Improving Student Learning Outcomes Main Subjects of Transformation Through Cooperative Learning Type STAD Class IX.1 Students of SMPN 1 Sawahlunto TP 2021/2022

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Abstract- Creating effective and fun learning is the duty and responsibility of the teacher in overcoming students' learning difficulties in understanding and mastering mathematical concepts. The purpose of this study is to improve student learning outcomes for the subject of Transformation through cooperative learning of the STAD (Student Team Achievement Division) type in class IX.1 students of SMP Negeri 1 Sawahlunto in the 2021/2022 academic year. Based on the data analysis, the implementation of the action in the first cycle showed that the class average was 68.85. and the percentage of classical completeness is 42.31%. This result has not reached the classical completeness of 65% or more. As for the results of the observation of student learning activities in the first cycle, it was obtained that the average score of student learning activities with a total score of 52.29 (C) was included in the less active category. Likewise with the teacher's performance observation with a score of 68.75 (C), so that the results of the research in the first cycle showed that student learning achievement was still lacking and student learning activities were also still low. Because learning mastery in cycle I has not been achieved, then the implementation of the action is continued to cycle II by making improvements and improvements to the shortcomings of cooperative learning in cycle I. After making improvements in the learning process, from the results of the analysis in cycle II, the average value is obtained. class is 78.00 and the percentage of classical completeness is 80.77%. On the results of observations of student learning activities obtained a score of 62.02 (B) which is classified as active, and the teacher's performance score is 73.96 (B). This data shows that there is an increase in the average score on student activities and an increase in student achievement scores when compared to the previous cycle. And after being analyzed using classical completeness and average scores, student learning achievement in cycle II has increased significantly.

Keywords : Math Learning, cooperative learning of the STAD, Learning outcomes

I. INTRODUCTION

Creating effective and fun learning is the duty and responsibility of the teacher in overcoming students' learning difficulties in understanding and mastering mathematical concepts. Teachers must be able to master and develop interesting learning and use the right model so that optimal learning outcomes are achieved.

Based on the BSNP Education Unit Level Curriculum, there is one goal of learning mathematics is to communicate ideas with symbols, tables, diagrams, or other media to clarify the situation or problem. In learning mathematics that is abstract in nature, media is needed that can help students so that problems that are abstract can become real/concrete. Therefore we need a

learning model in the learning process in understanding the concept of Geometry (Transformation) which must use media to understand concepts from abstract to concrete so that the learning outcomes achieved are very satisfying and more meaningful. This material includes material with a high level of difficulty caused by various factors, including students having difficulty imagining objects in concrete terms.

This is what happened at SMP Negeri 1 Sawahlunto, the information obtained from the learning outcomes data for Class IX.1, with the use of the lecture method, most students often have difficulty understanding the material being invited, they feel that mathematics is a difficult subject. Besides, student activities during the teaching and learning process are also still very lacking so that in the end student learning achievement becomes low. As an illustration of the situation, the following describes the acquisition of daily test scores for class IX.1 students in the first semester of the academic year, which can be seen in table 1

Table 1 Average Score Daily Assessment of Mathematics Subjects Semester I Class IX.1 SMP Negeri 1 Sawahlunto Academic Year 2021/2022.

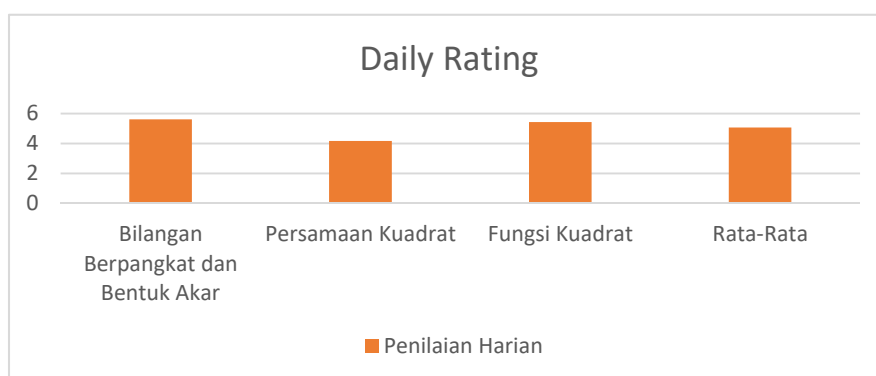| No	Daily Rating	Average value
1	Powers and Roots	5.62
2	Quadratic Equation	4.17
3	Quadratic Function	5.43
	Average HPH	5.07

Figure 1: Daily Rating Chart

From the data above, it is known that the average value of daily mathematics assessment in almost all KD is still very low, which of course is very low learning mastery as well. Therefore, it is necessary to choose the right learning model. Students of SMP Negeri 1 Sawahlunto in general do not have cooperative interactions, meaning that they have not studied together in a group, where students are still learning individually without any exchange of ideas, visible examples of smart students or students who have more abilities after they receive instruction from the teacher and understand the concept given, they do not want to guide and teach their friends who do not understand the concept so that students who lack or lack knowledge still have no progress.

This difference needs to be suppressed as small as possible so as not to cause psychological effects for students, so we need a facility in the form of a learning model that is able to create cooperation between students, namely one of the STAD type cooperative learning (Student Team Achievement Division).

II. METHOD

The subjects of this study were students of class IX.1 of SMP Negeri 1 Sawahlunto in the academic year 2021/2022, totaling 26 people with details of 13 sons and 13 daughters. The schedule of research activities is carried out for three months starting from the third week of November to the fourth week of December. The source of the research data was primary data

which was obtained through questionnaires, interviews, and observations of class IX.1 students of SMP Negeri 1 Sawahlunto.The data collection techniques used in this study were Tests, Non-Tests (Observation, Documentation, Questionnaires) Research Instruments (1) Learning Implementation Plans (RPP), (2) Student Worksheets (LKPD), (3) Observation Sheets, (4) Questionnaire. Data Analysis Techniques (1). Student/teacher activity data uses a quantitative approach in the form of a percentage, (2). Likes Data on Google Classroom Applications (Questionnaire). (3) Learning Outcomes Data by comparing the initial condition test scores with test scores after cycle I and cycle II. Based on the learning outcomes data, the analysis was continued by grouping students into grades and predicate intervals that had been determined at SMPN 1 Sawahlunto with one KKM model for all subjects. The specified KKM is 75. Therefore, the value and predicate intervals also have one size.

This type of research is classroom action research (Action Research), the steps of this classroom action research use the spiral model proposed by Tanggart (1988) in Wiratmaja (2006: 66) that one cycle consists of 4 steps, namely: 1) Planning, 2) Action, 3) Observation, and 4) Reflection. This research consists of two cycles, the first cycle will be held in one meeting with the material "Relations and Functions". The same thing also applies to the second cycle, one meeting was held with the material "Relations and Functions". At the end of each cycle, observation of learning activities is carried out to see changes in student activity in each cycle. As well as a questionnaire to see student responses to the ease of using google classroom and the performance of google classroom itself.
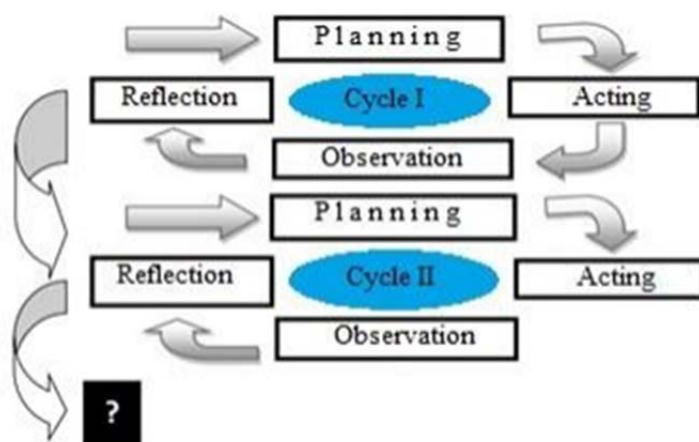

Figure 2: Flow chart Study Class Action

III. RESULTS AND DISCUSSION

Description of Initial Conditions

Based onresultsevaluation before taking action, obtained data from the number of students in class IX.1 there are 26 people, who get a score of reaching the KKM (75) there are 6 people and those who get a score less than the KKM (< 75) are 20 people. obtained without using the STAD type learning model can be seen in table 2 and figure 3 below. At the time of this research, the PBM process was carried out in a limited face-to-face manner.

Table 2. Pre-Cycle Learning Outcome Data

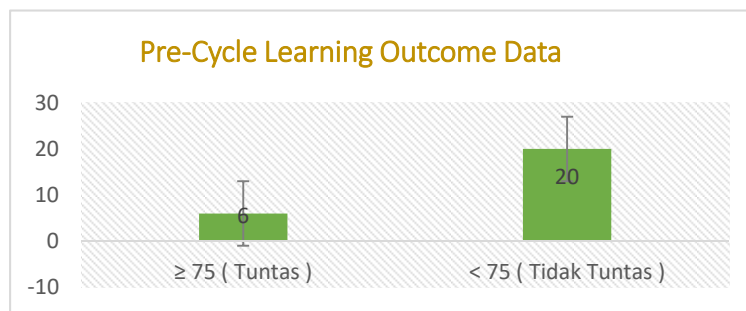| No	Score	Amount	Percentage
1	75	6	31%
2	< 75	20	69%
	AMOUNT	26	100%
	Average	59.81	

Figure 3.Chart Pre-Cycle Learning Outcomes

Results Study

The research results are the results obtained at the pre-cycle stage, the implementation of the first cycle of actions, and the implementation of the actions of the third cycletwo. The results of the study were in the form of students' daily test results and students' attitudes or behavior during group discussions and class discussions.

This research was carried out in 2 cycles, from the results of observations obtained qualitative data that will provide an overview of the activities carried out by students and teachers during the teaching and learning process and student test results.whichobtained in the form of quantitative data. The data is then analyzed using the methods and formulas that have been previously determined.

The data analysis of each cycle will be obtained as follows:

Analysisresearch data cycle I

Student Activity Observation Results.

Complete data on student learning activitiesDuringthe learning process by applying STAD type cooperative learning in cycle I can be seen in the appendix. Based on the number of students and the number of descriptors on each indicator, the ideal score for each indicator is 4 so that the criteria for classifying student learning activities can be seen in the following table:

Table 3. Observation ResultsActivityCycle I . Student

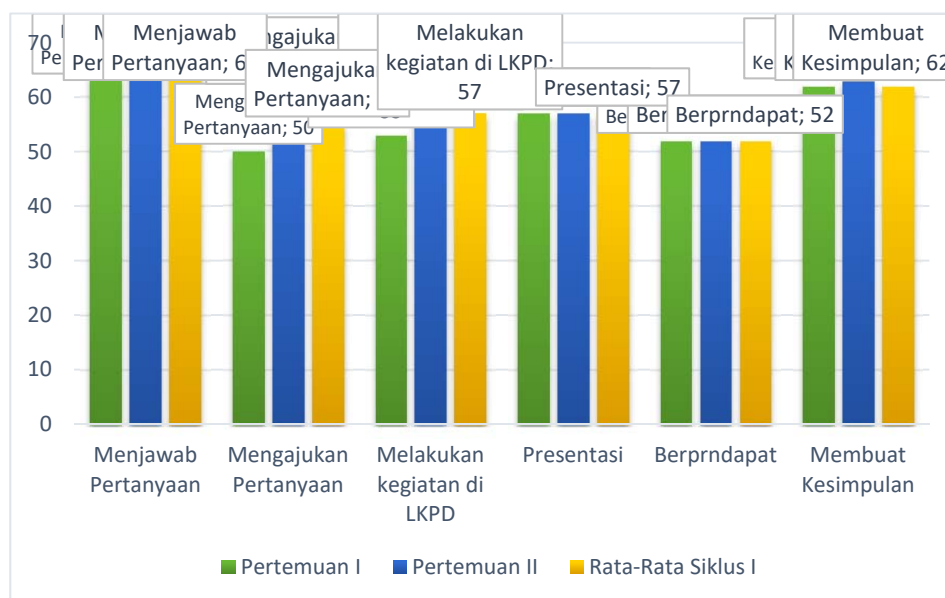| CYCLE I	Answer the question	Asking question	Doing Activities in	Presentation	Opinion	Making Conclusions	TOTAL CATEGORIES
OBJECT OF OBSERVATION							
Meeting I	64	50	53	57	52	62	C
Meeting II	66	61	62	57	52	63	(52.29)
Enhancement	2	11	9	0	0	1	
Average	65	55	57	57	52	62	
Category	**B**	**C**	**C**	**C**	**C**	**B**	

Figure 4.Graph of Student Activity Observation Results Cycle I

From the tables and graphs above, it can be seen that the total score of student learning activities in the first cycle is 52.29 (C), which means that student learning activities are categorized as less active, so that in the next cycle it needs to be improved again.

Teacher's Appearance Observation Results

Table 4. Results of Observation of Teacher's Appearance in Cycle I

NO	ACTIVITY	Meeting	
	Preliminary activities	**I**	**II**
1	Conditioning a pleasant learning atmosphere	2	3
2	Do apperception	2	3
3	Convey the competencies to be achieved and their benefits in everyday life	2	2
4	Delivering an outline of the scope of material and activities to be carried out	2	2
5	Convey the scope and assessment techniques used	3	3
6	Teacher's appearance	2	3
	Core activities		
A.	**Exploration**		
7	Involving students in finding information and learning from various sources by applying the principle of takambang nature as a teacher	3	3
8	Using a variety of learning approaches, media and other learning resources	2	3
9	Facilitate interaction between students, students and teachers, the environment and other learning resources. (Asking technique).	3	3
10	Involve students actively in various learning activities	3	3
B	**Elaboration**		
11	Facilitating students through giving assignments, discussions and others to come up with new ideas both orally and in writing	3	3
12	Facilitating students through giving assignments, discussions and others to come up with new ideas both orally and in writing	3	3
13	Provide opportunities to think, analyze, solve problems and act without fear	3	3

14	Facilitate students in cooperative and collaborative learning.	3	3
15	Facilitate students to present their work individually or in groups.	3	3
C	**Confirmation**		
16	Confirming the results of student exploration and elaboration through various sources	3	3
17	Help solve student problems in checking the results of exploration	2	2
18	Provide motivation to students who are less active and provide information to explore further.	2	2
19	The teacher uses good and correct language	3	3
20	Teachers use technology and information	3	3
	Closing Activities		
21	Facilitate and guide students to conclude learning activities	3	3
22	Conduct an assessment and/or reflection on activities that have been carried out consistently and programmed	3	3
23	Provide feedback on the learning process and results	3	3
24	Delivering the lesson plan at the next meeting	3	3
	Amount	**64**	**68**
	Percentage	**66.67**	**70.83**
	Average	**68.75**	
	Final score	**C**	

From the table, it can be seen that the total score of teacher performance in the first cycle is 68.75 (Enough) which means thatappearancethe teacher as a facilitator needs to be improved, so that in the next cycle it needs to be improved.

Student Learning Outcomes Data

Data on student achievement in cycle I is to discussequalitylinear one variable. Complete data on student achievement in cycle I (Appendix 2), then analyzed to obtain data such as the following:

Table 5. Datathe results of the learning evaluation cycle I

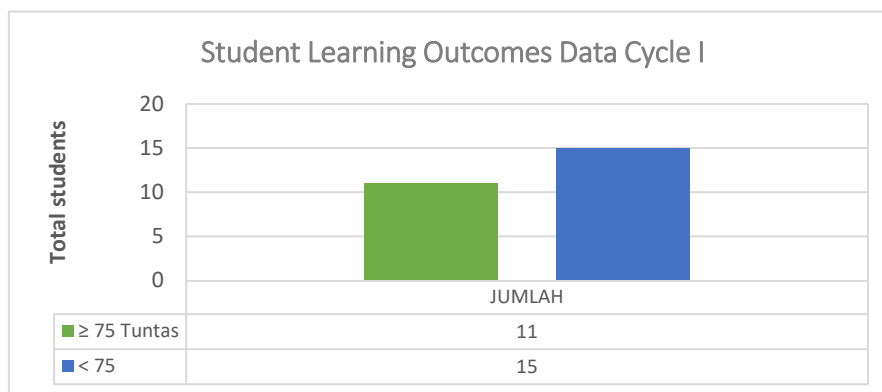| No	SCORE	AMOUNT	PERCENTAGE
1	☐75 Complete	11	42.31%
2	<75	15	57.69%
	Amount	**26**	**100%**
	Average	**68.85**	

Figure 6 Graph Results Student Study Cycle I.

From the data above, it can be seen that the average score of students is 68.85. Of the 26 students who took the evaluation test, there were 15 students who finished studying, the percentage of learning completeness was 42.31%. The value is still less than the classical completeness of learning. This shows that student learning achievement has not reached the target of high learning achievementwantednamely classical learning completeness >65%. And to find out whether or not student learning achievement can increase, it will be continued to cycle II.

By studying the results of research in cycle I, there are shortcomings in cycle 1 including:

1. Two-way communication between teachers and students is still lacking

2. Communication and cooperation of students in groups seems lacking. Thus, students with low abilities are reluctant to ask their high-ability friends.

3. Teachers do not guide students in discussions.

4. The teacher does not manage the time allocation, so there is not enough time for work

5. The teacher does not motivate students in generating interest at the beginning of the lesson

Taking into account the shortcomings above, the improvement plans that will be carried out in cycle II are:

1. The teacher gives several questions and provides opportunities for students to ask questions, so that communication between teachers and students is created.

2. The teacher determines peer tutors for each group so that they are willing to help or teach their friends who cannot. The teacher emphasizes to students that the group is said to be successful if each member of the group understands or can answer the questions given

3. The teacher is more active in providing guidance to each group by continuously correcting the group each lesson takes place

4. The teacher rearranges the time allocation for working on the worksheets and determines the number of questions and the level of difficulty of the questions according to the time available.

5. The teacher motivates students to generate interest in the lesson by providing an overview of the usefulness of the material being studied in everyday life.

Research data analysis cycle II

Student Activity Observation Results

Complete data on student activities during lessons by applying STAD type cooperative learning in cycle II can be seen in the appendix. Based on the results of observations of the average score of studentscouldseen in the following table:

Table 6. Data on Observation of Student Learning Activities in Cycle II

CYCLE II	Answer the	Asking question	Doing Activities	Presentation	Opinion	Conclusion	*TOTAL CATEGORIES*
Meeting I	66	62	61	61	56	65	B
Meeting II	67	62	61	63	57	65	(62.02)
Enhancement	1	0	0	2	1	0	
Average	67	62	61	62	56	65	
Category	**B**	**B**	**B**	**B**	**C**	**B**	

OBJECT OF OBSERVATION

From the table above, it can be seen that the total score of learning activitiesstudentin the second cycle of 62.02 (B) which means that the activitystudystudents are categorized as active.

Teacher's Appearance Observation Results

Table 7. Observation ResultsAppearanceCycle II Teacher

NO	ACTIVITY	Meeting I	Meeting II
	Preliminary activities	**I**	**II**
1	Conditioning a pleasant learning atmosphere	3	3
2	Do apperception	3	3
3	Convey the competencies to be achieved and their benefits in everyday life	4	4
4	Delivering an outline of the scope of material and activities to be carried out	3	3
5	Convey the scope and assessment techniques used	3	3
6	Teacher's appearance	3	3
	Core activities		
A.	**Exploration**		
7	Involving students in finding information and learning from various sources by applying the principle of takambang nature as a teacher	3	3
8	Using a variety of learning approaches, media and other learning resources	2	2
9	Facilitate interaction between students, students and teachers, the environment and other learning resources. (Asking technique).	3	3
10	Involve students actively in various learning activities	3	3
B	**Elaboration**		
11	Facilitating students through giving assignments, discussions and others to come up with new ideas both orally and in writing	3	3
12	Facilitating students through giving assignments, discussions and others to come up with new ideas both orally and in writing	3	3
13	Provide opportunities to think, analyze, solve problems and act without fear	3	3
14	Facilitate students in cooperative and collaborative learning.	3	3
15	Facilitate students to present their work individually or in groups.	3	3
C	**Confirmation**		
16	Confirming the results of student exploration and elaboration through various sources	3	3
17	Help solve student problems in checking the results of exploration	2	3
18	Provide motivation to students who are less active and provide information to explore further.	2	3

19	The teacher uses good and correct language	3	3
20	Teachers use technology and information	3	3
	Closing Activities		
21	Facilitate and guide students to conclude learning activities	3	3
22	Conduct an assessment and/or reflection on activities that have been carried out consistently and programmed	3	3
23	Provide feedback on the learning process and results	3	3
24	Delivering the lesson plan at the next meeting	3	3
	Amount	**70**	**72**
	Percentage	**72.92**	**75**
	Average	**73.96**	
	Final score	**B**	

From the table, it can be seen that the total score of the teacher's performance in the first cycle was 73.96 (Good), which means that the teacher's performance as a facilitator needs improvement, so that in the next cycle it needs to be improved.

Student learning outcomes

Complete data about achievementsstudyStudents in cycle II can be seen in the data in the attachment that is analyzed so that the following results are obtained:

Table 8 Data Results Student Learning Cycle II

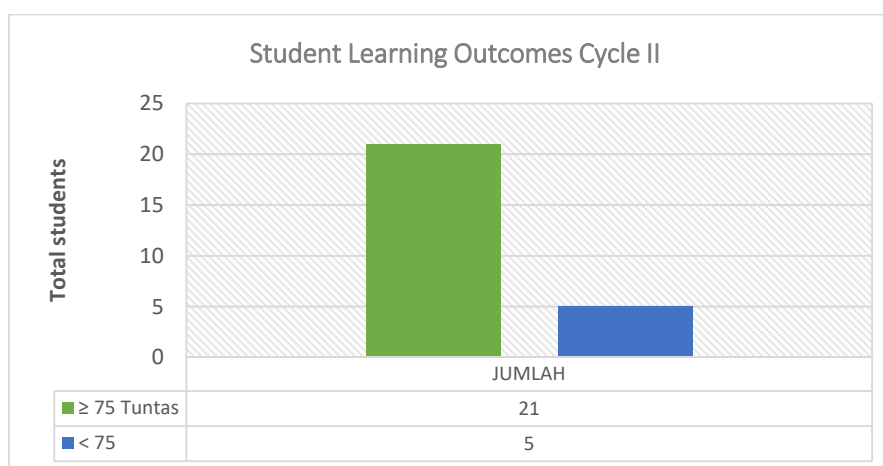| No	SCORE	AMOUNT	PERCENTAGE
1	☐75 Complete	21	80.77%
2	<75	5	19.23%
	Amount	**26**	**100%**
	Average	**78.00**	

Figure 7. Graph of Student Learning Results Cycle II

From the data above, it shows that the percentage of students who get a score of more than 75 is 80.77%. Because classical completeness is achieved if the number of students who complete 65%, then the results of research in cycle II have achieved complete learning mastery.classic, this means that the learning process in cycle II can be said to be successful. The following is a

table and graph of the average increase in learning outcomes for each cycle

Table 9 Comparison of Learning Outcomes in Each Cycle

No	SCORE	Amount		
		Pre Cycle	Cycle I	Cycle II
1	□75 Complete	6	11	21
2	<75	20	15	5
	Amount	26	26	26
	Average	59.81	68.85	78
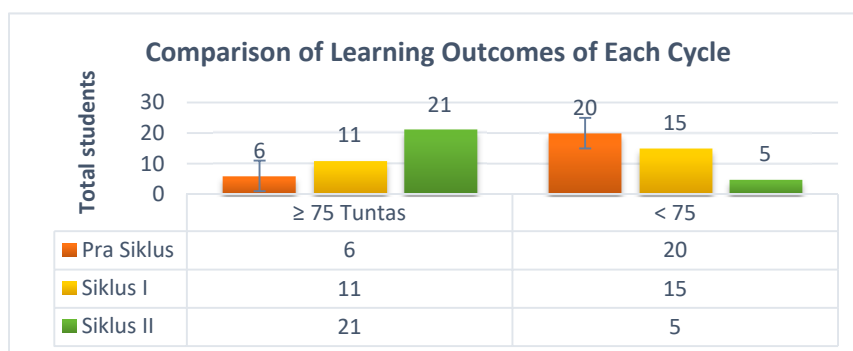
Figure 8 : Graphics Comparison Learning Outcomes of Each Cycle

Based on the data above, it is known that there is a significant increase in the results of student achievement that is lacking in the first cycle and can be improved in the second cycle, thus this indicates that the expected goal of improving student learning achievement is achieved.

From the second cycle of action, it turns out that the targets set by the curriculum have been achieved. Thus, in the next cycle it can be stopped because sufficient information has been obtained to make some decisions regarding the target of this research.AlthoughHowever, there are still some students who are still below the target, it is necessary to get special countermeasures from the teacher in the field of study concerned.

Discussion

This research was carried outin accordanceClassroom Action Research (CAR) procedures that have been determined starting with planning, implementing actions, observing to reflecting. Based on the data analysis, the implementation of the action in the first cycle showed that the average value of the class was 68.85. and the percentage of classical completeness is 42.31%. This result has not reached the classical completeness of 65% or more. As for the results of observations of student learning activities in the first cycle, it was obtained that the average score of student learning activities with a total score of 52.29 (C), which belongs to the less active category. Likewise with the Observation of the teacher's appearance with a score of 68.75 (C), so that the results of the research in the first cycle show that student learning achievement is still lacking and student learning activities are also still low.

Because the mastery of learning in the first cycle has not been achieved, then the implementation of the action is continued to the second cycle by making improvements and perfecting the shortcomings of cooperative learning in the first cycle.

After making improvements in the learning process, from the results of the analysis in the second cycle, the average grade value was 78.00 and the classical completeness percentage was 80.77%. On the results of the observation of student learning activities obtained a score of 62.02 (B) which is classified as active, and the teacher's performance score is 73.96 (B). This data

shows that there is an increase in the average score on student activities and an increase in student achievement scores when compared to the previous cycle. And after being analyzed using classical completeness and average scores, student learning achievement in cycle II has increased significantly.

From the results obtained in the STAD type cooperative learning, it can be seen that this learning can increase students' activities and learning achievements. Because in cooperative learning students can help each other understand learning and improve friends' answers and other activities by achieving learning goals together. This is in accordance with the opinion of Anita Lie(2002) which states that "A cooperative learning atmosphere is also able to produce higher achievements, as well as more positive relationships and better psychological adjustments than a learning atmosphere that is full of competition and separates students" .

This increase is also caused by the STAD type of cooperative learning model which is applied in learning Mathematics has advantages according to the opinion of Ibrahinm et al (2000) including "Students play an active role as peer tutors to further increase group success, interaction between students along with their ability to argue" .

Thus, the application of the STAD Type Cooperative learning model can improveperformancelearning mathematics, the subject matter of Transformation, in class IX.1 students of SMP Negeri 1 Sawahlunto in the 2021/2022 academic year.

IV. CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that the students' motivation to learn mathematics in Class IX.1 SMPN 1 Sawahlunto Yearlesson2021/2022 semester 1 has increased after the teaching and learning process was held using various learning media, with the following indications: (1) The use of varied learning media can increase student activity in learning mathematics. (2) The use of varied learning media can increase students' interest and motivation in learning mathematics. (3) The use of varied learning media makes students have the courage to express their ideas and opinions using mathematics. (4) The use of varied learning media can improve student learning outcomes. Based on the results obtained in classroom action research and its application to improving the quality of education, several things are suggested, including:

To increase students' motivation in learning mathematics in the classroom, it can be overcome by using a variety of learning media. (1) Teachers must design learning media well so that students can develop their numeracy skills. (2) Mathematics teachers always innovate in the learning process so thatgrowstudents' interest and motivation in learning mathematics. (3) Mathematics teachers, especially at SMPN 1 Sawahlunto, always create a pleasant learning atmosphere for students.

REFERENCE

[1]. Agustin, Y., & Jamna, J. (2021). Philosophy of Humanism Education in the Perspective of Science Learning for Students at the Junior High School Level. International Journal of Progressive Sciences and Technologies, 29(2), 448-453.

[2]. Degeng, I Nyoman Sudana, Prof. Dr., M.Pd., 2005. Teknologi Pembelajaran, Surabaya, Program Pascasarjana Universitas Adi Buana Surabaya.

[3]. Depdikbud 1996. Kamus Besar Bahasa Indonesia, Jakarta, Balai Pustaka.

[4]. Hasanah, Z. (2021). Model pembelajaran kooperatif dalam menumbuhkan keaktifan belajar siswa. Irsyaduna: Jurnal Studi Kemahasiswaaan, 1(1), 1-13.

[5]. Ks, E. D. (2021). PENERAPAN METODE STAD UNTUK MENINGKATKAN HASIL BELAJAR INDUKSI MATEMATIKA. Jurnal Ilmiah Pro Guru, 2(2), 237-247.

[6]. Mariani, M. (2016). Peningkatan Aktivitas dan Hasil Belajar Siswa Kelas VII. 1 SMPN 7 Kubung dengan Menggunakan Model Pembelajaran Kooperatif Tipe STAD. JPGI (Jurnal Penelitian Guru Indonesia), 1(1).

[7]. Pasiak, Taufiq, dr. M.Pd.I, M.Kes, 2007. Brain-Based Teaching, Bandung, Kaifa.

[8]. Pranata, A. (2013). PENGERUH MODEL PEMBELAJARAN KOOPERATIF TIPE JIGSAW TERHADAP HASIL BELAJAR IPA SISWA PADA KONSEP CAHAYA (KUASI EKSPERIMEN DI SDN CIRENDEU III, TANGERANG SELATAN).

[9]. ROHMAN, F. (2014). PENERAPAN MODEL PEMBELAJARAN KOOPERATIF TIPE STAD BERBASIS MULTIMEDIA PADA MATERI HIMPUNAN KELAS VII E SMP YPI DARUSSALAM CERME (Doctoral dissertation, Universitas Muhammadiyah Gresik).

[10]. Sadiman, Arief S, Dr., M.Sc, dkk, 1984. Media Pendidikan, Jakarta, PT Raja Grafindo Persada.

[11]. Sofa, H., S.IP, M.Pd. 2007. Motivasi Dalam Pembelajaran, http://massofa.wordpress.com

[12]. Sudrajat, Akhmad, M.Pd. 2007. Teori – Teori Motivasi, http://akhmadsudrajat.wordpress.com

[13]. Sutikno, M. Sobry, 2007. Peran Guru dalam Membangkitkan Motivasi Belajar Siswa, http://sobry.wordpress.com

[14]. Vandini, I. (2016). Peran kepercayaan diri terhadap prestasi belajar matematika siswa. Formatif: Jurnal Ilmiah Pendidikan MIPA, 5(3).

[15]. Wardani, I. GAK, Dr., dkk, 2002. Penelitian Tindakan kelas, Pusat Penerbitan   Universitas Terbuka.

[16]. Wahjosumijo, 1992. Kepemimpinan dan Motivasi. Ghalia Indonesia, Jakarta.

[17]. Yuni, Y. (2010). Perencanaan Pembelajaran Matematika. Jakarta: STKIP Kusumanegara.

[18]. Zaenudin, R. (2019). IMPLEMENTASI PEMBELAJARAN TIPE STAD UNTUK MENINGKATKAN AKTIVITAS DAN HASIL BELAJAR SISWA. MADRASCIENCE: Jurnal Pendidikan Islam, Sains, Sosial, dan Budaya, 1(1), 31-47.