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EFFORTS TO INCREASE MATHEMATICS LEARNING OUTCOMES FOR FLAT BUILDING MATERIALS THROUGH STAD TYPE COOPERATIVE MODEL

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ABSTRACT

Mathematics is a subject that is often considered difficult for some students, even though mathematics is always needed in all fields of science and to solve problems in everyday life. However, based on a preliminary study conducted in class III SDN Tunjung 4, the teacher uses the lecture model continuously so that it has an impact on students' low mathematics learning outcomes. The purpose of this study was to improve the mathematics learning outcomes of third grade students of SDN Tunjung 4 on flat-shaped materials through the application of the STAD type cooperative learning model. The method used is interviews, observations, tests, and documentation with data analysis techniques in the form of quantitative data analysis techniques. The results showed an increase in student learning outcomes in mathematics. This is shown from the average posttest score of learning outcomes in the first cycle, which is 63.75 with a percentage of students who complete 40%. The results increased in the second cycle, where the average score obtained was 77 with the percentage of students completing 85%. Based on the results of this study, it can be concluded that the STAD type cooperative learning model can improve the mathematics learning outcomes of third grade students of SDN Tunjung 4 on the flat shape material.

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A. Introduction

Mathematics is a subject that is often considered difficult for some students (Siregar, 2017). There are two main factors that make mathematics difficult for students to understand, namely a bad picture of mathematics that is in the minds of children from the start and teachers who have not been able to package and teach abstract mathematical concepts to be more concrete, simple, fun and easy for students to understand. With students thinking that mathematics is a difficult subject, students become less enthusiastic about learning these subjects (Kholil & Sulfiani, 2020). From this low interest in learning, it will affect the results of learning mathematics to be less than optimal (Fadhillah & Istiqomah, 2016). In addition, the delivery of material provided by the teacher is no less important in influencing students' interest in learning these subjects (Khotimah, 2018)

The problem of low interest and student learning outcomes in mathematics is a big problem considering that mathematics is a subject matter that is always taught at every level of education, including the elementary school level (Herawati et al., 2022). Mathematics is a mandatory material at every level of education, because mathematics is a global field of study that is always there and needed in various fields of discipline and is very much needed in solving problems in everyday life (Kamarullah, 2017). Therefore, students' interest in learning mathematics needs to be improved. One of the efforts that can be done is to apply interesting learning methods and models, so that they can increase students' interest in learning and learning mathematics outcomes (Yusup, 2017).

According to the Ministry of Education and Culture, there are several objectives in learning mathematics, including developing intellectual abilities and learning outcomes, problem solving abilities, learning outcomes, communication skills, and developing student character. The purpose of learning mathematics at the SD/MI level is for students to recognize simple numbers, simple arithmetic operations, measurements, and fields (Susriyati & Yurida, 2019). This goal can be achieved if mathematics learning can run conducive and students are enthusiastic in learning. One of the learning models that has been proven to improve mathematics learning outcomes is the STAD cooperative learning model.

The STAD type cooperative learning model is a cooperative learning model that groups students into small groups of 4-5 students who are selected heterogeneously so that students can interact and discuss with their groupmates related to math material (Agustini, 2018). This learning model is relatively easy to

apply and has several advantages such as making students more independent in learning, students are given space to look for subject matter from various learning sources, can practice students' speaking and communication skills, train students' sense of responsibility, acceptance, and concern, develop students' social sense, stimulate higher order thinking skills and problem solving abilities (Lamidi & Purwanto, 2013)

Based on the results of observations on third grade students at SDN Tunjung 4, some students find it difficult in mathematics. This is because the teacher is still continuously using the lecture method in delivering the material. Even though the lecture method that is carried out continuously can make students passive and not directly involved in constructing their knowledge, so this causes learning to be less meaningful, and results in low student learning outcomes (Sulandari, 2020). Therefore, this research was conducted with the aim of improving students mathematics learning outcomes in the class through the application of the STAD type cooperative model. With this research, it is hoped that students can change their mindset that actually mathematics is a fun and easy subject.

B. Method

This research is classroom action research with participatory collaborative research type. This type of research requires collaboration with other parties such as school principals and classroom teachers. In this study, researchers are directly involved in the research process from the beginning to the results of the research in the form of a report. Thus, since planning the research researchers are involved, monitor, record, and collect data, and report research results. This study uses a design by Kemmis and McTaggart, where each cycle consists of four components, namely planning, action, observation or observation and reflection. In addition, there is also a pretest and posttest in each cycle to determine the extent to which learning outcomes have increased after a certain action has been applied (Ilham Effendy, 2016). The data collection techniques used to obtain data in this study, researchers used tests, interviews, observation, and documentation. In this study, data on improving learning outcomes was analyzed using quantitative data analysis techniques.

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C. Result and Discussion

Cycle I

This research was carried out at SDN Tunjung 4, Burneh District, in 2022. From the results of the first cycle of research, the actions taken consisted of planning action, implementing actions, observing, and reflecting which were carried out on Tuesday, May 24, 2022 in class III SDN Tunjung 4. The action implementation stage consists of 3 stages, namely introduction, core activity, and closing. At the beginning of the main activity the teacher gave a pretest, on the results of the activity. Based on the results of the pretest in the first cycle, it was found that there were only 5 students who were declared complete or 25%, while 15 students were declared incomplete or 75%. The number of students who have learning outcomes or grades that meet learning completeness standards is 5 students. These results indicate that there are still many students who have difficulty in learning, based on the level of completeness obtained after the pretest activity, the teacher presents mathematics material using the STAD type cooperative learning model. Next, students were given a post test. The purpose of the post test is to see the results of the given action. Based on the post-test cycle I conducted, it can be seen that 8 students or 40% of students were declared complete, while 12 students or 60% of students were declared incomplete. In this first cycle, the students' average score was 63.75. The following are the results of the students' pretest and pottest in the cycle I:

Tabel 1. Pretest and Posttest Results Cycle I

No.	Student's Name	Pretest	Description	Posttest	Description
1.	Aditya Rendra Baskoro	30	Not complete	45	Not complete
2.	Akbar Nur Wahid	50	Not complete	50	Not complete
3.	Aura Widianing Johan	50	Not complete	60	Not complete
4.	Azmi Maulana	65	Not complete	65	Not complete
5.	Dafid Pratama Putra	65	Not complete	65	Not complete
6.	Desi Raifa Arsyila	80	Complete	80	Complete
7.	Fediansar Putra G	60	Not complete	60	Not complete
8.	Felik Rahmawan	70	Complete	70	Complete
9.	Maulana Febriansyah	50	Not complete	50	Not complete
10.	Moch Ghali Syahputra	65	Not complete	70	Complete
11.	Muhammad Raja	70	Complete	70	Complete
12.	Muhammad Rifan Halili	65	Not complete	70	Complete
13.	Nadhi Fahumairo	65	Not complete	65	Not complete
14.	Naila	50	Not complete	60	Not complete
15.	Neneng	65	Not complete	65	Not complete
16.	Olivia	70	Complete	70	Complete
17.	Septi Anasya Putri	75	Complete	75	Complete
18.	Sheffira Anisa R	55	Not complete	60	Not complete
19.	Susan Kumalasari	65	Not complete	70	Complete
20.	Syaqif Raihan Z	65	Not complete	65	Not complete

Total	1230	1275
Average	61,5	63,75

In the first cycle, observations were also made. Observations were carried out by observers, with the subject being observed was the teacher's activities during learning. Based on these observations, it was found that the teaching quality of educators was in the good category. The following are the results of observing teacher activities as follows:

Tabel 2. Results of Observation of Teacher Activities in Cycle I

No	Activity Indicator	Observation Score	
		Observer 1	Observer 2
1.	The teacher conducts learning according to the lesson plan	4	3
2.	Teachers use appropriate learning media	4	4
3.	The teacher gives an explanation that is easy for students to understand	3	3
4.	Teachers can build a comfortable atmosphere during learning	3	4
5.	The teacher gives the delivery of material in 2 directions	3	3
6.	Teachers can make students enthusiastic about learning	3	4
7.	The teacher does not use the lecture method much	3	4
8.	he teacher can't control the condition of the class when the students are busy	3	3
9.	The teacher still looks nervous in front of the class	4	3
10.	The teacher still doesn't understand the material given	4	4
Total		**34**	**35**
Criteria		**Good**	**Good**

In addition to the observation scores, the observers also provided reflections regarding things that researchers need to improve as model teachers to be able to improve the quality of learning in the next cycle. Based on the observer's assessment, the teacher should convey the learning objectives and the grouping of students should be made more members so that the STAD type cooperative learning model can run more optimally

Based on the posttest learning outcomes in the first cycle, it shows that most of the students have not finished. To determine whether the results obtained in the first cycle were successful and had reached the maximum point or not, the researchers continued the action in the second cycle. This is in accordance with what was conveyed by (Mulyatiningsih, 2015), that repetition of actions in classroom action research can be done if the results in the previous cycle have not reached the desired target and researchers want to find out more about the impact of the actions taken.

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In cycle II the actions taken consisted of action planning, action implementation, observation, and reflection which were carried out on Friday, 27 May 2022 in class III SDN Tunjung 4. The series of activities in cycle II were carried out similar to the series of activities in cycle I. At the implementation stage The activities that took place were the same as in cycle I, but what made the difference was the division of groups by the teacher. In the first cycle, the students divided the students by pairing with their classmates, while in the second cycle the teacher divided the students into small groups consisting of 7-8 students. At the beginning of the activity, the teacher gave a pretest. Based on the results of the pretest, it was obtained that there were 11 or 55% of students who were declared complete, while 9 students or 45% of students were declared incomplete. In this first cycle, the students' average score was 66.25. Whereas in the posttest, after taking the action there were 17 students or 85% of students who were declared complete, while 3 students or 15% of students were declared incomplete. In this second cycle, the students' average score is 77. This shows that as many as 85% of students can meet the learning mastery standards. Based on the theory of completeness of learning outcomes presented by (Trianto, 2012), that learning is declared classically complete if there are at least 85% of students complete. This shows that the action in cycle II can increase student learning outcomes until they reach the classical complete criteria. The following are the results of the pretest and posttest of third grade students at SDN Tunjung 4:

Tabel 3. Cycle II Pretest and Posttest Results

No.	Nama Siswa	Pretest	Description	Posttest	Description
1.	Aditya Rendra Baskoro	50	Not complete	70	Complete
2.	Akbar Nur Wahid	60	Not complete	65	Not complete
3.	Aura Widianing Johan	70	Complete	80	Complete
4.	Azmi Maulana	75	Complete	85	Complete
5.	Dafid Pratama Putra	70	Complete	85	Complete
6.	Desi Raifa Arsyila	80	Complete	95	Complete
7.	Fediansar Putra G	60	Not complete	70	Complete
8.	Felik Rahmawan	70	Complete	80	Complete
9.	Maulana Febriansyah	50	Not complete	70	Complete
10.	Moch Ghali Syahputra	70	Complete	80	Complete
11.	Muhammad Raja	70	Complete	75	Complete
12.	Muhammad Rifan Halili	70	Complete	80	Complete
13.	Nadhi Fahumairo	65	Not complete	65	Not complete
14.	Naila	60	Not complete	75	Complete
15.	Neneng	65	Not complete	80	Complete
16.	Olivia	70	Complete	80	Complete
17.	Septi Anasya Putri	75	Complete	85	Complete
18.	Sheffira Anisa R	60	Not complete	65	Not complete
19.	Susan Kumalasari	70	Complete	80	Complete
20.	Syaqif Raihan Z	65	Not complete	75	Complete

Total	1325	1540
Average	66,25	77

In the second cycle, teacher activities were also observed. Based on the results of observations, it shows that all aspects that are considered at the time of observation and can be classified as teaching quality of educators are in the very good category. In addition, there was an increase in the score indicating the quality of the teacher in presenting learning was better than the quality of presenting the material in the previous cycle. The following are the results of teacher observations in cycle II:

Tabel 4. Results of Observation of Teacher Activities in Cycle II

No	Activity Indicator	Observation Score	
		Observer 1	**Observer 2**
1.	The teacher conducts learning according to the lesson plan	4	4
2.	Teachers use appropriate learning media	4	4
3.	The teacher gives an explanation that is easy for students to understand	4	4
4.	Teachers can build a comfortable atmosphere during learning	3	4
5.	The teacher gives the delivery of material in 2 directions	4	4
6.	Teachers can make students enthusiastic about learning	3	4
7.	The teacher does not use the lecture method much	4	4
8.	he teacher can't control the condition of the class when the students are busy	4	3
9.	The teacher still looks nervous in front of the class	4	4
10.	The teacher still doesn't understand the material given	4	4
Total		**38**	**39**
Criteria		**Verry Good**	**Verry Good**

Based on the implementation of the activities of cycle I and cycle II, it can be seen that there was an increase in student learning outcomes by using the Stad Type Cooperative Model learning model with flat wake learning media in mathematics subjects material properties of flat shapes in grade 3 SDN Tunjung 4. The data review student learning outcomes in cycle I and cycle II can be seen in the following table:

Tabel 5. Comparison of Student Learning Outcomes in Cycles I and II

No	Students Name	Cycle I		Cycle II		Description
1.	Aditya Rendra Baskoro	30	45	50	70	Increase
2.	Akbar Nur Wahid	50	50	60	65	Increase
3.	Aura Widianing Johan	50	60	70	80	Increase
4.	Azmi Maulana	65	65	75	85	Increase
5.	Dafid Pratama Putra	65	65	70	85	Increase
6.	Desi Raifa Arsyila	80	80	80	95	Increase

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7.	Fediansar Putra G	60	60	60	70	Increase
8.	Felik Rahmawan	70	70	70	80	Increase
9.	Maulana Febriansyah	50	50	50	70	Increase
10.	Moch Ghali Syahputra	65	70	70	80	Increase
11.	Muhammad Raja	70	70	70	75	Increase
12.	Muhammad Rifan Halili	65	70	70	80	Increase
13.	Nadhi Fahumairo	65	65	65	65	Stable
14.	Naila	50	50	60	75	Increase
15.	Neneng	65	65	65	80	Increase
16.	Olivia	70	70	70	80	Increase
17.	Septi Anasya Putri	75	75	75	85	Increase
18.	Sheffira Anisa R	55	60	60	65	Increase
19.	Susan Kumalasari	65	70	70	80	Increase
20.	Syaqif Raihan Z	65	65	65	75	Increase
Total		2.505		2865		Increase
Average		62,625		71625		Increase

E. Conclusion

Based on the results of the research that has been done, it can be concluded that learning by applying the STAD type cooperative learning model can improve mathematics learning outcomes in grade III students at SDN Tunjung 4. This is evidenced by the increase in learning outcomes obtained from cycle I and cycle II. In the first cycle, based on the KKM scores applied in schools, about 60% of students finished studying. This percentage increased in the second cycle, which was 85% of students completed learning, so that in the second cycle the student learning outcomes could be said to be classically complete.

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