

The Effect of Cooperative Learning Model with Student Team Achievemen Division (STAD) Type on Motivation and Learning Outcomes

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A B S T R A C T

This study aims to analyze the effect of the Student Teams-Achievement Divisions (STAD) cooperative learning model on students' motivation and learning outcomes in the topic of function limits in class XI IPS at SMA Negeri 1 Pangkah. The method used is quantitative with a true experimental design, involving 72 students from class XI IPS 4 as the experimental group and XI IPS 5 as the control group. Data were collected through pre-tests and post-tests to evaluate the differences in learning outcomes and motivation before and after the implementation of the STAD model. The results indicate a significant increase in students' motivation and learning outcomes following the application of the STAD model. Meaningful learning, effective discussion coordination, and motivation to collaborate are key factors for the success of this model. Teachers are also expected to present engaging lessons to enhance student enthusiasm and involvement in the learning process.

Keywords: STAD, Motivation, Learning Outcomes.

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INTRODUCTION

Education has an important role in developing human life. Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System Chapter I Article 1 Paragraph 1, states: "Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and State." Based on the definition of education, it is concluded that education is something that must be realized for the strength of intellectual, emotional, and spiritual values which are human needs to actively develop their potential so that they can achieve the competencies needed. Education has a very important role in advancing a nation. The progress of the nation can be seen from the quality of its human resources. To get quality human resources obtained from good and quality education as well.

Good and quality education is obtained from learning between teachers and students. Gagne (1981) (in Rifa'i and Anni, 2019: 85) states that learning is a series of external events of learners designed to support the internal process of learning. Learning activities are influenced by two important components, namely the teacher as a contributor of knowledge and subject matter to students and students as recipients of knowledge from the teacher. A learner is required to learn one of them is mathematics. According to Gagne and Berliner

The Effect of Cooperative Learning Model with Student Team Achievemen Division (STAD) Type on Motivation and Learning Outcomes (1983; in Rifa'i and Anni, 2015: 64), learning is defined as the process of a person arriving at changes in behavior as a result of experience.

In the learning process, at the same time the teaching process also occurs, because it needs to be understood that if there are those who learn then of course there must be those who teach if the two of them have interacted with each other then intentionally or not both of them are already in a learning atmosphere. In the teaching and learning process the teacher is a teacher and students as learning subjects so there must be facilities and qualifications of abilities, knowledge, attitudes, skills that must always be developed, for example from the qualification of knowledge a teacher must always develop various knowledge such as educational psychology, teaching methods, and classroom management. A teacher must also have supporting competencies so that in the learning process the teacher does not make difficulties and mistakes in taking action on students who are unique creatures because they have complex characteristics, so that each individual must have different potential, intelligence, and background. The teacher competencies that must be possessed are personality competence, pedagogical competence, social competence, and professional competence. Teachers are not only material deliverers but must be able to educate, guide, model, assess, evaluate so that the spirit of a teacher is not lost in the observation and assessment of students so that it can be assumed in the process of learning activities carried out optimally can achieve maximum learning outcomes as well.

According to Sudjana (2016: 23) "learning outcomes are the overall pattern of behavior, both cognitive, affective and psychomotor, obtained by students after participating in the teaching and learning process". Changes in behavior patterns are expressed in the form of mastery concepts in the form of knowledge, attitudes and skills of students which are expressed in numbers. In reality, not all students can achieve maximum learning outcomes, there are several factors that influence student learning outcomes, namely the role of the students themselves, namely students learning seriously, and the role of the teacher in teaching, namely the teacher provides knowledge to students through learning that can be easily understood by students.

Learning outcomes are basically the impact of a series of learning processes. Learning outcomes will be good and optimal if the learning can create learning activities that are comfortable, fun and able to foster cooperation in the process of teaching and learning interactions, both between teachers and students and between students and students. Teachers have an important role in the learning process in the classroom. The learning process is the core of education that is built so that students can transfer knowledge. Learning can be interpreted as a process of adding knowledge and insight through a series of activities carried out consciously by a person and resulting in changes in him, so that positive changes occur, and in the final stage new skills, skills and knowledge will be obtained.

Mathematics is one of the subjects taught starting from all levels. It is intended to equip students to have the ability to think logically, analytically, systematically, critically and creatively in accordance with existing competency standards. The learning ability of students will be achieved if mathematics learning is carried out by activating students so that they grow their potential. The learning model that teachers usually use in learning is a conventional learning model but this learning model is less effective in fostering student motivation in learning. It is possible that students learn more subject matter in conventional learning, but it is also possible that they will easily forget it if it is not internalized in an effort to increase self-motivation to always learn, so that what arises will care about the quality of learning that should be a vehicle for learning but only as a routine of going to school, sitting sweetly in class then going home has no meaning in changing attitudes, increasing knowledge and increasing learning outcomes, as teachers are also the same as teaching only to fulfill obligations without caring about the development of students both in character, cognitive and skills.

Post-pandemic is a very difficult situation, especially in the world of education. Students who have been learning online for more than two years so that learning does not interact directly, teachers cannot control the abilities and attitudes of students because the active role and motivation in online learning is very low, this has an impact on children's ability to absorb the material taught by the teacher, as well as the responsibility of students is very low towards the assignments given.

Limited interaction with teachers to clarify understanding and network difficulties trigger learning loss as an impact of PJJ that is not maximized. Learning loss refers to a condition of losing a small or large part of knowledge and skills in academic development which is usually caused by stopping or disrupting the learning process in education. Learning loss according to The Glossary of Education Reform is defined as the loss or limitation of knowledge and abilities that refer to academic progress, generally occurs due to prolonged gaps or discontinuities in education including decreased participation rates so that the process of child development is disrupted in both cognitive, psychomotor and affective aspects. The boredom and pressure of online learning, coupled with the lack of interaction with teachers, friends and the surrounding environment can cause learners to stress. Parents, conditions and environments that are not wise and not conducive to the process of children learning at home can trigger psychological pressure for the students themselves. Therefore, to catch up with this in the post-pandemic, teachers must try hard to restore the spirit of education to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state, besides that teachers can also foster the level of motivation of students in participating in learning.

Motivation is a series of efforts to provide certain conditions, so that someone wants and wants to do something, and if he doesn't like it, then he will try to negate or eliminate that feeling of dislike, according to Sardiman (2018: 75). Learning motivation can also be interpreted as a driving force within students who cause learning activities consciously by using the potential they have to obtain the desired learning objectives can be achieved and is a psychological factor in a person that can generate passion, pleasure, and enthusiasm for learning.

The learning motivation of each learner is different which will affect the learning activities of the learners. Learning motivation in students encourages students to improve learning outcomes. Learners who have high motivation, will have high enthusiasm and great energy to carry out learning activities, so that the results obtained will be good. Conversely, children who have low learning motivation will not have an interest in learning activities, tend to trivialize, carry out activities outside the agreement path of the learning process, it will affect low learning outcomes or do but on the basis of force or just ceremonial. will even apply to children who have high intelligence can also fail due to lack of motivation. Seeing this, the failure of students should not blame students, because it may arise due to the unsuccessfulness of the teacher in providing motivation to students.

With the level of motivation to learn in learning mathematics limit material of low students, as a result, mastery of concepts in students is low. This can be seen from the results of daily tests conducted by several mathematics teachers at SMA Negeri 1 Pangkah in the 2023/2024 academic year showing that students who reach the KKM are still low.

The phenomenon that occurs at SMA Negeri 1 Pangkah in learning mathematics, the level of mastery of material and motivation of students decreases, resulting in decreased learning outcomes both in terms of cognitive, affective, and psychomotor. Students in expressing opinions and carrying out learning instructions are still low, so that many students get learning outcomes that have not met the KKM and in the learning process still use a conventional learning model in which the learning process is still dominated by the teacher.

The logical consequence of the low motivation of students in the learning process is the low sense of responsibility and behavior of students in learning, for example, being noisy and not paying attention when explained, not being active in the learning process, lack of respect for the teacher, not easily interacting with friends, not doing the assignments given by the teacher, not wanting to ask about the difficulties encountered etc. This fact must be addressed immediately, so that students change to enjoy learning and their learning achievement increases. This fact must be resolved immediately, so that students change to be happy in learning and students' learning achievement increases. For this reason, it is necessary to make changes in approaches and techniques for learning mathematics so that students have high activeness and responsibility by providing the widest possible opportunity for students to be involved in the learning process.

Therefore, a learner-centered learning method is needed and the teacher acts as a facilitator and motivator. In addition, learning methods should be able to train students' critical thinking. Based on the problems, causes, impacts and real consequences mentioned above, the author conducts analysis and evaluation as an effort to solve the problem.

Based on the data from the daily test results, it is obtained that the limit function is difficult material, and the learning process on this material is still felt to be far from the expected reality. This is because when the teacher explains the material, students do not listen but tend to joke with friends and when students are given assignments, students only cheat without wanting to understand the steps of doing it. In delivering information to students, the method often used by teachers is the lecture method. Because this method is quite easy to do and does not demand too much effort from both teachers and students. Learners are only allowed to sit, listen, record, memorize and are not accustomed to learning actively. During the learning process, students also lack practice solving varied problems. Learners when experiencing difficulties in working on practice problems do not continue to work but will leave the problem and will cheat on the work of their friends. This has an impact on the learning outcomes of students when an evaluation assessment is held. When an evaluation is held, students are required to work on their own, but because when given practice questions students do not really work on them, which results in students not being able to work on evaluation questions, and has an impact on student learning outcomes.

In addition, there are still many students who do not understand the basic concepts of limit functions and are less active in participating in math learning. Automatically, only learners who have a tendency to be active will progress and develop. Learners who are not active will just accept what is given in further explanation, so that it cannot be recorded in their memory in the long term. So, with this, math teachers in class XI IPS at SMA N 1 Pangkah must collaborate to get better results in an effective way. So that in its application the teacher must make changes to the learning model that is right on target and able to increase the motivation and learning outcomes of students.

Learning strategies should develop the basic abilities of students, so that the teaching and learning process is more interesting, effective and efficient in a familiar and pleasant atmosphere. So that it will arouse interest and increase the activeness of students' learning of mathematics subjects. In this regard, a learning model that can increase the motivation and learning outcomes of students will be used, namely the Student Team Achievement Division (STAD) Cooperative learning model. This model reviews the subject matter that has just been taught by the teacher, invites and motivates students to be more active in learning and practice a lot of questions so that it can increase students' understanding of the subject matter of limit functions, learning motivation and ability to do problems.

Based on the problems described above, the objectives to be obtained in this study are to find out:

The application of the Student Team Achievement Division (STAD) Cooperative Learning model in increasing student motivation in mathematics subject matter Limit function in class XI IPS at SMA N 1 Pangkah semester 2 Year 2023 / 2024.

The application of the Student Team Achievement Division (STAD) type cooperative learning model in improving student learning outcomes in the subject matter of mathematics Limit functions in class XI IPS at SMA N 1 Pangkah semester 2 Year 2023 / 2024.

The relationship between increasing motivation and learning outcomes of students in mathematics subject matter Limit function in class XI IPS at SMA N 1 Pangkah semester 2 Year 2023 / 2024 with the learning model Cooperative Learning Type Student Team Achievement Division (STAD).

METHOD

In this study, researchers applied a quantitative approach and a True Experimental Design research type. This design involves two randomly selected groups: an experimental group that receives treatment and a control group that does not. There are two forms of design, namely Posttest Only Control Design and Pretest Group Design. The effect of the treatment is analyzed using an independent test, such as the t-test, to determine whether there is a significant difference between the experimental and control groups. Sugiyono (2022: 116). This study took the population of students in class XI IPS SMA N 1 Pangkah which amounted to 178 students.

In analyzing the data, researchers used the prerequisite test of proving the hypothesis, which included normality test and homogeneity test. In addition, researchers also applied descriptive analysis and quantitative analysis which included Pre- and Post-Test and Paired Sample T-Test test. Then, hypothesis testing was also carried out after the normality test which stated that the data was normally distributed and the homogeneity test which stated that the data of both classes had homogeneous variances.

FINDINGS AND DISCUSSION

Pre-Test and Post-Test Learning Outcomes of Class XI IPS 4

Table 1. Pre-Test and Post-Test Results of Class XI IPS 4

	N	Minimum	Maximum	Average	Deviasi
Pretest	36	7	93	47,94	22,4
Post test	36	40	100	76,11	16,6

Based on table 1. which contains the results of the pretest and posttest, it can be seen that the pretest to posttest scores have increased well. The average pretest score was 47.94 with the lowest score of 7 and the highest score of 93. While the posttest value experienced a good change, this was evidenced by the average value obtained of 76.11 with the lowest value of 40 and the highest value of 100.

Description of Pre-Test Data Class XI IPS 4

XI IPS 4 is the experimental class used for research with the Student Team Achievement Division (STAD) model. Before being given the treatment in the form of a model of Cooperative Learning Type Student Team Achievement Division (STAD) pretest questions are given to students first to measure initial ability. Data on the initial learning outcomes (pretest) of students on cognitive aspects have been calculated with SPSS assisted statistical calculations as follows:

Table 2. Analysis of Pre-Test Value Description of XI IPS 4 and XI IPS 5 Classes

	N	Minimum	Maximum	Average	Deviasi
Control Pretest	36	13	86	51,11	18,417
Experiment Pretest	36	7	93	47,94	16,573

Table 2. presents a descriptive analysis of pretest scores for two groups of students in class XI IPS, namely the control (XI IPS 5) and experimental (XI IPS 4) groups with 36 students each. The minimum score for the control group was 13, while for the experimental group was 7, with the maximum score of the control group 86 and the experimental group 93. The mean pretest score showed the experimental group obtained 47.94 lower than the control group which reached 51.11 indicating better academic performance in the control group. As for the standard deviation, the control group was lower (18.417) than the experimental group (22.389). Overall, this table shows that the experimental group had a lower mean score, but in the academic performance of the learners (deviation) was higher compared to the control group.

Description of Post-Test Data Class XI IPS 4 and XI IPS 5

Data on the posttest results of students obtained after students get treatment during learning takes place in the form of a model of Cooperative Learning Type Student Team Achievement Division (STAD). Data collection was carried out in class XI IPS 4 and XI IPS 5, each class totaling 36 students. The average final learning outcomes (posttest) of Limit Function material based on SPSS calculations are as follows in table 3.

Table 3. Description Analysis of Post-Test Values of Class XI IPS 4 and XI IPS 5

	N	Minimum	Maximum	Average	Deviiasi
Control Pretest	36	40	100	72,78	15,119
Experiment Pretest	36	40	100	76,11	16,573

Table 3. presents a description analysis of posttest scores for two groups of XI social studies students, namely the control and experimental groups, each consisting of 36 students. The minimum score for the control group and experimental group is 40, while the maximum score for the control group and experimental group is 100. The average posttest score shows that the experimental group got an average score of 76.11, higher than the control group whose average was 72.78, while the standard deviation of the control group was also smaller at 15.119 compared to the experimental group which had a standard deviation of 16.573, indicating a greater variation in learner performance in the experimental group. Overall, this table shows that after the learning intervention, the experimental group performed better in the posttest than the control group.

Table 4. Results of Paired Sample T-Test (T-test) Learning Outcomes of Control Class XI IPS 5

Paired Samples Test									
Paired Differences									
		Std. Deviation		Std. Error		95% Confidence Interval of the Difference		Sig. (2-tailed)	
Mean				Mean		Lower	Upper	t	df
Pair 1	Pretest - Post_Test	-21,667	4,834	,806		-23,302	-20,031	-26,891	35
									,000

Referring to the results of the Paired sample T test displayed in table 4. it can be seen that the average learning outcomes of control class students Pre test is known to be 51.11 and post test is 72.78. These results show that there is a difference in the average learning outcomes before and after the application of conventional learning models. And judging from the table above, a significant difference of $0.000 < 0.05$ is obtained.

Table 5. Significance Results of Paired Sample T-Test (T-test) Learning Outcomes of Experimental Class XI IPS 4

Paired Samples Test									
		Paired Differences							
				Std. Error	95% Confidence Interval of the Difference				Sig. (2-tailed)
		Mean	Std. Deviation	Mean	Lower	Upper	t	df	
Pair 1	Pretest - Post Test	-28,167	6,947	1,158	-30,517	-25,816	-24,328	35	,000

Referring to the results of the Paired sample T test displayed in table 5. it can be seen that the average learning outcomes of experimental class students Pre-test is known to be 47.94 and post test is 76.11. These results indicate that there is a difference in the average learning outcomes before and after the application of the Student Team Achievement Division (STAD) model. And seen from the table above, a significant difference is obtained of $0.000 < 0.05$.

From the results of the Paired sample T test displayed in table 4.9 and table 4.10, it shows that the control class and the experimental class both experienced an increase in learning outcomes and there was a significant difference in the average pretest and posttest tests of $0.000 < 0.05$. From these results it can be concluded that the experimental group showed better learning outcomes than the control group.

Table 6: Paired Sample T-Test Results of Motivation Questionnaire for Control Class XI IPS 5

		Paired Samples Test							
		Paired Differences							
				Std. Error	95% Confidence Interval of the Difference				Sig. (2-tailed)
		Mean	Std. Deviation	Mean	Lower	Upper	t	df	
Pair 1	Before - After	-5,528	7,828	1,305	-8,177	-2,879	-4,237	35	,000

Referring to the results of the Paired sample T test displayed in table 6. it can be seen that the average learning motivation of control class students Pre test is known to be 92.86 and post test is 98.39. These results show that there is a difference in the average learning motivation before and after the application of conventional learning models. And judging from the table above, a significant difference of $0.000 < 0.05$ is obtained.

Table 7. Significance Test Results of Paired Sample T-Test (T-Test) Motivation Questionnaire Results Experiment Class XI IPS 5

		Paired Differences							
				Std. Error	95% Confidence Interval of the Difference				Sig. (2-tailed)
		Mean	Std. Deviation	Mean	Lower	Upper	t	df	
Pair 1	Pretest - Post Test	-4,667	9,165	1,528	-7,768	-1,566	-3,055	35	,004

Referring to the results of the Paired sample T test displayed in table 7. it can be seen that the average learning motivation of experimental class students Pre test is known to be 95.00 and post test is 99.67. These results indicate that there is a difference in the average learning outcomes before and after the application of the Student Team Achievement Division (STAD) model. And seen from the table above, a significant difference of $0.004 < 0.05$ is obtained.

From the results of the Paired sample T test displayed in table 6. and table 7. shows that between the control class and the experimental class both experienced an increase in learning motivation and there was a significant difference in the average pre-test of $0.000 < 0.05$ and a significant average post-test of $0.004 < 0.05$. From these results it can be concluded that the experimental group showed better learning motivation than the control group.

Table 8. Significance Test Results Correlations of Motivation Questionnaire Results and Learning Outcomes of Experimental Class XI IPS 4
Correlations

		Motivation	Result_Learning
Motivation	Pearson Correlation	1	.629**
	Sig. (2-tailed)		.000
	N	36	36
Result_Learning	Pearson Correlation	.629**	1
	Sig. (2-tailed)	.000	
	N	36	36

** . Correlation is significant at the 0.01 level (2-tailed).

Referring to the Correlations results displayed in table 8. it can be seen that between the results of learning motivation and learning outcomes of experimental class students after the application of the Student Team Achievemen Division (STAD) model has a significant relationship. These results can be seen from the table above, a significant relationship of $0.000 < 0.05$ is obtained.

CONCLUSIONS

The study reveals that the Student Team Achievement Division (STAD) Cooperative Learning model has a positive effect on increasing student motivation in mathematics, specifically in the subject matter of Limit functions for class XI IPS at SMA N 1 Pangkah in the second semester of the 2023/2024 academic year. Additionally, the STAD model also significantly improves student learning outcomes in the same subject. Furthermore, there is a notable relationship between the increase in student motivation and the improvement in learning outcomes, demonstrating that the STAD learning model effectively enhances both motivation and academic performance in the mathematics subject matter of Limit functions for the students in class XI IPS at SMA N 1 Pangkah.

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