

Enhancing Students' Learning Outcomes through the Implementation of the Team Games Tournament Model at SD Negeri 4 Banda Aceh

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Abstract. Mathematics is often perceived by students as a complicated subject, leading to learning outcomes that are consistently lower compared to other subjects. To address this issue, this study implemented the cooperative learning model Team Games Tournament (TGT) as an intervention to improve mathematics learning outcomes. This classroom action research (CAR) was conducted with fourth-grade students (Class IVA) at SD Negeri 4 Banda Aceh during the 2024/2025 academic year. The study aimed to provide an objective description of the improvement in students' achievement in learning the area of rectangles and squares through the TGT model. The research was carried out in two cycles, each consisting of phases of planning, action, observation, and reflection. The findings indicate that applying the TGT model significantly improved students' mathematics learning outcomes. This improvement is evidenced by the increase in the average score and the mastery learning rate from Cycle I to Cycle II. Mastery learning increased from 67% in Cycle I to 83% in Cycle II. These results suggest that the TGT model effectively enhances students' understanding of geometric concepts, particularly in calculating the area of rectangles and squares.

Article History

Received: April 7, 2025

Revised: April 15, 2025

Published: April 30, 2025

Key Words :

Team Games
Tournament (TGT),
learning outcomes,
Banda Aceh

How to Cite: Raihan, P.A., Aski, N., & Tursinawati, T. (2025). Enhancing Students' Learning Outcomes through the Implementation of the Team Games Tournament Model at SD Negeri 4 Banda Aceh. *DIDAKTIKA: Jurnal Penelitian Tindakan Kelas*, 3(1). 36-41.

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Introduction

Education is universally acknowledged as a conscious and deliberate effort to foster an environment conducive to active learning, enabling students to develop their spiritual, personal, intellectual, and social competencies (Undang-Undang Republik Indonesia No. 20 Tahun 2003). In Indonesian, the quality of human resources is fundamentally rooted in education, which necessitates early performance, especially at the elementary school level. Improving the educational outcomes of elementary students is, therefore, integral to national development, particularly in strengthening cognitive and collaborative skills. As professional educators, teachers are expected to demonstrate mastery of eight professional standards, including the ability to implement effective pedagogical strategies, foster student participation, and create a learning environment that supports the achievement of educational objectives (Hamalik, 2003). However, in practice, teaching in elementary classrooms often remains teacher-centered. Teachers dominate the instructional process through lecture-based methods, while students are positioned as passive recipients. This limits active participation and diminishes opportunities for students to construct their understanding, particularly in complex subjects such as mathematics.

Although mathematics education is essential for developing critical, logical, and creative thinking skills, it continues to present challenges for educators and learners. The dominant use of conventional methods, such as direct instruction, frequently makes students perceive mathematics as abstract and disengaging (Widyantini, 2006). Research highlights that

improving students' mathematical understanding requires innovative and interactive instructional approaches. One such approach is cooperative learning, which promotes student collaboration and peer interaction as central elements of the learning process. Cooperative learning has significantly enhanced students' engagement and achievement by promoting collaborative problem-solving and reducing social barriers in diverse classrooms (Abidin, 2014). The Team Games Tournament (TGT) model has gained increasing attention among the various cooperative learning models. TGT integrates academic competition, peer tutoring, and group work to foster student motivation, cooperation, and comprehension. According to Shoimin (2014), TGT encourages the participation of all students, eliminates hierarchical roles, and leverages the pedagogical benefits of peer-assisted learning in a game-based structure.

Empirical studies support the efficacy of the TGT model in improving mathematics achievement and student collaboration. Fauzi and Masrupah (2024) demonstrated that the TGT model significantly increased students' cognitive performance across multiple classroom contexts. Similarly, Mulyadi (2022) found that TGT enhanced individual achievement and group collaboration, while Putri (2022) reported a notable increase in student motivation and engagement during mathematics instruction. Moreover, Nuryanti (2019) documented TGT's effectiveness among students with special educational needs, illustrating its inclusive and adaptive potential. Despite its proven benefits, many classrooms reflect low student engagement and cooperation levels. Observations conducted in Class IVA of SD Negeri 4 Banda Aceh revealed that only one or two students actively engaged in group tasks, while others remained passive or disengaged. Interviews with the classroom teacher indicated students struggled with effective communication and task distribution during group activities. Additionally, teacher-reported challenges included students' lack of focus, limited motivation, and restricted access to varied instructional models. Students identified mathematics as a complicated subject. In preliminary assessments, only 44% of students achieved the minimum mastery criterion (KKM), with 10 out of 18 scoring below standard. These findings underscore the urgent need for instructional interventions that improve mathematical understanding and foster collaborative learning behaviours. This study examines the effectiveness of the Team Games Tournament (TGT) cooperative learning model in improving student learning outcomes in mathematics at SD Negeri 4 Banda Aceh.

Research Method

Type of Research

This study is a Classroom Action Research (CAR). CAR was chosen because it integrates reflective practice with systematic intervention in the classroom context to improve the quality of teaching and learning processes and outcomes. The research was conducted at SD Negeri 4 Banda Aceh in the 2024/2025 academic year, with the research subjects being 18 fourth-grade students of Class IVA, consisting of 12 boys and six girls. The study adopted the Kurt Lewin model of CAR, which comprises four stages in one cycle: (1) planning, (2) acting, (3) observing, and (4) reflecting. The research was carried out in two main phases: pre- and main-cycle. Each cycle was conducted in one meeting for 2×35 minutes. The activities carried out in each research phase are described as follows.

Pre-Cycle

This phase involved (a) initial observation in Class IVA at SD Negeri 4 Banda Aceh during mathematics learning and (b) problem identification. This was done to identify issues

faced by the classroom teacher in the mathematics teaching process. (c) Discussions were conducted with the teacher. After identifying the problems, a pretest in mathematics was administered to assess the student's prior knowledge before the intervention, especially concerning rectangles and squares. (d) The research plan was then developed. At this stage, the researcher and the teacher collaboratively designed a series of actions to implement classroom intervention comprehensively.

Cycle I

This phase involved (a) planning, which included preparing the learning materials, developing a mathematics module on the area of rectangles and squares using the Team Games Tournament (TGT) cooperative learning model, preparing learning tools and media, designing observation sheets for students' learning activities, creating a post-cycle test, determining group arrangements, and setting the rules for the tournament; (b) implementation of the action, which involved class presentations by the teacher to deliver the material, stating the learning objectives, and motivating students. Teams were formed into four heterogeneous groups, each comprising four students from different academic and gender backgrounds. Activities included group discussions, games, a tournament to answer prepared questions, and awarding prizes to the group that answered the most questions correctly; (c) observation, which was conducted to assess student engagement during the learning process; and (d) reflection, which was carried out jointly with the teacher to evaluate the effectiveness of the TGT model in improving students' learning outcomes in mathematics, particularly on the topic of area.

Cycle II

Cycle II was implemented based on the data obtained from Cycle I and served as a refinement of the previous cycle. The procedures followed were the same as those in Cycle I. The researcher reviewed the success level and challenges faced during Cycle I, then analyzed the data and compared the initial and post-intervention conditions. Based on this comparison, a decision was made on whether to continue or end the cycle.

Data Collection and Analysis

Student learning outcome data were collected using a test administered at the end of each cycle. The test assessed students' ability to solve mathematics problems and was validated through expert judgment. Item discrimination, difficulty level, and test reliability were also calculated. Data were analyzed quantitatively using descriptive statistics. Student performance was evaluated based on individual scores compared to the Minimum Mastery Criterion (KKM) set at 75. Students scoring above the KKM were considered to have achieved mastery, while those scoring below had not. The percentage of students meeting the mastery criterion was presented for the pre-cycle, Cycle I, and Cycle II stages.

Research Findings

Pre-Cycle

The pre-cycle phase began with administering a pre-test to students to determine their initial learning achievement in Mathematics, specifically on calculating the area of rectangles and squares. The pre-test results served as a baseline to assess students' prior knowledge before implementing the Team Games Tournament (TGT) type of cooperative learning

model. Based on the pre-test results, it was found that most students had not yet achieved the Minimum Mastery Criterion (KKM) of 75. Only 8 out of 18 students (44%) managed to reach the KKM, while the remaining 10 students (56%) did not meet the standard (Table 1).

Table 1. Recapitulation of student learning outcomes in the pre-cycle phase

Description	Achieved	Not Achieved
Number of Students	8	10
Percentage	44%	56%

Cycle I

Following the implementation of the TGT model in Cycle I, there was an improvement in student learning outcomes. The number of students who achieved the KKM increased to 12 (67%), while those who had not achieved mastery decreased to 6 (33%). Applying the TGT model, which integrates games and inter-group competition elements, proved effective in enhancing students' engagement and learning motivation.

Table 2. Recapitulation of student learning outcomes in Cycle I

Description	Achieved	Not Achieved
Number of Students	12	6
Percentage	67%	33%

Cycle II

A more significant improvement was observed in Cycle II, where the number of students meeting the KKM increased to 15 (83%), while only three students (17%) had yet to reach the standard. This result indicates that the cooperative learning strategy using the TGT model became increasingly effective after adjustments and refinements based on reflections from the previous cycle.

Table 3. Recapitulation of student learning outcomes in Cycle II

Description	Achieved	Not Achieved
Number of Students	15	3
Percentage	83%	17%

Data analysis reveals a consistent improvement in student learning outcomes from the pre-cycle phase to Cycle I and into Cycle II. Implementing the cooperative learning model, Team Games Tournament (TGT) type, has been proven to enhance the mathematics learning outcomes of fourth-grade students at SD Negeri 4 Banda Aceh. This improvement reflects that the TGT model increases content comprehension and fosters active student engagement through team interaction and positive competition.

Discussion

The research findings indicate a significant improvement in students' learning outcomes in Mathematics, particularly in calculating the area of rectangles and squares, through implementing the cooperative learning model of the Team Games Tournament (TGT) type. Applying the TGT model has positively contributed to enhancing conceptual understanding and student engagement in the learning process.

In the pre-cycle phase, student achievement showed that only 44% of the participants met the Minimum Mastery Criterion (KKM). This outcome reflects the low effectiveness of the conventional instructional approach that had been previously employed. Several key obstacles were identified, including low student motivation towards mathematics, lack of concentration during lessons, limited learning resources relying solely on textbooks, and a one-way lecture method that positioned students as passive recipients of information. Implementing the TGT learning model in Cycle I showed a notable improvement, with 67% of students achieving the KKM. However, some challenges remained, such as suboptimal learning motivation and varying levels of student engagement. To address these issues, improvements were made in Cycle II, including the provision of motivation and rewards, the use of more varied instructional materials, and the incorporation of interactive learning media based on information technology. Results in Cycle II showed further improvement, with 83% of students achieving the KKM. This indicates that applying the TGT model enhanced learning outcomes and fostered collaboration among students, strengthened their sense of responsibility, and encouraged active participation in the learning process. Reflections from each cycle revealed that learning activities involving educational games and competition through tournaments created an enjoyable and meaningful learning atmosphere.

These findings align with various previous studies. Sholikhah et al. (2025) stated that the TGT model significantly improved mathematics achievement among fourth-grade students at SDN 01 Winongo. Similarly, Riana (2019) emphasized that TGT could enhance student activeness and academic performance. Supporting results were also reported by Maria et al. (2023), who found that TGT effectively improved students' overall learning outcomes. Furthermore, Wahyudi (2024) argued that TGT positively impacted the development of students' collaborative skills through teamwork, respect for differing opinions, and collective responsibility in problem-solving. Research conducted by Thalita et al. (2019) also corroborated these findings, noting that the game and tournament elements in TGT contributed to greater student engagement and deeper conceptual understanding. These results suggest that the TGT learning model can effectively improve students' academic performance, particularly at SD Negeri 4 Banda Aceh.

Conclusion

The research concludes that implementing the cooperative learning model of the Team Games Tournament (TGT) type significantly improved the mathematics learning outcomes of fourth-grade students at SD Negeri 4 Banda Aceh. The improvement is evident from the progression of student mastery across the pre-cycle, Cycle I, and Cycle II phases, with mastery percentages rising from 44% in the pre-cycle to 67% in Cycle I and reaching 83% in Cycle II. Beyond improved scores, the TGT model also positively impacted students' learning motivation, discussion participation, and group activity collaboration. The learning environment became more enjoyable and interactive, encouraging students to understand the material better and participate more actively in the learning process.

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