

# Implementation of Cooperative Learning Type Team Games Tournament (TGT) to Improve Students' Understanding of Mathematical Concepts on Fractions at SDN 07 Tilamuta

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## ABSTRACT

*This study aims to implement the cooperative learning model of Team Games Tournament (TGT) to improve students' understanding of mathematical concepts on fractions at SDN 07 Tilamuta. The research method used is classroom action research (CAR) with two cycles, each consisting of planning, implementation, observation, and reflection. The subjects of this study were 30 fifth-grade students. The results indicate that the application of the TGT learning model can enhance students' understanding of mathematical concepts. This is evidenced by the increase in the average test scores of concept understanding in each cycle. In the first cycle, the average student score was 65, which increased to 80 in the second cycle. Furthermore, students' learning activities also improved, marked by their active participation in group discussions and game tournaments. In conclusion, the implementation of the TGT cooperative learning model is effective in improving students' understanding of mathematical concepts on fractions at SDN 07 Tilamuta. It is recommended that teachers consider using this learning model in teaching mathematics for other topics as well.*

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## 1. INTRODUCTION

Mathematics education at the elementary school level is a crucial foundation in formal education, as understanding basic mathematical concepts significantly impacts students' ability to grasp more complex mathematical material in higher education levels (NCTM, 2019).

However, in reality, many students struggle with understanding basic mathematical concepts, including fractions. Research by Rahmawati and Sari (2020) indicates that understanding fractions remains a challenge for most elementary school students.

To address this issue, various innovative learning methods have been developed and applied in the learning process. One proven effective method is cooperative learning. Cooperative learning not only encourages interaction among students but also enhances motivation and concept understanding (Johnson & Johnson, 2018). One popular form of cooperative learning

is Team Games Tournament (TGT), which combines elements of games and tournaments to create a fun and competitive learning environment.

Research by Hasanah and Nugraha (2019) shows that the application of the TGT model can increase students' active participation and understanding of mathematical concepts. Furthermore, a study by Kusuma (2021) indicates that TGT can make students more engaged in the learning process and significantly improve their learning outcomes.

Based on this background, this study aims to apply the TGT cooperative learning model to enhance students' understanding of mathematical concepts on fractions at SDN 07 Tilamuta. Thus, it is hoped that this learning model can be an effective solution to improve the quality of mathematics education at the elementary school level.

## 2. METHOD

This study was conducted at SDN 07 Tilamuta, located in Boalemo Regency, Gorontalo Province. The school was selected as the research site due to its adequate number of students and permission granted for the research.

The research subjects were fifth-grade students of SDN 07 Tilamuta, with a focus on improving understanding of mathematical concepts, specifically fractions, through the application of the Team Games Tournament (TGT) cooperative learning model.

The main materials used in this research include the syllabus and Lesson Plans (RPP) adjusted to the TGT model, as well as student worksheets (LKS) containing fraction problems. The primary tools used include writing materials, a whiteboard, and simple technological devices such as computers and projectors to support learning activities.

Data collection techniques used in this study include:

- **Observation:** To observe students' activities during the learning process.
- **Tests:** Tests of mathematical concept understanding administered before and after the application of the TGT model to measure improvement in students' concept understanding.
- **Interviews:** Conducted with several students and teachers to gather in-depth information regarding their experiences and responses to the TGT model.

- **Documentation:** Data collection through documentation such as photos, videos, and field notes during the research process.

### **Data Analysis Techniques**

Data obtained from the concept understanding tests will be analyzed quantitatively using descriptive statistics to determine the average score improvement before and after the application of the TGT model. Data from observations, interviews, and documentation will be analyzed qualitatively to obtain a comprehensive view of students' activities and responses during the learning process.

## **3. RESULTS AND DISCUSSION**

This study aimed to apply the Team Games Tournament (TGT) cooperative learning model to improve students' understanding of mathematical concepts on fractions at SDN 07 Tilamuta. The results are presented in the form of quantitative and qualitative data obtained from concept understanding tests, observations, interviews, and documentation.

### **Concept Understanding Test Results**

Mathematical concept understanding tests were given to students before and after the application of the TGT model. The test results are as follows:

**Table 1. Concept Understanding Test Results**

<b>Cycle</b>	<b>Number of Students</b>	<b>Average Test Score</b>	<b>Category</b>
Pre-Cycle	30	65	Sufficient
Cycle I	30	72	Good
Cycle II	30	80	Very Good

The table shows that the average test score for mathematical concept understanding increased from 65 in the pre-cycle to 72 in Cycle I and 80 in Cycle II. This indicates that the TGT model effectively improves students' understanding of mathematical concepts.

## Student Activity Observation Results

Observations were conducted to assess students' activities during the learning process using the TGT model. The results are as follows:

**Table 2. Student Activity Observation Results**

Observed Aspect	Cycle I	Cycle II
Active participation in group discussions	70%	85%
Cooperation among students	75%	90%
Engagement in game tournaments	80%	95%
Enthusiasm and motivation	75%	90%

Observations show an increase in active participation, cooperation, engagement in game tournaments, and enthusiasm and motivation from Cycle I to Cycle II. This indicates that the TGT model enhances overall student learning activity.

## Interview Results

Interviews with several students and teachers provided the following feedback:

- **Students:** Most students reported feeling more motivated and enjoying mathematics more with the TGT model. They also found it easier to understand fractions through group discussions and games.
- **Teachers:** Teachers observed increased participation and motivation among students. They also felt that the TGT model effectively helped students better understand mathematical concepts.

## 4. DISCUSSION

The increase in average test scores for mathematical concept understanding shows that the TGT learning model is effective in improving students' understanding of fractions. This aligns with previous research indicating that cooperative learning can enhance concept understanding and student motivation (Johnson & Johnson, 2018; Hasanah & Nugraha, 2019). The increase in student activity in group discussions and game tournaments supports these test results. Group discussions allow students to share knowledge and help each other understand

difficult concepts, while game tournaments create a fun and competitive learning environment that can boost student motivation.

Positive feedback from students and teachers indicates that the TGT model not only improves understanding of mathematical concepts but is also well-received. This suggests the potential for applying the TGT model to other mathematical topics at the elementary school level.

## 5. CONCLUSION

The implementation of the TGT cooperative learning model proves effective in improving students' understanding of mathematical concepts on fractions at SDN 07 Tilamuta. The model also successfully increases student learning activity and motivation. Therefore, it is recommended that teachers consider using the TGT model for teaching mathematics on other topics as well.

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