ISSN: 2339-2940
E-ISSN: 2614-8633

The Implementation of Learning Models Student Team Achievement Division (STAD) in Improving Results Learning Mathematics Eighth Grade of SMP Negeri 2 Praya

Aini Husnida Wulandari [a,1,*], Lalu Isnaeni Rahman [b,2], Sartika Hijriati [c,3]

[abc] *Universitas Teknologi Mataram, Mataram, 83126, Indonesia*
[1] *ainihusnidaw@gmail.com;* [2] *lalugedeir.bhsing@gmail.com;* [3] *sartika.hijriati@gmail.com*

ARTICLE INFO

Article history:
Received:12/10/2022
Revised :11/11/2022
Accepted: 16/12/2022

Keywords:
Learning outcomes,
STAD type Cooperative
Learning Model

ABSTRACT

This research is a classroom action research conducted in class VIII.1 of SMP Negeri 1 Praya. The purpose of this classroom action research (CAR) is to determine the extent to which students' learning outcomes in mathematics are improved by applying the STAD Type Cooperative Learning Method. In this classroom action research (CAR), it is carried out in 2 cycles, from the results of the actions taken; it is proven to be able to improve student learning outcomes by achieving the classical mastery set that is 85%. Classical completeness 71% obtained in the first cycle, can be increased in the second cycle to 100%. In terms of student activity, there was also an increase, namely in the first cycle, the category of quite active increased to a category. The results of this action research indicate that the application of the STAD Type Cooperative Learning Model can improve student learning outcomes in mathematics with completeness reaching 100%.

I. Introduction

Learning is an activity for everyone, knowledge, skills, preferences, habits, and attitudes of a person are formed, modified, and developed due to learning [1]. Because of that, a person is said to be learning, if it can be assumed that in that person it becomes a process of activity that results in a change in behavior.

Learning is a journey that never ends in self-development and understanding. Analysis and improvement of learning methods are required so that it continues to be sustainable.

The 2013 curriculum develops a learning process in which knowledge, thinking skills, and psychomotor skills develop through direct interaction with learning resources designed in the syllabus and lesson plans in the form of learning activities (Regulation of The Ministry of Education and culture, 2013). The learning that is being carried out is student-centered (student center) and the teacher is no longer dominating the learning activities [2]. So that the 2013 curriculum requires students to actively learn and seek as much information as possible.

Mathematics is one way to find answers to problems faced by humans, namely a way of using information, using knowledge of shapes and sizes, calculating, and most important thing is thinking within the human itself [3]. Mathematics functions to develop the ability to calculate, measure, derive, and use mathematical formulas needed in everyday life through algebra, geometry, mathematical logic, probability, and statistics. Mathematics also functions to develop the ability to communicate ideas through mathematical models which can be in the form of sentences and mathematical equations, diagrams, graphs, or tables.

Mathematics is very important in everyday life, mathematics also has characteristics as a science that has abstract objects, is patterned on axiomatic deductive thinking, and is also based on truth. In this case, teachers have an important role in achieving the success of the learning process, including

ISSN: 2339-2940
E-ISSN: 2614-8633

success in education globally. This success can be demonstrated by the ability of students to understand and understand the material being taught.

Competency-based learning emphasizes liking and improving a range of abilities and potential of students so they can anticipate future life challenges. If in the past learning was more emphasized on aspects of knowledge and material which tended to be verbalised and lacked applicability, now it is more emphasized on aspects of competence and skills. With this competency-based learning, it is hoped that the quality of graduates will be more meaningful in life. In order for high-level mathematical thinking skills to develop, learning must be an environment where students can be actively involved in many mathematical activities that are beneficial to the implementation of learning.

In essence, mathematics as an exact science requires students to really understand and master the material. For this reason, most students conclude that mathematics is a subject that is difficult and difficult to understand, and not a few students in class VIII-1 SMP Negeri 2 Praya make mathematics the most feared subject when compared to other subjects.

According to students, there are several reasons why they do not like mathematics. Among them are conveying methods of delivering material that is less interesting, less supportive class management, less programmatic delivery of material, lack of student concentration in receiving lessons, and the factor of lack of practice. As a result, students find it difficult to get satisfactory grades and results in students getting minimal achievements.

There are a number of contextual-based effective learning models that can be used in the learning process, one of which is the STAD-type cooperative model [4]. The STAD-type cooperative model is one of the models or strategies in simple cooperative learning and can improve learning outcomes, activities, and student responses [4]. In general cooperative learning emphasizes the notion that learning does understand meaning not memorizing [3].

To find out whether students have succeeded in mastering the material presented by the teacher, the researcher will apply the STAD Cooperative Learning type. There were significant differences in learning independence between students who took the STAD-type cooperative learning model and students who took conventional learning [5]. The STAD cooperative learning model is a learning model that is useful for fostering the ability to collaborate, be creative, think critically and have the ability to help friends and is a very simple cooperative learning [6]. Furthermore, learning models that provide opportunities for students to actively build knowledge are cooperative models, one of which is STAD [7]. Cooperative Learning arises from the concept that students will find it easier to find and understand difficult concepts if they discuss them with their friends. Students routinely work in groups to help each other solve complex problems [8].

This type of STAD is a type of Cooperative Learning model by using small groups with a number of members in each group 4-5 students hieroglyphically [9]. Cooperative Learning has also proven to be very beneficial for students with heterogeneity. By highlighting interactions in groups, this learning model can make students able to accept other students with different abilities [10].

II. Method

A. Cycle I

1) Action Planning

At this stage, the activities that need to be carried out by researchers are:

1. Socialize teaching by applying the Cooperative Learning Model Type Student Team Achievement Division (STAD) learning to class teachers
2. Compile observation sheets to record student and teacher activities during learning.
3. Prepare student worksheets (LKS) or question sheets.
4. Develop a test of learning outcomes in the form of multiple choice to determine student learning outcomes.
5. Designing assessment techniques.

ISSN: 2339-2940
E-ISSN: 2614-8633

6. Form study groups with teacher approvals that are heterogeneous by taking into account learning achievement and gender.

2) Action Implementation

In learning the Cooperative Learning Model Type Student Team Achievement Division (STAD), there are several things that are done by teachers and students, among others, grouping students according to needs, teacher's explanation of the problems that will be the subject of learning, understanding of concepts is given by giving group assignments, evaluation carried out individually and in groups, rewarding the group with the best results. The main idea behind the STAD Type Cooperative Learning Model is to motivate students to encourage and help each other to master the skills presented by the teacher. This stage is detailed as follows:

a) Introduction:

1. The teacher greets and prays led by the class leader (religious values)
2. The teacher checks student attendance.
3. The teacher prepares students psychologically and physically to participate in the learning process.
4. The teacher does apperception and motivation by asking questions.
5. Convey the learning objectives to be achieved. Instruct students to take out learning equipment.
6. Disseminate STAD model learning to students.
7. Divide students into discussion groups, where one group consists of 4 people.
8. Distribute LKS to each group.
9. Each student works on assignments in the LKS that have been distributed.

b) Core activities.

1. Students pair up with colleagues in groups to discuss.
2. Guide discussion groups in pairs.
3. Several discussion groups present the results of the discussion in front of the class.
4. Convey student perceptions and provide an assessment of the results of group discussions.
5. Distribute practice questions.
6. Ask students individually to work on practice questions related to the material being studied.
7. Ask some students to write their answers on the blackboard.
8. Assess student answers and convey the correct completion steps, if there are errors in student answers.

c) 3. Closing

1. Together with students convey conclusions on the material studied.
2. Provide opportunities for students to ask questions and express their opinions.
3. Each group is given an award related to group activities.
4. Inform the material to be studied at the next meeting. Assign students to study the next material.
5. Give homework to do some questions

3) Units Observation and Evaluation

During the implementation of the action, observations are made continuously every time learning takes place by observing teacher activities and student activities. Evaluation is carried out after learning is complete by giving a test in the form of multiple choices. This test is done individually for two hours of lessons (2 x 40 minutes).

ISSN: 2339-2940
E-ISSN: 2614-8633

4) Reflection

Reflection is carried out at the end of the cycle, at this stage the researcher as a teacher together with the teacher who acts as an observer examines the results obtained from giving action in each cycle. This is done by looking at the evaluation results data achieved by students in cycle I, if the results of data analysis show that the results obtained in cycle I were not optimal, namely learning completeness was not achieved ≥ 85% of students who obtained a KKM score of 77, then continue next cycle. The results of this reflection are used as a basis for improving and perfecting the planning and implementation of actions in the next cycle.

B. Cycle II

The planning and implementation of the stages in cycle 2 are no different from the stages in cycle 1; it's just that the deficiencies in cycle 1 are expected to be corrected in cycle 2.

C. Data Collection Technique

1) Research Instruments

Suharsimi Arikunto in the book Research Procedures a Practice Approach published in Jakarta by Rineka Cipta (2006: 160) explains that research instruments are tools or facilities used by researchers in collecting data so that work is easier and the results are better, in the sense that they are more accurate, complete and systematic so that it is easier to process.

There are two learning instruments used in this study, namely:

- Learning implementation instrument

In this study, the learning implementation instruments used were syllabus and learning implementation plans (RPP).

- Data collection instrument

In this study, the data obtained was collected through several methods:

a. Documentation

The documentation used in this study was in the form of student data, student activity and data on students' daily test scores that the researchers obtained from initial observations.

b. Observation

Observation by observation includes the activity of paying attention to an object using all the senses (direct observation). The purpose of this observation is to determine the level of student activity in participating in the process of teaching and learning activities in the classroom.

c. Evaluation test in each cycle

The test is a series of questions or exercises or tools used to measure the skills, knowledge, intelligence, abilities or talents possessed by individuals or groups. In this study an achievement test was used to measure a person's achievement after learning something. The test instrument is structured to determine the level of students' understanding in mastering the material that has been presented.

D. Data Analysis Technique

1) Student Activity Data

For each student behavior indicator in this study, the method of scoring was based on the following guidelines:

a. A score of 5 is given if 81% - 100% (12 - 14 students) do the intended descriptor.

b. A score of 4 is given if 61% - 80% (9 - 11 students) do the intended descriptor.

c. Score 3 is given if 41% - 60% (7 - 8 students) do the intended descriptor.

d. Score 2 is given if 21% - 40% (4-6 students) do the intended descriptor.

e. A score of 1 is given if 0% - 20% (1 - 3 students) do the intended descriptor.

To find out the activity in learning, then the observational data in the form of a score is processed by the formula

ISSN: 2339-2940
E-ISSN: 2614-8633

$$A = \frac{\sum X}{nxi}$$

Fig. 1. The Formula.

Information:

A = Average score of student learning activities

∑ X = Total score of all learning activities

I = number of items

n = number of students

To assess student activity categories, MI and SDi are determined in advance with the following formula (Nurkencana, 1990:100) Evaluation of Learning Outcomes. Surabaya: National Business:

M □ 1 □(max score + min score)

i 2 —

SD = 1 M

—

i 3 i

Information;

Mi □ Mean ideal

SDi = Standard Deviation ideal

Table 1. Guidelines for standard student learning activity scores.

Interval	Category
AS□ M_i + 1,5 SD_i	Very Active
M_i +0,5 SD_i □ AS<M_i	Active
+1,5SD_i	
M_i -0,5 SD_i □ AS<M_i	Moderately Active
+0,5SD_i	
M_i -1,5 SD_i □ AS<M_i –	Less Active
0,5SD_i	
AS<M_i - 1,5 SD_i	Very Less Active

Description: AS = Student Activity

Based on a predetermined score, namely: the highest score = 5 and the lowest score = 1, then:

$M_i = \frac{1}{2} \times (5+1)$ and $SD_i = \frac{1}{3} \times M_i$

$= \frac{1}{2} \times 6$

$= \frac{1}{3} \times 3$

$= 3$

$= 1$

ISSN: 2339-2940
E-ISSN: 2614-8633

Then the criteria for student learning activities are obtained as follows:

Table 2. Guidelines for student learning activity criteria

Value	Category
AS □ 4,5	Very Active
3,5 □ AS < 4,5	Active
2,5 □ AS < 3,5	Moderately Active
1,5 □ AS < 2,5	Less Active
AS < 1,5	Very Less Active

Description: AS = Student Activity

2) Learning Outcome Test Data

After obtaining the learning achievement test data, the data is analyzed by looking for learning completeness and absorption, and then analyzed quantitatively.

a. Individual Completeness

Each student in the teaching and learning process is said to be complete if he gets a score of ≥ KKM, namely 77. The minimum completeness score is 77. It was chosen because it is in accordance with individual abilities; this is also in accordance with the standard of student learning completeness at SMP Negeri 2 Praya.

a. Classical Mastery

Data on the learning outcomes test of the learning process were analyzed using a classical learning completeness analysis of at least 85% of the number of students who obtained a □ KKM score of 77. The classical learning mastery formula was:

$$KK=\frac{X}{Z}x\ 100\ \%$$

Information:

KK = Classical Completeness

X = Number of students who scored □ KKM

Z = Total number of students

Mastery of classical learning is achieved if □ 85% of students get a value of □

KKM which will be seen in the evaluation results of each cycle.

III. Results and Discussion

A. Cycle I

From the results of observations and observations made, it was found that the learning process was not as expected because there were still deficiencies both from the teacher's side and from the students' side. Student learning activity in cycle I meeting 1 was 2.9 with the category quite active and meeting 2 was 3.0 the category was quite active. Therefore, student activity in the next cycle still needs to be improved. The learning completeness achieved by students is 71% with an average value of 76.1. This result has not yet reached classical learning mastery. Therefore, the learning continues in the next cycle.

B. Cycle II

From the results of observations of student activities in cycle II, learning activities have been able to run well, where the results of observations of student activities with the results of meeting 1 are in the active category and meeting 2 is in the active category. From the results of the analysis of the results of the evaluation, there was an increase in the class average, and the percentage of completeness classically had reached/exceeded 85%, meaning that 85% or more students had achieved a test score of the KKM or exceeded the specified KKM. Therefore this research was stopped until the second cycle according to the plan.

ISSN: 2339-2940
E-ISSN: 2614-8633

This classroom action research was carried out as an effort to improve mathematics learning outcomes in class VIII.1 students by applying the STAD Type Cooperative Learning Model at SMP Negeri 2 Praya.

Based on the results of data analysis in each cycle, it appears that the results from cycle I to cycle II have increased. In the implementation of learning and the results of data analysis in the first cycle, student activity was obtained in the quite active category, and student activity in cycle II was obtained by student activity in the active category.

Regarding the results of repetition in cycles I and II, the details can be seen below:

Table 3. Summary of Evaluation Results in Cycle I

No	**Description**	**Results**
1	Lowest Value	75
2	The highest score	90
3	Average	76.1
4	Number of students who complete	10
5	Number of students who participated test	14
6	Completed percentage	71%

While in cycle II the results are as follows:

Table 4. Summary of Evaluation Results in Cycle II

No	Description	Results
1	Lowest Score	75
2	Highest Score	95
3	Average	87.1
4	Number of students who finish	14
5	Number of students who participated test	14
6	Completed percentage	100 %

After looking at the two tables of evaluation results from cycles I and II where the scores they obtained had reached the level of learning completeness. And exceeds the level of classical learning mastery: 85%.

This classroom action research was carried out as an effort to increase the activity and results of learning mathematics in the material of the Linear Equation System of Two Variables through the application of the STAD Type Cooperative Learning Model. Where this research was conducted in two cycles.

IV. Conclusion

Based on the results of the research and discussion above, it can be concluded that the Application of the STAD Type Cooperative Learning Model can increase student activity and learning outcomes at SMP Negeri 2 Praya. This increase can be seen from the acquisition of student activity scores, and class average scores, and the level of classical completeness in each cycle has increased in both cycle I and cycle II.

From the results of the research and discussion above, we can conclude that the Application of the STAD Type Cooperative Learning Model can improve Mathematics learning outcomes in class VIII.1 students of SMP Negeri 2 Praya.

Based on the results achieved in this study, the suggestions are: may include, among other things:

a. For students

ISSN: 2339-2940
E-ISSN: 2614-8633

1. In practical learning activities with the application of the STAD Type Cooperative Learning Model it is hoped that students before receiving learning, prepare themselves to take part in practical learning activities properly.
2. It is hoped that students after carrying out practical learning with the STAD Type Cooperative Learning Model can improve their learning outcomes.

b. For teachers

1. Learning model STAD type cooperative learning is active student learning that can increase enthusiasm, potential, and student activity in practical learning activities
2. It is hoped that other teachers will be able to use the Cooperative STAD learning model in practical learning activities in their classes.

c. For school

1. It is expected that school principals will carry out workshops in schools with the theme of implementing the STAD Type Cooperative Learning Model with the aim of increasing teachers' understanding of this matter to be applied to students in class.
2. It is hoped that the principal in determining policies related to increasing teacher professionalism will program activities that involve deepening understanding of the application of strategies/approaches/methods/practical learning models that can be applied by teachers.

References

[1] Rivai, A., "Penerapan Model Pembelajaran Kooperaktif Tipe STAD Untuk Meningkatkan Hasil Belajar Membandingkan Pecahan." *Jurnal Kreatif Tdulako Online, Vol 4*(2), 2015.

[2] Faisal, A., "Penerapan Model Pembelajaran Kooperaktif Tipe Student TeamAchievement Division (STAD) Untuk Meningkatkan Hasil Belajar Siswa Pada Mata Pelajaran Pemeliharaan Mesin Kendaraan Ringan". *Jurnal Pendidikan Vokasi Otomotif, Vol 2*(2), 2020.

[3] Khairuddin, A., "Effect Of Problem Based Learning Model On MathematicalLearning Outcomes Of 6th Grade Student Of Elementary School Accredited B In Kendari City". *International Journal of Trends in Mathematics Education Research*. vol.1(2), 2019.

[4] Khairuddin, A. & Lisambu, L., "Penerapan Model STAD Dalam Meningkatkan Hasil Belajar Dan Aktivitas Siswa SMP". *Jurnal Pendidikan Matematika Raflesia,* 4(1), 2019.

[5] Sunilawati, N. M., Dantes, N. & Candiasa, I.M., "Pengaruh Model Pembelajaran Kooperaktif Tipe Hasil Belajar Matematika Ditinjau Dari Kemampuan Numerik Siswa Kelas IV SD". *Jurnal Pendidikan Dasar Volume 3,* 2013.

[6] Gusniar., "Penerapan Model Pembelajaran Kooperaktif Tipe Student Teams Achievment Division (STAD) Dalam Meningkatkan Hasil Belajar Siswa Pada Mata Pelajaran IPS Kelas IV SDN No.2 Ogoamas II". *Jurnal Kreatif Tadulako Online. 2(1),* 2014.

[7] Heriani, M., Hartanto, H & Dharmayana, W.,"Perbedaan PeningkatanKemampuan Pemahaman Dan Penalaran Matematika Siswa SMKN 3 SelumaMelalui Model Pembelajaran Kooperaktif Tipe STAD Dan Model Pembelajaran Bias". *Jurnal Pendidikan Matematika Raflesia,* 1(2), 2016

[8] Trianto., "Model-model Pembelajaran Inovative Berorientasi Kontruktivistik". Jakarta: Prestasi Pustaka Publiser, 2007

[9] Marno, M & Idris. 2008. *Strategi & Metode Pengajaran*, Jogjakarta: Ar-Ruzz Media Group, 2008

[10] Erman, Suherman, et. al., *Strategi Pembelajaran Matematika Kontemporer*, Bandung: Universitas Pendidikan Indonesia, 2003