

APPLICATION OF THE TEAMS GAMES TOURNAMENT (TGT) MODEL IN GRADE V MATHEMATIC LEARNING

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Abstract

Mathematics is often perceived by students as a challenging subject due to its complicated calculations, resulting in a lack of interest. Despite the expectation that teachers should implement active learning methods, many still rely on traditional lecturing methods, leading to passivity in students. An analysis by the teacher showed that only 45% of students had completed their studies. To address this, a diverse learning approach is required, such as the Teams Games Tournament (TGT) learning model. The study aims to evaluate how the TGT learning model can improve grade V students' learning outcomes and attitudes towards mathematics. This study used qualitative and quantitative research techniques to measure student attitudes and learning outcomes, respectively. Classroom Action Research (CAR) techniques were employed by implementing two cycles with pre-tests and post-tests. In the first cycle, student completeness was 33% in the pre-test, while in the post-test, it increased to 73%. In the second cycle, the pre-test recorded 79% completeness, which increased to 85% in the post-test. The application of the TGT cooperative learning model improved student learning outcomes in each cycle, as evidenced by the increase in student completeness. These results support the effectiveness of the TGT model in improving student learning outcomes.

Keywords: Learning Methods, Learning Models, TGT, Learning Outcomes

1. INTRODUCTION

Finding a teacher who can effectively engage and manage a classroom can be challenging. Many teachers still rely on the traditional lecture method, which often leads to student boredom, drowsiness, and passivity (Dewi & Primayana, 2019). At SD Negeri 5 Tambakasri, researchers observed that the teacher struggled to control the class, resulting in poor student learning outcomes, especially in math. The teacher's analysis revealed that only 45% of students had achieved the required level of understanding (KKM), with many scoring below the expected value of 70. Unfortunately, mathematics is the subject that students find least interesting due to its complicated calculations, making it a challenging subject for them to master (Mullen et al., 2021).

The success of a classroom heavily depends on the teacher's choice of teaching method, which can impact student learning outcomes, attitudes, and understanding of the material (Filgona et al., 2020). Using engaging learning methods can make students more enthusiastic and active in their learning (Panjaitan et al., 2022). The Teams Games Tournament or TGT cooperative learning model is a useful method that groups students based on their intelligence levels and provides tests to promote active participation (Veloo & Chairhany, 2013). This method helps low-ability students understand the material better by working with high-ability peers. TGT aims to improve low student learning

outcomes by placing students with different abilities in the same team (Wyk, 2011). By doing so, students with low abilities can play an active role in their learning through their groups.

According to Soedijarto (in (Purwanto, 2011)), learning outcomes refer to the level of mastery achieved by students in following the teaching and learning process, in line with the educational goals that have been set. Similarly, Hamzah (2008) defines learning outcomes as relatively sedentary behavioral changes in a person resulting from their interaction with the environment. Thus, the results of learning can be described as changes in one's behavior on a regular basis because of the outcomes of individual interactions with the environment during the learning process.

Asma (2006) explains that learning activities with the TGT model begin with the teacher presenting learning material and end with giving questions to students. Then, students move to their respective groups to discuss and solve the problems given by the teacher. Instead of a written test, each student meets once a week at a tournament table with two peers from another group to compare his or her group's abilities with those of another group. Each student carries points from the tournament table to the original group.

Slavin (2008) defines TGT as an academic tournament, where students compete as representatives of their teams with other team members whose previous academic performance is equivalent to theirs. Shoimin (2014) states that TGT is a cooperative learning model that is easy to apply, involves the activities of all students without having differences in status, involves the role of students as peer tutors and contains elements of play and reinforcement. In contrast, Rusman (2014) defines TGT as a type of cooperative learning that places students in learning groups consisting of 5 to 6 students who have different abilities, genders, and tribes or races.

Margiati & Halidjah (2012), conducted a study entitled *The Effect of TGT Application on Learning Outcomes in Grade IV Mathematics Learning SDN 11 Pontianak Kota*. The study found that the average post-test results of the experimental class (83.42) were significantly higher than those of the control class (66.94), with a *t* count of 3.63 and *t* table ($\alpha = 5\%$ and *dk* = 53) of 1.6755. Thus, *H_a* was accepted, and the effect size was 0.86 (high criteria), indicating that the TGT model had a major influence on the high learning outcomes of grade IV students of SDN 11 Pontianak Kota.

Another study by Nurul Amalia Shadriana Hermansyah (2014), entitled *The Effectiveness of TGT (Teams Games Tournament) Type Cooperative Learning Model with Word Square Game Technique to Improve Beginner French Writing Skills*, found that students' French writing skills improved significantly, with a score difference of 33.2 between the pre-test score of 65.7 and the post-test score of 89.9. Based on statistical calculations, a *t* value of 9.79 was obtained, with a significance level of 1% and a degree of freedom of 24, and a table *t* value of 2.97 was obtained. Thus, the working hypothesis in this study was accepted.

The aim of the study is to investigate the effectiveness of the Teams Games Tournament (TGT) learning model in improving student learning outcomes and attitudes towards mathematics in grade V. The study seeks to implement the TGT model as a diverse learning approach and measure its impact on student completeness and engagement in mathematics. The study uses Classroom Action Research (CAR) techniques with pre-tests and post-tests to evaluate the effectiveness of the TGT model over two cycles. The objective is to provide evidence that the TGT model can improve student learning outcomes and increase their interest in mathematics.

2. RESEARCH METHODS

This study employs Classroom Action Research (CAR) to enhance learning outcomes, especially in mathematics. Kemmis (2009) CAR model is used, which includes four steps: planning, action, observation, and reflection. CAR is a process of self-reflection in classrooms to identify and solve learning problems by implementing planned actions in real situations and analyzing the treatment's effects.

The research was conducted in grade V of SD Negeri 5 Tambakasri with 33 children, consisting of 17 females and 16 males. The study material was the mathematics of the volume of building space, and the implementation time was in August 2019. Pre-test and post-test assessments were used to evaluate the difference in children's learning outcomes before and after applying the Teams Games Tournament (TGT) learning model. The test consisted of ten multiple-choice questions, with a 15-minute time limit. TGT was conducted in three sessions, with increasing difficulty levels in each session. The time required for each session was 15 minutes.

Qualitative methods were used to evaluate student attitudes during learning, while quantitative methods were used to measure student learning outcomes. Data analysis was carried out to determine if there was an improvement in student learning outcomes in each cycle. Test scores from each cycle were compared with individual and classical Minimum Completeness Criteria (KKM) to measure student performance. The completeness of learning classically was expressed as a percentage of the students who achieved scores equal to or greater than the school's KKM, which is 70. Classical success was achieved if the students' test scores completed an average of 75% of the number of students in the class.

The data analyzed in a qualitative descriptive manner were the teacher's activities during the learning process and photo documents during the learning process in each cycle. Quantitative data were in the form of post-test result scores at the end of the cycle. Process assessment was carried out during the learning process while the teacher was applying the TGT learning model.

In summary, this study used the CAR model to improve learning outcomes in mathematics. Pre-test and post-test assessments were conducted, and the TGT learning model was applied in three sessions with increasing difficulty levels. Qualitative and quantitative descriptive analysis methods were used to evaluate student attitudes and learning outcomes. The completeness of learning classically and classical success were measured using the KKM and the students' test scores.

3. RESULTS AND DISCUSSION

3.1. Research Results

In the implementation of the TGT method, researchers follow four stages: planning, action, TGT implementation, evaluation, and reflection. The following is the researchers' implementation of the TGT method:

3.1.1. Implementation and Results of Cycle 1

a) Planning Stage

During the planning stage, researchers prepare the Education Calendar and RPP, TGT questions, and the formation of TGT groups.

b) Action Stage

Class Action (CAR) was conducted on May 9 and 10, 2019. On May 9, researchers carried out a pre-test and TGT, while on May 10, they conducted a post-test, evaluation, and preparation for Cycle 2. The results of Cycle 1 are presented in Table 1 below:

Table 1. Cycle 1 Results		
Activities	Completeness	
	Complete	Incomplete
Pre Test	33%	67%
Post Test	73%	27%

As shown in Table 1, student learning outcomes increased from the pre-test to the post-test due to the implementation of TGT. Students became more active and engaged in the learning process, which allowed low-ability students to interact with their high-ability peers.

c) TGT Implementation Phase

During the TGT implementation phase, researchers carried out the following activities:

1) Group Formation Based on Academics

Researchers divided the students into five groups based on their academic level, with three groups consisting of six members and two groups consisting of five members.

2) Tournament Table Occupancy

After forming the groups, researchers directed students to occupy the tournament tables according to their group number and respective members.

3) Teacher Presentation

At this stage, researchers presented the regulations and stages of TGT to the students.

4) Problem Division

Researchers introduced the topic of building space and divided the TGT questions into three sessions.

5) Problem Work

Students worked on the questions for 15 minutes per session.

6) Score Calculation

After the TGT session, researchers calculated the students' scores.

7) Awarding

The winning group received awards from the researchers.

8) Formation of a New Group

At this stage, researchers prepared the formation of a new group for Cycle

d) Observation Phase

During the observation phase, researchers observed the learning activities before, during, and after the TGT implementation. They assessed student processes, outcomes, and attitudes, and documented their observations on teacher and student observation sheets.

e) Reflection

After completing all activities, researchers reflected on the shortcomings of Cycle 1 and made improvements for Cycle 2. These included using different question forms, varying group members, and revising student worksheets.

3.1.2. Implementation and Results of Cycle 2

The implementation of the TGT method in Cycle 2 has the same stages as Cycle 1, which consists of four stages: the planning stage, action stage, TGT implementation stage, evaluation stage, and reflection stage. The following is the implementation of the TGT method by the researchers:

a) Planning Stage

This stage is the same as in Cycle 1, where researchers prepare the Education Calendar and RPP, different question forms from Cycle 1, prepare new groups in Cycle 2, and Student Worksheets.

b) Action Stage

CAR in Cycle 2 was held on May 16 and May 17, 2019. On May 16, researchers carried out pre-tests and TGT. Then on May 17, the researcher carried out a post-test and conducted an evaluation of the implementation. The following pre-test and post-test results in Cycle 2 are presented in the table below:

Activities	Table 2. Cycle 2 Results	
	Completeness	
	Complete	Incomplete
Pre Test	79%	21%
Post Test	85%	15%

Judging from the table above, it can be explained that the percentage of student completeness in Cycle 2 increases higher than Cycle 1. In Cycle 2, the post-test diligence score is 85%, which is higher than the first cycle post-test score of 73%. The completeness results showed an increase in the percentage seen from the post-test.

c) TGT Implementation Phase

The following are the stages of TGT implementation in Cycle 2:

1) Group Formation Based on Academics

In Cycle 2, there are differences from Cycle 1, which are members of different groups. However, the number of groups and members is the same as Cycle 1, namely three groups with six members and three groups with five members. Changes in group members were made by researchers after finding problems in Cycle 1.

2) Students occupy the tournament table

After the formation of the group was completed, the researcher directed the students to occupy the tournament table.

3) Teacher Presentation

At this stage, the teacher explains the stages and regulations of TGT. Researchers also briefly explain the material of building space. The purpose of this activity is to find out whether students still remember the material that has been delivered in Cycle 1.

4) Problem Division

After the researcher explained the material, the researcher distributed the questions to each group.

5) Problem Work

The researcher allows students to work on the problem.

6) Score Calculation

After the students worked on the problem, the researcher asked them to collect and calculate the score.

7) Awarding

After the score calculation is completed, the researcher awards the winning group.

3.2. Discussion

After applying TGT to fifth-grade students in the Building Space subject, researchers found that it can improve student learning outcomes. In Cycle 1, the post-test result showed a student completeness rate of 73%, while in Cycle 2, it was higher at 85%. This result was higher than the classroom teacher's analysis, which was only 45%. Therefore, it proves that TGT can significantly improve student learning outcomes in a traditional classroom setting. The comparison table and chart of TGT results in Cycle 1 and Cycle 2 are presented below in Figure 1.

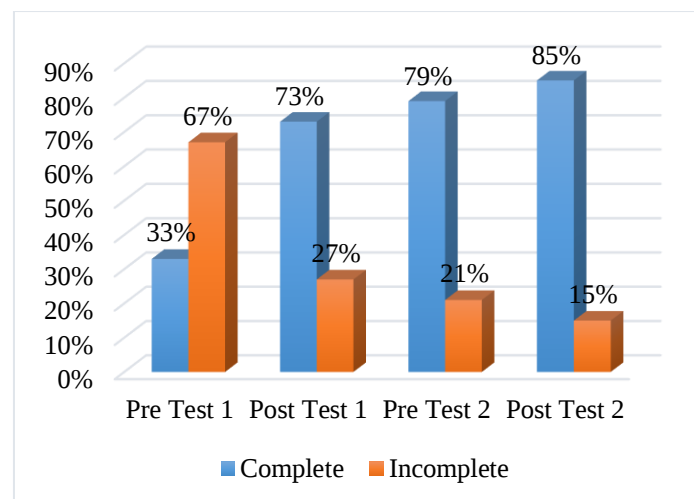


Figure 1. Comparison Graph of Cycle 1 and Cycle 2

As seen in the comparison chart, the percentage of student completeness increased from Cycle 1 to Cycle 2, demonstrating that students received the TGT model well. The research process showed that TGT provides a new learning atmosphere for students. Typically, learning only happens through lectures, which can be boring and uninteresting for students. However, TGT can make learning more engaging and enthusiastic for students.

4. CONCLUSION

After analyzing the research and discussions, it can be concluded that the Teams Games Tournament (TGT) cooperative learning model can effectively enhance students' mathematics learning outcomes in the building classrooms volume material at SD Negeri 5 Tambakasri. The study found that the percentage of student completeness was 45% before the implementation of TGT, whereas after the TGT method was applied, the percentage rose significantly to 85%. Furthermore, students' attitudes of cooperation, activeness, responsibility, and discipline also improved significantly. Students were more enthusiastic when given tasks to complete together.

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The study's results suggest several essential suggestions for achieving good learning outcomes. Creative and proficient teachers who develop fun, active, and interactive teaching methods can encourage students to learn effectively. Additionally, schools must take responsibility for providing and maintaining adequate facilities and infrastructure to support learning. Finally, students should continuously strive for better learning outcomes, given that learning resources are now widely available beyond books.

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