselves with the types of questions available. In this cycle there is also a slight adjustment to the learning design where students whose understanding of algebra is poor are given the understanding to catch up with their other friends.

CONCLUSIONS

Based on the research results, conclusions can be drawn regarding the research that has been carried out. There has been an increase in student learning achievement in Mathematics learning by implementing the Student Teams Achievement Devision (STAD) type of cooperative learning model. The first increase was in Cycle I, namely the percentage of students who passed was 53%, then in Cycle II it increased again to 78%. This improvement is closely related to the learning process, namely the Student Teams Achievement Devision (STAD) type cooperative model. Apart from that, the presence of rewards increases students' motivation in carrying out the learning process and the presence of mentors in each group makes discussions more focused and effective. Therefore, it can be said that the Student Teams Achievement Devision (STAD) type cooperative learning model can improve the learning achievement of class X12 students at SMA N 1 North Kuta.

Based on the conclusions above, the author provides several suggestions that can be taken into consideration by teachers, students, and schools alike in improving the quality of learning carried out.

1. For schools, the school is ready to try to meet the needs of teachers and students in maximizing the learning process carried out. .
2. For teachers, teachers should actively involve students during the learning process both in implementation and during reflection, teachers can choose appropriate learning methods and strategies that are appropriate to the level of achievement and characteristics of the students.
3. For students, students must learn to be open with teachers regarding their learning needs so that teachers can provide solutions to the problems they face.

REFERENCES

Fitrianti. (2015). Success in the Teaching Profession with Classroom Action Research. Yogjakarta: Deepublish

GOOSSENS, L. (2001). Global versus domain-specific statuses in identity research: a comparison of two self-report measures. Journal of Adolescence, 24(6), 681–699. https://doi.org/10.1006/jado.2001.0438

Imtikhanah. (2022). Cooperative Model of Student Teams Achievement Divisions Type in Distance Learning to Improve Concentration and Learning Outcomes of Vocational School Students. Journal of Educational Action Research. 6(2), 259-268. https://ejournal.undiksha.ac.id/index.php/JEAR/article/download/45879/22154/125181

Indrawan et al. (2019). Increasing Student Mathematics Learning Achievement Through Geogebra-Assisted ARIAS Learning. Indonesian Journal of Mathematics Education and Learning, 8(1), 2-6. https://ejournal-pasca.undiksha.ac.id

Lie, Anita. (2008). Practicing Cooperative Learning in Classrooms. Jakarta: Grasindo.

Made Sugiarta, I., Bagus Putu Mardana, I., Adiarta, A., Wayan Artanayasa, I., Jasmani, P., & and Recreation, K. (2019). Ki Hajar Dewantara's Educational Philosophy (Eastern Figure). Indonesian Journal of Philosophy, 2(3), 124–136.

Nafiah. (2022). Student Teams Achievement Division (STAD) Type Cooperative Learning Model to Improve Learning Outcomes About Trigonometric Equations in High School Students. ANARGYA: Scientific Journal of Mathematics Education. 5(2), 207-217. https://jurnal.umk.ac.id/index.php/anargya/article/download/8992/3788

Octavia, Shilpny. (2020). Learning Models. Yogjakarta: Deepublish

Parwati, NN, Pasek, S, IP, and Ratih, AA 2018. Learning and Learning. Depok: Rajawali Press

Prarivi. D. et al (2018). The Relationship between Motivation and Student Learning Achievement. International Journal of Elementary Education. 2(3), 192-201. https://ejournal.undiksha.ac.id/index.php/IJEE/article/view/15958/9515

Sriana J. & Sujarwo. (2022). Analysis of the STAD Type Cooperative Learning Model in Improving Student Learning Outcomes. PEDAGOGY: Educational Scientific Journal. 8(1), 39-51. https://siakad.univamedan.ac.id/ojs/index.php/pedagogi/article/download/245/207/769

Sunilawati. (2022). Efforts to Improve the Citizenship Education Learning Achievement of Class VI Students by using the Cooperative Learning Method. Journal of Educational Action Research. 6(1), 41-47. https://ejournal.undiksha.ac.id/index.php/JEAR/article/view/40572/21308

Syamsu, FN et al. (2019). The Effectiveness of the STAD Learning Model on Mathematics Learning Outcomes in Building Materials. International Journal of Elementary Education. 3(3), 345-349. https://ejournal.undiksha.ac.id/index.php/IJEE/article/view/19450/11514

Zainal, Aqib and M. Chotibuddin. (2018). Theory and Application of Classroom Action Research. Yogjakarta: Deepublish