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Improving Numeracy Skills Through The Team Games Tournament Model In Fifth-Grade Students at Paripurno Public Elementary School

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Abstract
This Classroom Action Research aims to improve mathematics learning outcomes through the implementation of the Teams Games Tournament (TGT) model. The study was conducted at Paripurno Public Elementary School involving 30 fifth-grade students as the research subjects. The primary issue addressed was low student interest and academic achievement during the pre-cycle, with an average score of only 68.4 and 45% classical completeness. The research followed a two-cycle process including planning, action, observation, and reflection. Results showed significant improvement in Cycle II, where the average score rose to 82.3 with a completeness rate of 85%. Grounded in constructivism and Piaget's cognitive development theory, this success was driven by social interaction and healthy competition that facilitated independent knowledge construction. In conclusion, the TGT model effectively enhances learning outcomes, motivation, and active engagement among fifth-grade students at Paripurno Public Elementary School in mathematics lessons.

Keywords: *Mathematics; Learning Outcomes; Teams Games Tournament.*

INTRODUCTION

Mathematics is a vital subject in the elementary school curriculum. Numeracy, as part of mathematical competency, forms the foundation for mastering advanced concepts such as number operations, measurement, and problem-solving (Girard et al., 2021). However, many fifth-grade elementary school students still struggle to understand and apply numeracy concepts correctly. This difficulty often results in poor student learning outcomes, necessitating appropriate solutions to improve their numeracy skills (Gittens, 2015).

The challenges students face in numeracy are not only caused by the complexity of the material but also by a lack of varied learning methods. Monotonous learning approaches tend to cause students to lose interest and motivation. As a result, students become passive in the learning process and less actively engaged. Therefore, a learning model is needed that can create a fun learning atmosphere, actively engage students, and simultaneously improve their learning outcomes (Fitri & Herman, 2024).

The Team Games Tournament (TGT) learning model is an effective cooperative learning strategy for mathematics. TGT integrates elements of play and healthy competition into the learning process, enabling students to learn in a more enjoyable

environment. Through Team Games Tournament (TGT), students are divided into small groups to collaborate on understanding the material and compete in game-based learning tournaments (Kholidah & Qohar, 2021). This method not only improves students' academic abilities but also develops social skills such as cooperation, responsibility, and self-confidence (Sugianto et al., 2022).

The implementation of the TGT model for fifth-grade students at Paripurno Public Elementary School is a primary focus in efforts to improve their numeracy skills. This model is expected to address the challenges students face while providing a diverse learning experience. By actively involving students through group discussions and games, learning to count is no longer perceived as a burden but rather as an engaging and challenging activity. Furthermore, TGT provides opportunities for students to develop their full potential, both individually and in groups (Capinding, 2021).

This study aims to evaluate the extent to which the implementation of the Team Games Tournament (TGT) model can improve the numeracy skills of fifth-grade students at Paripurno Public Elementary School. It is hoped that the results of this study can serve as a reference for more effective learning innovations, particularly in mathematics teaching in elementary schools. With the right approach, students can not only improve their learning outcomes but also experience a more enjoyable and meaningful learning experience.

RESEARCH METODE

This research used a Classroom Action Research (CAR) design conducted in two cycles. Each cycle included four stages: planning, implementation, observation, and reflection. Research Subjects: The research subjects were 30 fifth-grade students at Paripurno Public Elementary School. The research success criteria were determined based on the average increase in arithmetic ability test scores and the percentage of students achieving the Minimum Completion Criteria (KKM) of 75.

Research Procedures: (1) Planning: Developing learning materials, such as lesson plans (RPP), practice questions, and game rules in the TGT (Test-Based Competency Test); (2) Implementation: Implementing learning using the TGT model, where students are divided into heterogeneous groups to work together and compete in tournaments; (3) Observation: Observing student activities during the lesson using observation sheets; and (4) Reflection: Evaluating learning outcomes and determining improvement measures for the next cycle (Mertler, 2009; Koshy, 2009).

Research Instruments: Data were collected through arithmetic ability test and teacher and student observation sheets. Data analysis was carried out quantitatively by comparing the test results in each cycle.

RESULTS AND DISCUSSION

This section outlines the results and discussion of the Classroom Action Research (CAR) conducted to improve students' mathematics learning outcomes. This research employed a cooperative learning model, the Teams Games Tournament (TGT), which was conducted in two main cycles, preceded by an initial observation phase during the pre-cycle. The primary objective of this data analysis was to analyze the effectiveness of the TGT model in addressing students' low interest and academic achievement in class. The data analyzed included students' cognitive evaluation scores and observations related to learning activities and motivation at each stage.

Based on data obtained during the pre-cycle, the initial results of students' academic achievement fell short of expectations and did not meet the class graduation standard. The average student math test score at this stage was only 68.4. This figure indicates that students' basic understanding of the material being taught was still relatively low. Furthermore, of the total number of students in the class, only 45% achieved or exceeded the Minimum Completion Criteria (KKM) set by the school.

The low learning outcomes in the pre-cycle phase were directly proportional to observations of student behavior in the classroom during class. Students demonstrated very low interest in learning, as evidenced by a lack of enthusiasm during teacher explanations. Furthermore, the classroom atmosphere was deemed less conducive to mathematics learning, which requires a high level of focus and concentration. Many students were passive and viewed mathematics as a burden, making interventions using more interactive learning models urgently necessary.

As a pedagogical intervention to address these issues, researchers implemented the TGT learning model in the first cycle. Evaluation results following the implementation of the first cycle demonstrated significant improvement compared to the pre-cycle. The average student evaluation test score increased by 7.2 points to 75.6. In line with this increase in average scores, the percentage of classical learning completion also increased, with 65% of students successfully achieving the Minimum Competency (KKM).

This academic improvement in the first cycle demonstrates that the implementation of the TGT cooperative learning model is beginning to have a positive impact on students' assimilation of the material (Rizqi et al., 2025). However, the implementation of the model at this stage has not yet been optimal. Based on field notes from observers, it was discovered that several students still faced significant obstacles in the adaptation process. They appeared confused about the game rules and the academic competition system being implemented, resulting in a lack of optimal collaboration and communication within the group.

To address the various shortcomings identified in the first cycle, researchers immediately designed corrective actions to be implemented in the second cycle. These

improvements focused on providing a more detailed and systematic explanation, accompanied by a brief simulation of the tournament rules before the core learning session began. Furthermore, researchers modified the approach by varying the difficulty levels of the tournament questions to make the competition more challenging, fair, and able to accommodate students of various cognitive levels.

The implementation of the further, refined intervention in the second cycle yielded very satisfactory results and successfully exceeded the CAR success indicator. The average student evaluation score jumped significantly to 82.3 at the end of the cycle. This average increase also coincided with a sharp increase in the percentage of classical learning completion, which exceeded 85%. This impressive achievement confirms that the majority of students in the class have mastered the targeted basic mathematics competencies.

Table 1. Summary of Student Grade Improvement (Pre-Cycle, Cycle I, and Cycle II)

No.	Cycle	Average	Percentage	Observation Conditions & Findings
1.	Pre-cycle	68,4	45%	Low interest in learning, less conducive classroom atmosphere
2.	cycle I	75,6	65%	The impact is starting to be positive, but students are having difficulty understanding the game rules
3.	cycle II	82,3	85%	More detailed explanations of the rules, increased question variations, increased motivation and active involvement

In addition to measurable improvements in cognitive aspects, the results of non-test observations in the second cycle also recorded a very positive behavioral transformation among students. Classroom observations revealed a marked increase in learning motivation and active student engagement throughout the learning process. The classroom atmosphere, which felt stiff and unconducive in the pre-cycle, dramatically transformed into a lively, dynamic, and enthusiastic learning environment.

This significant success is fundamentally attributable to the intrinsic characteristics of the Teams Games Tournament model itself. This model cleverly combines cooperative learning principles with game elements (gamification), which have been proven effective in reducing math anxiety often experienced by students (Jingili et al., 2023; Pitoyo, 2019). With a healthy and structured competitive system, each student feels challenged and shares the responsibility to contribute points to their team's victory, which in turn maximizes their internal motivation (Chuang et al., 2014).

Overall, this Classroom Action Research provides strong empirical evidence of a positive correlation between the implementation of innovative learning models and

improved learning outcomes. A consistent upward trend was observed, from an initial average of 68.4 in the pre-cycle, to 75.6 in the first cycle, and peaking at 82.3 in the second cycle, with a completion rate of 85%. Therefore, it can be concluded that the implementation of the TGT learning model is highly effective as a practical solution to improve learning outcomes while simultaneously fostering a fun and interactive classroom climate in mathematics (Macar & Ziyagil, 2024).

The successful improvement in learning outcomes through the application of the TGT model in this study aligns with the basic principles of constructivist learning theory (Hakim et al., 2025). According to constructivism, knowledge cannot simply be transferred passively from teacher to student but must be actively constructed by students themselves through experience and social interaction (Titus, 2016). In the implementation of TGT, the group work and tournament phases encourage students to discuss, solve problems together, and tutor each other (peer tutoring). This collaborative interaction facilitates students' meaningful construction of their own mathematical understanding. They are no longer passive recipients of information as in the pre-cycle phase, but rather active subjects discovering mathematical patterns and solutions through peer collaboration (Dzan et al., 2012).

Furthermore, the positive transformation that occurs from the first to the second cycle is highly relevant when viewed through the lens of Jean Piaget's cognitive development theory. School-age students (especially those in the transition period) often straddle the concrete operational and formal operational phases, requiring a bridge in the form of concrete representations or structured activities to understand abstract mathematical concepts (Rukmi & Gembong, 2025). The game element in TGT acts as this cognitive bridge. When teachers refine the actions in the second cycle by providing more detailed rules and varying the difficulty levels of the problems, this directly stimulates the assimilation and accommodation processes in students' cognitive structures. Students are challenged to adapt their initial understanding schemes to the new information and rules, thus creating equilibration (cognitive balance) that culminates in the ability to answer the problems correctly (Lestari & Asiani, 2025).

This synergy between a constructivist learning environment and an approach sensitive to Piaget's stages of cognitive development is the key to the surge in mastery in the second cycle. The TGT model not only creates a fun classroom atmosphere but also theoretically provides the right platform for students to move from basic cognitive understanding to mastery of higher-level concepts through trial and error during the tournament (Muaziz et al., 2024). The increase in the classical completion ratio to 85% ultimately serves as empirical evidence that when learning designs are designed in harmony with the brain's natural way of adapting—namely through active engagement, measurable challenges, and social interactions—students'

cognitive barriers and anxiety towards mathematics subjects can be significantly overcome (Yanti & Yhasmin, 2023).

CONCLUSION

Based on the results and discussion presented, it can be concluded that the implementation of the Teams Games Tournament (TGT) cooperative learning model significantly improves students' mathematics learning outcomes, as evidenced by the increase in the class average score from 68.4 in the pre-cycle to 82.3 in the second cycle, alongside an increase in classical completeness from 45% to 85%. This success was driven by the creation of a constructivist learning environment through social interaction and healthy competition aligned with students' cognitive development stages; thus, it did not only enhance quantitative academic achievement but also transformed student motivation and active engagement far more positively compared to the initial conditions.

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