

The Effect of the Team Games Tournament Type Cooperative Learning Model on Student Learning Outcomes in Mathematics Subjects in Grade Four of Public Elementary Schools Biro



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ABSTRACT: This study aims to determine the influence of the Team Games Tournament (TGT) type cooperative learning model on student learning outcomes in Mathematics subjects in grade IV of SD Negeri Biro. The method used is quasi-experimental design with a one-group pretest-posttest design. The sample of this study amounted to 22 grade IV students. The data collection technique uses tests and observations, with test instruments in the form of multiple-choice questions as many as 10 items that have been tested for validity and reliability. Data analysis was carried out with the Wilcoxon test using the help of SPSS because the data was not distributed normally. The results showed an increase in student learning outcomes after the TGT learning model was applied, with the average posttest score (54.09) higher than the pretest (35.45). The results of the Wilcoxon test showed a significance value of $0.000 < 0.05$ which means that there is a significant influence of the use of the TGT model on students' mathematics learning outcomes. In addition, the results of observations show an increase in student involvement and enthusiasm in the learning process. Thus, the TGT model is effective in improving the learning outcomes of grade IV students in broad measurement materials.

KEYWORDS: Team Games Tournament, learning outcomes, Mathematics, cooperative model.

INTRODUCTION

Mathematics is a systematic discipline that examines patterns of relationships, thought patterns, art, and language, all of which are studied logically and deductive. In the process of its development, it can be seen that Mathematics is a basic science that has become a tool to study other sciences. Because almost all disciplines use the concept of Mathematics in studying the object of study (Khaesarani, 2021). According to the regulation of the Minister of National Education Number 22 of 2006, it is stated that Mathematics subjects need to be given at every level of education to equip students with logical, critical, analytical, systematic, and creative thinking skills as well as the ability to work together. Mathematics has an important role in various disciplines in developing human thinking, by studying Mathematics students are more critical in understanding a problem in daily life. Therefore, Mathematics lessons need to be given to all students from elementary school (SD) to college. Mathematics is a universal science that is able to provide opportunities for the formation of the ability to communicate, think, solve problems and reason for students (Azizah et al., 2021).

Many elementary school students face great challenges in understanding the concept of multiplication, which often hinders their progress in Mathematics. These difficulties can reduce student motivation, lower students' confidence, and ultimately negatively impact their overall academic achievement. One of the main causes of these problems is the use of monotonous and static learning methods. Learning takes place as a process of mutual influence between teachers and students. In this case, the activities that occur are teachers teaching and students learning so that the core of the teaching process is student learning activities in achieving a goal. Learning is a conscious endeavor undertaken by educators to impart knowledge to their students, enabling them to perform educational activities with the best results possible. Throughout the learning, the teacher will oversee the entire sequence of learning tasks to ensure that the educational goals are met, encompassing both the learning experience and the outcomes as a of learning impact (Gagaramusu et al., 2025). Whether or not a learning goal is achieved can be seen from the learning results obtained by students after the learning process is completed. Therefore, in learning Mathematics, teachers must choose from various variations of models that are in accordance with the conditions and materials presented so that the goals of a planned learning can be achieved.

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Cooperative learning as a model is a group formation strategy that aims to achieve learning outcomes, diversity inclusion, and social skills resulting from the cooperation of group members. The purpose of this cooperative learning is to make students more accustomed to working together in groups to solve problems and complete tasks (Srinarwati, 2022). The cooperative learning paradigm requires students to work in groups. The learning style, known as the collaboration model, focuses on collaboration and support among small groups of four students with varying levels of talent. Cooperative learning is a useful strategy for teaching Mathematics to students in various contexts (Irfan et al., 2023). Team Games Tournament focuses on student activities that also include games, so students are not surprised if they can reduce student boredom in participating in the learning process (Azizah et al., 2021). The Learning of the Team Games Tournament model is the application of this model with the grouping of heterogeneous students as many people. The tasks in each group may be the same or different. After receiving the assignment, each group works together in the form of individual work and discussion. Ensuring that group dynamics take place consistently and compactly, as well as fostering a sense of competition between groups. The atmosphere of the discussion is fun and fun, similar to that of the game. After completing the work, the group will present the results to the group., and there will be a class discussion. If time permits, tournament team games may be held in recurring meetings. In this model, students play with other team members to earn additional points on their team's score (Nurkhauly et al., 2020).

Initial observations made by researchers at SD Negeri Biro showed results in several classes that students' ability to master basic concepts of Mathematics still requires special attention. Many students have limited knowledge of the basics of Mathematics, as evidenced by their difficulty in memorizing multiplication tables and applying them to various Mathematics contexts. When faced with more complex problems, such as calculating larger numbers or story problems that require deeper understanding, students often become confused and take longer to find the right solution. This suggests that existing teaching methods may not provide enough of a solid foundation for Mathematics concepts, thus hindering students' ability to think critically and logically in the Mathematics classroom. Therefore, a more interactive approach that focuses on understanding basic concepts is needed to help students overcome these difficulties and improve their Mathematics skills. The focus of this research is class IV. In addition to the various problems above, what the researcher wants to know is whether it will also have an impact on the learning outcomes that will be obtained by the student, such as the score of the student's post-test results. Based on the background of the above problem, the researcher is interested in researching "The Influence of the Team Games Tournament Type Cooperative Learning Model on Student Learning Outcomes in Mathematics Lessons in Grade IV of Biro State Elementary School"

LITERATURE REVIEW

Cooperative learning consists of two words, namely Cooperative and Learning. Cooperative means cooperation and Learning means learning. So, Cooperative Learning is learning through joint activities. Cooperative Learning is a learning model in the form of a learning community, namely by forming a learning community or learning groups (Simamora, 2024) Davidson and Kroll stated that collaborative learning is an activity that takes place in a learning environment of a small group of students who exchange ideas and work together to solve specific problems on a task (Suratiningsih, 2020). Based on the definition above, it can be concluded that the cooperative learning model is learning that emphasizes student collaboration so that students can help each other in solving problems that have been given by teachers (Lathifa et al., 2024).

The Collaborative Learning Team Game Tournament (TGT) was originally developed by David Devries and Keith Edwards It is the first study method from Johns Hopkins University. The TGT learning model is a learning model where students are divided into small groups of 4 to 6 students, and each member plays a tournament in their respective group. The winner of the tournament is the student who answers the most questions correctly with the fastest time (Rika, 2025). The Team Games Tournament type cooperative learning model is a model learning model that places students in small groups that are heterogeneous in terms of ability, gender, and race. Each student plays an active role in learning which is packaged in the form of academic tournaments to obtain scores (Adnyana, 2020). Team Games Tournament is an easy-to-use learning model that engages all students in the same activity. This model integrates the role of learners as peer tutors through game activities, thus allowing them to actively participate in the learning process (Armidi, 2022).

Learning outcomes are a change in behavior that occurs after participating in the teaching and learning process in accordance with educational objectives. Learning outcomes or achievements are the realization or expansion of potential skills or capacities that a person has. The mastery of learning outcomes by a person can be seen from his behavior, both behavior in the form of mastery of knowledge, thinking skills, and motor skills (Novianti et al., 2020). Learning outcomes are results given to students in the form of assessment after participating in the learning process by assessing the knowledge, attitudes, and skills in students with changes in behavior (Nurrita, 2018). Learning outcomes are abilities, be it cognitive, affective and psychomotor that a person gets from the learning process carried out in a certain time (Khaesarani, 2021)

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From a linguistic point of view, the terms mathematics (English), mathematik (German), mathématique (French), matematico (Italian), matematiceski (Russian), or amathereet/wiskunde (Dutch) are derived from the Latin word *matematica*, which was originally taken from the Greek term *mathematike*, which means related to learning, which has its roots in the word *mathema* which is interpreted as knowledge or science, and is closely related to other words that are in line, That is *Mathein*, which means to learn or think. Mathematics is a systematic discipline that examines patterns of relationships, thought patterns, art, and language which are all studied with logic and deductive, Mathematics is useful to help humans in understanding and mastering social, economic, and natural problems (Fahrurrozi & Hamdi, 2017). Mathematics is one of the compulsory subjects in formal education. Based on the Regulation of the Minister of National Education of the Republic of Indonesia Number 22 of 2006 concerning content standards for primary and secondary education units, it is stated that through Mathematics subjects, students have the ability to understand Mathematics concepts, use reasoning on patterns and properties, solve problems, communicate ideas and symbols, and have an attitude of appreciating the usefulness of Mathematics in life (Fauzi & Masrupah, 2024).

RESEARCH METHODS

In this study, the researcher used a quantitative approach with an experimental type. The type of experimental research is *quasi experimental design* (pseudo-experiment). The research design applied is *the One Group Pretest-Posttest Design*. In this study, the results of treatment (*Posttest*) will be compared with the condition before being given treatment (*pre-test*). The following is the design of the *Pre Test-Post Test Design*:

Table 1. Research Design

Before	Treatment	After
O1	X	O2

Information:

O1 = Pre *test* question scores (before treatment)

O2 = Post *Test* question scores (after treatment)

X = Treatment provided (learning using a cooperative learning models of *the Team Games Tournament type*)

Initial data capture:

Observing the state of grade IV of SDN Biro to find out the learning conditions. Interviews were conducted with grade IV teachers of SDN Biro to obtain data on the number of samples and variables in learning. This research includes three steps of activities, namely: Provide *pre-test* questions to measure bound variables before treatment. Applying treatment to the class of research subjects is taught using experimental methods.M Provide *post test* questions to measure bound variables after the treatment is applied.

To obtain the data needed to process data based on the problems studied by the researcher, a population is needed as a target/object in this study. According to Sugiyono, "Population is a generalized area consisting of objects/subjects that have certain qualities and characteristics that are determined by the researcher to be studied and then drawn conclusions. Based on the definition of population above, population is the whole of the object to be studied with all the characteristics it has. So the population in this study is grade IV students of SDN Biro. ampel is a small proportion of the population that should be studied. In this study, the sample was grade IV students. The sampling technique in this study is to use *saturated sampling techniques*. According to Sugiyono (2021), *saturated sampling* is a sampling technique when all members of the population are used as samples, the population is relatively small, less than 30 people, or research that wants to make generalizations with very small errors. Another term for saturated samples is census, where all members of the population are sampled

Table 2. Number of students

Class	Man	Woman	Total
IV	17 people	6 people	23 people

(Data Source: Grade IV Teacher of SDN Biro)

The types of data used in this study are 1) quantitative data obtained from student learning outcome tests, and 2) qualitative data obtained from observation and documentation at SDN Biro. The data source in this study was obtained from grade IV teachers of SDN Biro. This study has two variables, namely *independent* variables and bound variables (*Dependent*). An independent variable is a factor that affects the occurrence of changes or the appearance of bound variables, while for bound

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variables are variables that are affected due to the presence of independent variables. Therefore, in this study there are two variables, namely: 1) the independent variable in this study is a combination of *the team games tournament type cooperative learning model* (Variable X); 2) the bound variable in this study is the learning outcomes of grade IV students in the subject of Mathematics (Variable Y).

In order to obtain accurate data and information, a number of data collection techniques are used in this study such as: Test is an objective systematic tool or procedure to obtain the desired data or information about a person by asking questions (questions/questions or a series of tasks to be done). The *Pretest* is carried out to find out the students' initial ability to learn results in science subjects before being given treatment. *The pre-test* takes place in one meeting in the classroom, before students are taught using a cooperative learning model of *the Team Games Tournament type*. The final test (*Post-test*) is given after students receive treatment with learning using a cooperative learning model of *the team games tournament type*. *The post-test* is carried out at the end of the learning with 2 meetings in class, the purpose of the researcher is to conduct a final test or *post-test* to find out students' understanding of the Mathematics subject after treatment, namely learning using the cooperative learning model of *the Team Games Tournament Type*. This learning outcome test of the multiplication of numbers is carried out to be able to measure the acquisition of student learning outcomes at the end of the lesson with the same questions in the initial test.

The observation in this study aims to assess the application of *the Team Games Tournament* (TGT) type cooperative learning model in Mathematics subjects in grade IV of SD Negeri Biro. Through observation, the researcher can see the extent to which each stage in the TGT model runs according to plan, starting from individual thinking activities, discussion in pairs, sharing in groups, to the implementation of tournaments in heterogeneous groups. In this study, the researcher used documentation as tangible evidence to support the data collection process in the field. Documentation was taken in the form of photos or pictures of the researcher's activities during research in grade IV of SDN Biro Data collection instruments used in this study were tests and observations. In this instrument, the subject in this case is that grade IV students must fill in the items in the test that has been planned, in order to find out the level of success of students in the learning process, especially in the material of multiplication of integers. Observations were made to support the analysis of research results by observing student activities during learning using *the Team Games Tournament* (TGT) model. During the learning process, the researcher will pay attention to the level of involvement of students in group discussions, their activeness in completing assignments, as well as participation in games designed to strengthen their understanding of the material. In addition, observation also aims to assess students' enthusiasm in participating in learning activities, such as expressions of interest, enthusiasm for cooperation, and response to challenges given in games. Interactions between students are also the focus of this observation, including how they communicate, share understanding, and help friends who are struggling. The results of this observation will be qualitative data that complement the analysis of the influence of the TGT learning model in improving student learning outcomes. Grid – Test Instrument Grid Student learning outcomes can be found by using tests. The test used in this study was a multiple-choice test of 10 questions.

The data analysis techniques applied in this study are descriptive statistical analysis and inferential statistical analysis. Sugiyono (2017) defines descriptive statistical analysis as an analysis that is carried out to determine the existence of independent variables, either on only one or more variables (stand-alone variables or independent variables) without making comparisons of the variables themselves and looking for relationships with other variables (Rifai et al., 2022). The data presentation was carried out through a table of calculations of the mean cognitive learning outcomes of students before and after being given treatment using *the Team Games Tournament learning model*. In this analysis, the researcher determined the level of students' ability to master the subject matter in accordance with the procedures promulgated by the Minister of Education and Culture No. 21 of 2022, namely:

Table 3. Learning Outcome Completeness Standards

Shoes	Category
0-64	Less
65-76	Enough
77-88	Good
89-100	Excellent

The validity test is useful to determine the validity of the questionnaire made by the researcher in measuring and obtaining research data from the respondents. The reliability test is useful to see if the questionnaire made by the researcher has what consistency if the measurements made with the questionnaire are repeated repeatedly. The hypothesis testing in this study is seen based on the results of the data normality test, based on the results of the data normality test, it will be possible to

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determine the most suitable test tool to be applied. If the data is normal, the Paired *Sample T-test parametric test is used*. Meanwhile, if the data is abnormal eating, a non-parametric test is used, namely the Wilcoxon *Signed Rank Test*. In this study, a non-parametric test was used, namely Wilcoxon, because the sample was small and did not reach the standard of data normality (abnormal data). The Wilcoxon test is one of the non-parametric tests used to measure whether or not there is a difference in the average value of 2 paired (dependent) sample groups. The Wilcoxon test is commonly used in pre-post test design research. The test in this study will use the help of a computer program, namely SPSS.

RESULT

Descriptive Statistical Analysis

In this study, the researcher displays data from the results of the research that has been carried out by the researcher on the influence of the *Team Games Tournament* type cooperative learning model on learning outcomes in the mathematics subject of grade IV students of SDN Biro. The study featured descriptive statistical data analysis techniques to determine student learning outcomes using a *Team Games Tournament-type* cooperative learning model in grade IV Mathematics subjects obtained from SDN Biro. The Pretest-Posttest data technique aims to determine student learning outcomes before and after the implementation of learning using a *Team Games Tournament-type* cooperative learning model in Mathematics subjects with extensive measurement material using standard and non-standard units.

Test Validity Test Questions

The test trial in this study was carried out once in the same school but with a different class/respondent, namely in grade V of SDN Biro. The test trial was carried out on Monday, May 5, 2025 for 28 grade V students of SDN Biro, after which the researcher used a validity test using the help of the spss computer program and got all the valid test questions.

Table 4. Validity Test of Multiple Choice Test Questions

Question Number	Test Results for the Validity of Test Questions		Information
	R-Calculate Value	R-Table Values	
1	0,604077102	0,3882	Valid
2	0,423444804	0,3882	Valid
3	0,431483644	0,3882	Valid
4	0,417100856	0,3882	Valid
5	0,476708302	0,3882	Valid
6	0,388823531	0,3882	Valid
7	0,486972056	0,3882	Valid
8	0,59871109	0,3882	Valid
9	0,462441699	0,3882	Valid
10	0,454496105	0,3882	Valid

Source: Data Processing Results

Table 5 describes the number of valid test questions as many as 10 question numbers. The test questions were tested on 26 students with an R-table value of 0.3882 then compared to the R-Count obtained if the R-Count value exceeds the R-Table, then the question is valid, while if the R-Count value is less than the R-Table value, then the question is invalid from the comparison, then the valid question is 10 questions. After the researcher conducts a validity test, the next step is to conduct a reliability test using spss to find out whether the valid question is reliable or not as a research instrument. The following is a table of the reliability test questions.

Table 5. SPSS Reliability Test Results

Reliability Statistics	
Cronbach's Alpha	N of Items
.611	10

Source: Data Processing Results

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Categories are enough Forester et al. (2024), if the value of Cronbach's Alpha > 0.60 , then the questionnaire or questionnaire prepared is consistent or reliable and if the value of Cronbach's Alpha < 0.60 , then the questionnaire or questionnaire prepared is declared unreliable or inconsistent. Therefore, it can be concluded that the instruments of the researcher are reliable for research.

Description of Pre-Test and Post-Test

The researcher carried out a *Pre-Test* and Posttest with two meetings in grade IV of SDN Biro. The *Pre-Test* will be held on May 8, 2025, more precisely on Thursday from 07.30 and continued with the provision of material until 09.00 (break time). The researcher aims to hold a *Pre-Test* (initial test) to obtain students' initial knowledge of Mathematics learning materials about the measurement of the area of non-standard units and standard units. This test is in the form of multiple-choice questions with each question answered correctly by the student getting a score of 10. The *Post-Test* was held on Thursday, May 15, 2025 at 08.30. The researcher carried out learning in grade IV of SDN Biro with extensive measurement material using non-standard units and standard units during two meetings on Thursday, May 8, 2025 and May 14, 2025. In the learning process, the researcher applies a cooperative learning model of the *Team Games Tournament* type by following the learning implementation plan, after which the researcher gives the *Post-Test* to students with the same questions as in the initial test (*Pre-Test*) related to the learning material. The data obtained is in the form of *Pre-Test Post-Test* results as follows:

Table 6. List of Research Analysis Values

score	<i>Pre-Test</i>	<i>Post-Test</i>
Highest score	70	100
Lowest score	10	20
Average score	35,45	54,09

Source: Data Processing Results

Based on the results of the above processing, the presentation between *Pre-Test* and *Post-Test* there are different results with the difference between the average score is 18.64. In the presentation of the *Pre-Test*, the highest score obtained was 70 while the lowest score obtained was 10 and the average score in the *Pre-Test* was 35.45. The data from the *Post-Test* presentation results obtained was 100 while the lowest score was 20 and the average *Post-Test* score was 54.09. When viewed from the *Post-Test* score, the increase in the percentage of students' average score is 53%. On average, the *Post-Test* score is greater than the *Pre-Test* score ($54.09 > 35.45$) so that with the data above, it can be known that the student's *Post-Test* score is better than the previous student's *Pre-Test* score.

Inferential statistical analysis

Table 7. List of Pre-Test and Post-Test Scores

Student Name	Pretest Scores	Posttest Scores
Adrian Emelianus	30	30
Ahmad Gazali	20	30
Amely Calista	30	40
Andrew Gracio	10	30
Anugerah Setiawan	40	50
Arendra Nafiz	60	90
Danish Syawal	10	20
Fakhi Loliwu	70	90
Gigih Alvaro	30	50
Gwenze Belvania	20	50
Illa Djisman	70	70
Mardatillah Nuzlia	50	60
Michella Patricia	10	40

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Student Name	Pretest Scores	Posttest Scores
Mohammad Rafi	30	40
Moh Zaki	30	30
Nazifa Salsabillah	40	70
Nuh Ubadillah	10	40
Rayhan Alfatih	20	50
Rezky Musakkar	70	90
Risky Pri Anazwa	60	100
Rizky Ramadhan	20	50
Rizal Ifander	50	70
Total:	780	1190
Average	35,45455	54,09091
Highest Score	70	100
Lowest Score	10	20

Source: Data Processing Results

Based on table 3 of the *Pre-Test* scores obtained by SDN Biro students in the Mathematics teaching subject, the broad measurement material uses non-standard units and standard units without using *the Team Games Tournament* type learning model, many student scores are still below the KKM (65-76). The students who got the KKM standard score in the *Pre-Test* were 3 students and those who got a score below the KKM as many as 19 students. Furthermore, in the posttest, 3 students achieved the KKM standard score and 4 students achieved a very good score from the number of students who participated in the Mathematics learning of the area measurement material of non-standard units and standard units using *the Team Games Tournament type cooperative learning model* and 15 students whose scores were less than the KKM standard (65-76).

Hypothesis Proof

To see whether the increase is significant or not, inferential statistical analysis is carried out using the help of the SPSS version 26.0 program. Hypothesis testing is preceded by a data assumption test including a normality test. The results of the normality test with the Shapiro test showed a significance value of 0.029 for pretest data and 0.065 for posttest data. The significance value of the pretest data is smaller than the significance level of $\alpha = 0.05$ so it can be stated that *the Pre-Test* data is not normally distributed. The assumption test was not met, so the test was continued with non-parametric statistics, namely the Wilcoxon test. The hypothesis of the study is as follows:

Table 8. Non-Parametric Test Results (Wilcoxon) output 1

Ranks				
		N	Mean Rank	Sum of Ranks
Posttest - Pretest	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	19 ^b	10.00	190.00
	Ties	3 ^c		
	Total	22		
a. Posttest < Pretest				
b. Posttest > Pretest				
c. Posttest = Pretest				

Source: Data Processing Results

- H1: There is an effect of the application of the *Team Games Tournament type cooperative learning model* on the learning outcomes of Mathematics subjects of grade IV students of SD Negeri Biro
- Ho: There was no effect of the application of the *Team Games-type cooperative learning model* to learn Mathematics subjects for grade IV students of SD Negeri Biro.

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From the table above, there are some data as follows: 1. Negative Ranks are a decrease in scores or scores from before the administration of treatment (Post-Test) to after administration. This value of 0 indicates that out of a total of 22 students, no students experienced a decrease from Pre-Test scores to Post-Test scores. 2. Positive ranks are an increase in grades or scores from before the treatment (Pre-Test) to after the Post-Test is given. Positive ranks in the table there are 19 students (N) who have increased. Mean rank = 10.00 and Sum of Ranks = 190.00. 3. Data Ties are the absence of an increase or decrease in value or score from before the treatment (Pre-Test) and after the treatment (Post-Test). In the table above for the order of ties, there are 3 students out of a total of 22 students and there is no change in grades or scores before and after the treatment. Furthermore, the significance of the increase in the output of the Wilcoxon test statistic is seen as follows:

Table 9. Non-Parametric Test Results (Wilcoxon) Output 2

Test Statistics ^a	
	Posttest - Pretest
Z	-3.867 ^b
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

Source: Data Processing Results

Based on the results of the above data analysis with the help of using the SPSS computer program, significant values (Asymp. The sig) obtained is = 0.000 refers to the basic assumption if the significant value is > 0.05 then the hypothesis is rejected while if the significant value is < 0.05 then the hypothesis is accepted. The significant value obtained from the results of the Wilcoxon test in the table above, which is 0.000, can be said to be less than 0.05 ($0.000 < 0.05$) so that the hypothesis is accepted.

Observation

The researcher used observation as an instrument to obtain additional data on the application of *the Team Games Tournament (TGT) type cooperative learning model* in Mathematics subjects in grade IV of SD Negeri Biro. Through observation, the researcher can see the extent to which each stage in the TGT model runs according to plan, starting from individual thinking activities, discussion in pairs, sharing in groups, to the implementation of tournaments in heterogeneous groups. Observations were carried out with reference to several important aspects, namely: Students were observed to be active in giving opinions and exchanging ideas during group discussions. Students show high participation in the game, as well as actively answer questions asked in the tournament session. It can be seen that students help each other in understanding the material, showing positive interaction and a sense of responsibility for the success of the group. Students look enthusiastic and motivated during the learning process, both when discussing and when participating in game activities. Students are able to re-explain the concepts that have been learned, both to their group mates and to the teacher, which shows a good understanding of the material. Based on the results of observations, the majority of students showed good to very good performance during the learning process. This reflects that the implementation of the TGT model is able to increase student involvement actively, foster a spirit of cooperation, and encourage deeper understanding of concepts in a fun and competitive learning atmosphere

DISCUSSION

This study examines the influence of *the Team Games Tournament type cooperative learning model* in Mathematics subjects on the learning outcomes of grade IV students of SDN Biro, with the number of research samples reaching 22 students. This study applied the Wilcoxon test using the help of the SPSS computer program to find out whether there was an effect before and after the treatment was given. Based on the results of the calculation in the final test (*Post-Test*) of students, the average score obtained is higher than at the time of giving the initial test (*Pre-Test*), therefore the application of *the Team Games Tournament type learning model* can affect the learning outcomes of Mathematics students in grade IV. Learning was carried out in 2 meetings which were held for 3 days. On the first day, a *Pre-Test* was given in the form of multiple-choice questions that had been tested for validity and realism. Furthermore, on the same day, learning was carried out using the *Team Games Tournament type cooperative learning model* then resumed on the second day, and on the third day a *Post-Test* was given, learning was carried out until the time determined by the homeroom teacher. The application of the *Team Games Tournament type cooperative model* in two meetings uses 5 components/syntax of TGT (*Team Game Tournament*), namely class presentation, team formation, games,

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matches (*tournaments*), group awards. During learning students are seen enthusiastic in games and matches in teams, as the group with high scores will get rewards.

Awards are an exciting activity as one of the psychological factors in learning. Awards are also a form of extrinsic motivation given by teachers to students to encourage students to study actively because they are able to achieve their desired goals. The awarding of awards in teaching and learning activities in schools aims to foster a sense of joy in learning for students, as well as to spur students' motivation and enthusiasm, so that teaching and learning activities do not cause students to lose their identity (Sarah et al., 2022). From the learning that has been carried out, data in the form of *Pre-Test* and *Post-Test* scores are obtained. Based on the study, the results of the descriptive analysis can be found where the average value has increased. This shows that the TGT type cooperative learning method has an effect on improving student learning outcomes. Based on the Wilcoxon test that has been carried out, a significant value (asymptotic Sig) of $0.000 < 0.05$, shows that there is a difference in the average learning outcomes of students. Learning using a cooperative model of the *Team Games Tournament* type has an effect on improving student learning outcomes. This is in line with Vygotsky's (1978) theory that an educator can apply in the classroom, teachers are able to implement learning strategies that allow students to collaborate with peers in small groups (Fauzi & Masrupah, 2024). One of the learning methods that creates an interactive and collaborative classroom atmosphere is cooperative learning. Cooperative learning gives students the opportunity to establish social interaction with more competent peers through help and guidance from teachers. The classroom atmosphere in cooperative learning can facilitate students in developing the quality of thinking and building their social culture in group learning. Therefore, it can be concluded that Vygotsky's theory is one of the foundations that underlies the implementation of cooperative learning in the classroom (Suci, 2018).

The Teams Games Tournament (TGT) learning model has various advantages and disadvantages. According to Suarjana in Nasruddin (2019), some of the advantages of the TGT learning model include: Increasing time allocation for tasks, Prioritizing appreciation for the differences of each individual, With limited time being able to master the material in depth, Increasing good attitudes, sensitivity and tolerance, and superior learning outcomes and student learning processes take place with active participation from students (Tanjung et al., 2022). This study shows that the application of the *Team Games Tournament*-type cooperative learning model in the subject of Mathematics broad measurement material using non-standard units and standard units can affect a fairly high increase in the learning outcomes of grade IV students of SDN Biro.

CONCLUSION

The Pre-Test results showed that most students had not reached the Minimum Completeness Criteria (KKM), with details as many as 19 students obtaining scores below the KKM standard, and only 3 students obtaining scores according to the standards (range 65-76). After learning using the TGT model, the Post-Test results showed an improvement, namely 3 students achieved KKM scores, 4 students got scores exceeding KKM, and 15 students were still below standard. Furthermore, based on the results of data analysis using the Wilcoxon test through the SPSS program, a significance value was obtained (Asymp. Sig) of 0.000. This value is smaller than the significance limit of 0.05 ($0.000 < 0.05$), so it can be concluded as follows: After the implementation of the Team Games Tournament (TGT) type cooperative learning model, there was an increase in student learning outcomes. This increase shows an improvement in student learning outcomes after the implementation of the TGT model. In addition, based on the results of observations, the majority of students showed good to very good performance during the learning process, reflecting increased involvement, spirit of cooperation, and a deeper understanding of concepts. There is a significant influence of the application of the Team Games Tournament (TGT) type cooperative learning model on student learning outcomes in Mathematics lessons in grade IV of SD Negeri Biro. This is based on the results of data analysis using the Wilcoxon test through the SPSS program which shows the significance value (Asymp. Sig) of 0.000. So there is a significant difference between student learning outcomes before and after the implementation of the TGT-type cooperative learning model. Thus, H_0 was rejected and H_1 was accepted, which means that there is an influence on the application of the Team Games Tournament-type cooperative learning model in the Mathematics subject of grade IV of SDN Biro. Referring to the conclusions obtained from the results of the research, several suggestions are proposed that need to be considered: For a teacher, it is hoped that with this thesis, it can apply a cooperative learning model (Team Games Tournament) to the subject of Mathematics so that learning is more varied and interesting which later increases learning outcomes in the learning process can be achieved. For prospective researchers, they should try, read and use this research with different materials and different ways so as to make many useful references in the world of education. For researchers, this research is expected to apply a cooperative learning model for Mathematics subjects.

The Effect of the Team Games Tournament Type Cooperative Learning Model on Student Learning Outcomes in Mathematics Subjects in Grade Four of Public Elementary Schools Biro

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