

IMPLEMENTING TEAMS GAMES TOURNAMENT (TGT) ASSISTED BY DICE MEDIA TO IMPROVE THIRD-GRADE STUDENTS' MATHEMATICS LEARNING OUTCOMES AT MI AL-MADANIYAH MATARAM

Aisha Umul Rauhun

¹Student, Faculty of Tarbiyah and Teacher Training, Mataram State Islamic University, Indonesia
Corresponding Author Email: aishaumulrauhun@gmail.com

ABSTRACTS	ARTICLE INFO
This study was conducted to improve the mathematics learning outcomes of third-grade students at MI Al-Madaniyah Mataram, where mathematics instruction was predominantly teacher-centered and resulted in low student engagement and achievement. The study aimed to improve students' mathematics learning outcomes through the implementation of the Teams Games Tournament (TGT) cooperative learning model assisted by dice media. This study employed Classroom Action Research (CAR) based on Kurt Lewin's model, consisting of four stages: planning, action, observation, and reflection. The participants were 23 third-grade students, comprising 13 male and 10 female students. Data were collected through mathematics achievement tests and observation sheets of teacher and student activities. The research was conducted in two cycles, with each cycle consisting of two meetings. The findings showed an improvement in students' mathematics learning outcomes, with the classical mastery rate increasing from 43.47% in Cycle I to 86.95% in Cycle II, representing an increase of 43.48 percentage points. Teacher activity increased from 77% to 91.5%, while student activity increased from 52% to 91.5%. Since the classical mastery rate in Cycle II exceeded the predetermined success criterion of 85%, the research was concluded at this stage. The findings indicate that the implementation of TGT assisted by dice media supported more active and collaborative participation in mathematics learning and contributed to improved learning outcomes. Thus, this approach shows potential as an alternative cooperative learning strategy for mathematics instruction in similar elementary school contexts.	Article History: Received: August 18th 2026 Revised: August 26th 2026 Published: August 2026 Keywords: Cooperative Learning, Teams Games Tournament, Dice Media, Mathematics Learning, Learning Outcomes

INTRODUCTION

Mathematics is an important field of knowledge that deals with structures, space, quantity, change, patterns, and relationships. In educational contexts, mathematics learning involves developing students' conceptual understanding, problem-solving skills, logical thinking, and ability to apply mathematical concepts to everyday situations. Therefore, mathematics has an important role in developing students' critical and analytical thinking skills. Mathematics learning at the elementary level, however, is often perceived as difficult by students because it involves numbers, calculations, formulas, and abstract concepts. Such perceptions can reduce

students' interest and motivation to participate actively in the learning process. Consequently, mathematics instruction needs to be designed in an enjoyable, interactive, and student-centered manner. Teachers are therefore expected to select appropriate learning models and media that correspond to students' characteristics and learning needs.

The teacher plays an important role in creating effective learning experiences. The teacher is not merely a source of information but also acts as a facilitator who provides opportunities for students to participate actively in the learning process. One of the factors that can influence students' mathematics learning outcomes is the selection of an appropriate instructional model. A learning model provides systematic procedures for interaction between teachers and students to achieve predetermined learning objectives. One cooperative learning model that can be applied to mathematics instruction is Teams Games Tournament (TGT). TGT is a cooperative learning model that combines teamwork, academic games, and tournaments. Students work in small groups and participate in academic games through friendly competition. The model provides opportunities for students with different abilities and backgrounds to cooperate, discuss, and compete in an enjoyable learning environment.

The use of learning media can further support the implementation of TGT. Learning media can make abstract concepts more concrete and provide students with visual or practical representations of learning materials. Media can also make learning more communicative, interactive, and engaging. Therefore, appropriate learning media can help teachers facilitate students' learning and encourage greater participation. One simple medium that can be incorporated into TGT activities is dice media. Dice are familiar objects that can be easily used in classroom games. In this study, dice were used as part of the learning game. Students rolled the dice to determine the questions or tasks that their groups had to solve. This activity was expected to encourage students to think quickly, cooperate with their teammates, and participate actively in solving mathematical problems. The initial observation conducted in the third-grade classroom at MI Al-Madaniyah Mataram indicated that mathematics learning was not optimal. Several students did not pay attention to the teacher's explanation, talked to their classmates, drew or wrote unrelated things in their notebooks, and even left their seats during the lesson. The learning process was still predominantly teacher-centered, with activities focused on explanation, note-taking, and writing.

The results of an interview with the third-grade teacher also indicated that students, particularly some male students, were easily distracted and tended to play during lessons. Classroom conditions were further affected by the location of the third-grade classroom, which was adjacent to the first-grade classroom. Younger students sometimes looked through the classroom windows or entered the classroom, causing additional distractions. The initial mathematics achievement data also indicated low learning outcomes. The class average was 56, while the school's minimum mastery criterion (KKM) was 75. Of the 23 students, only eight students, or approximately 34%, achieved the required standard. The school expected at least 86% of students to achieve the KKM. These conditions indicated the need for an instructional improvement strategy. Previous research has reported that TGT can improve students' learning outcomes. For example, Setianingsih reported an increase in students' learning outcomes after implementing TGT, with the average score increasing from 70.33 in Cycle I to 77.40 in Cycle II. However, the present study specifically combines the TGT model with dice media in mathematics learning for third-grade students at MI Al-Madaniyah Mataram. Based on this background, this study aimed to investigate the application of the cooperative learning model of

TGT assisted by dice media to improve the mathematics learning outcomes of third-grade students at MI Al-Madaniyah Mataram during the 2023/2024 academic year.

RESEARCH METHOD

This study employed Classroom Action Research (CAR) to improve the mathematics learning outcomes of third-grade students through the implementation of the Teams Games Tournament (TGT) cooperative learning model assisted by dice media. The research adopted the classroom action research model proposed by Kurt Lewin, which consists of four interconnected stages: planning, action, observation, and reflection. These stages were implemented cyclically, with the results of each cycle serving as a basis for improving the subsequent cycle. The research was conducted in two cycles, and each cycle consisted of two meetings. The research was conducted from May 2 to May 11, 2024, during the second semester of the 2023/2024 academic year. The research was terminated after Cycle II because the predetermined success criterion for students' mathematics learning outcomes had been achieved. The research procedure can be summarized as follows:

Planning → Action → Observation → Reflection → Improvement → Cycle II → Evaluation

In this study, the researcher collaborated with the classroom teacher. The researcher was responsible for designing the research procedures, preparing the learning instruments, and analyzing the data, while the classroom teacher assisted in implementing and observing the learning activities. This collaborative arrangement was intended to ensure that the classroom action was conducted systematically.

The study was conducted at MI Al-Madaniyah Mataram during the 2023/2024 academic year. The participants were 23 third-grade students, consisting of 13 male students and 10 female students. The participants represented the entire third-grade class; therefore, no sampling procedure was applied. The study focused on mathematics learning, particularly the topic of plane figures (*bangun datar*), based on the learning objectives of the 2013 Curriculum implemented at the school. Each research cycle consisted of four stages: planning, action, observation, and reflection.

RESEARCH FINDING AND DISCUSSION

3.1 Students' Learning Outcomes

The results demonstrated that the application of TGT assisted by dice media improved students' mathematics learning outcomes. In Cycle I, only 10 of 23 students achieved the minimum mastery criterion, resulting in a classical mastery percentage of 43.47%. Meanwhile, 13 students had not achieved the KKM. In Cycle II, the number of students achieving the KKM increased to 20 students, while only three students remained below the criterion. Consequently, classical mastery increased to 86.95%.

Table 1. Students' Mathematics Learning Outcomes

Indicator	Cycle I	Cycle II
Highest score	90	100
Lowest score	50	60

Students achieving KKM	10	20
Students not achieving KKM	13	3
Classical mastery	43.47%	86.95%

The improvement in classical mastery was 43.48 percentage points, increasing from 43.47% to 86.95%. The result exceeded the predetermined success criterion of 85%. Therefore, the action research was stopped after Cycle II. The improvement can be attributed to the characteristics of TGT, which provides opportunities for students to work collaboratively, participate in academic games, and compete in a structured and enjoyable environment. Through group discussion, students were encouraged to exchange ideas and assist one another in solving mathematical problems. The use of dice media also contributed to creating a more interactive learning atmosphere. Rather than simply listening to explanations and completing conventional exercises, students became directly involved in the game. The element of chance associated with rolling the dice generated curiosity and encouraged students to participate actively.

3.2 Improvement in Teacher Activity

Teacher activity also improved during the implementation of the TGT model. In Cycle I, teacher activity reached an average of **77%**, categorized as good. In Cycle II, the average increased to **91.5%**, categorized as very good.

Table 2. Teacher Activity

Cycle	Average Percentage	Category
Cycle I	77%	Good
Cycle II	91.5%	Very Good
Improvement	14.5%	—

The increase of 14.5 percentage points indicates that the teacher became more effective in implementing the TGT procedures. In Cycle I, some aspects of classroom management and the sequencing of TGT activities were not yet optimal. Students were sometimes confused about the game procedures, and classroom management became challenging during the dice activity. Following reflection, the teacher improved the explanation of the game procedures, organized students into groups more systematically, and provided clearer instructions. These improvements contributed to more effective implementation in Cycle II.

3.3 Improvement in Student Activity

Student activity demonstrated a substantial increase. In Cycle I, student activity reached an average of 52%, categorized as less active. In Cycle II, the percentage increased to **91.5%**, categorized as very active.

Table 3. Student Activity

Cycle	Average Percentage	Category
Cycle I	52%	Less Active
Cycle II	91.5%	Very Active
Improvement	39.5%	—

The increase of 39.5 percentage points indicates that students became more engaged in the learning process.

During Cycle I, several students were still confused about the game procedures and were reluctant to participate in group discussions. Some students also had difficulty waiting for their turn to roll the dice. After the teacher clarified the procedures and emphasized cooperation, students became more organized and actively participated in group discussions during Cycle II.

3.4 Comparison of Research Findings

The overall improvement in learning outcomes, teacher activity, and student activity can be summarized as follows.

Table 4. Comparison of Research Results

Variable	Cycle I	Cycle II	Improvement
Classical learning mastery	43.47%	86.95%	43.48 percentage points
Teacher activity	77%	91.5%	14.5 percentage points
Student activity	52%	91.5%	39.5 percentage points

The results indicate that improvements in the learning process were accompanied by improvements in students' mathematics achievement. As students became more active and collaborative, their ability to complete mathematical tasks also improved. The findings support the principle of cooperative learning that students can learn through interaction and collaboration with peers. In TGT, students are responsible not only for their own learning but also for contributing to their group's success. The combination of group discussion, games, competition, and rewards can increase students' engagement. The findings are also consistent with previous research reporting positive effects of TGT on mathematics learning outcomes. Setianingsih reported an increase in students' mathematics achievement following TGT implementation. Similarly, Hartanto found that TGT could improve student engagement and mathematics learning outcomes across classroom action research cycles. The present study extends these findings by incorporating dice media into the TGT learning process. The dice served as a simple game-based instructional medium that helped transform mathematics learning into a more interactive activity.

3.5 Discussion of the Implementation of TGT Assisted by Dice Media

The implementation of TGT in this study involved several essential stages: class presentation, group formation and study, games, tournament activities, and group recognition. During the class presentation, the teacher introduced the mathematical concepts and provided examples related to plane figures. Students were then divided into groups. Each group was expected to cooperate in solving the questions obtained through the dice activity. The game stage became an important component of the intervention. Students took turns rolling the dice and obtaining questions to be discussed with their respective groups. This activity encouraged students to communicate, exchange ideas, and develop responsibility for group achievement. In Cycle I, the implementation was not yet optimal. Some students competed to obtain the dice, resulting in noise and classroom-management problems. Some students also did not understand the sequence of activities. These problems were addressed during Cycle II by providing clearer instructions and organizing the groups more effectively. During Cycle II, students demonstrated greater discipline and enthusiasm. They waited for their turns, worked with their group members,

and actively participated in solving the questions. The teacher also provided motivation and emphasized that winning and losing were normal aspects of games, while cooperation and mutual respect were more important. Therefore, the improvement in student activity suggests that TGT assisted by dice media can create a learning environment that is not only academically oriented but also socially interactive.

4. Limitations of the Study

Although the findings indicate positive effects, this study has several limitations. First, the implementation of TGT assisted by dice media required relatively considerable classroom time because students needed to be organized into groups and given opportunities to participate in the game. Second, three students had not yet achieved the KKM at the end of Cycle II. These students therefore required further guidance and remedial activities from the teacher. Third, the research involved only one third-grade class consisting of 23 students. Therefore, the findings should be interpreted within the context of the research setting and participants.

CONCLUSION

The implementation of the Teams Games Tournament (TGT) cooperative learning model assisted by dice media improved the mathematics learning outcomes of third-grade students at MI Al-Madaniyah Mataram during the 2023/2024 academic year. The classical mastery rate increased from 43.47% in Cycle I to 86.95% in Cycle II, exceeding the predetermined success criterion of 85%. In addition, teacher activity increased from 77% to 91.5%, while student activity increased from 52% to 91.5%. The findings indicate that the implementation of TGT assisted by dice media supported more active and collaborative student participation during mathematics learning. Since the classical mastery criterion was achieved in Cycle II, the classroom action research was concluded at this stage. The three students who had not achieved the minimum mastery criterion (KKM) should receive further guidance and remedial instruction. Overall, the findings suggest that TGT assisted by dice media shows potential as an alternative cooperative learning approach for improving mathematics learning outcomes in similar elementary school contexts. Further studies involving different schools, larger groups of students, and longer implementation periods are recommended to examine the applicability of this approach more broadly.

REFERENCES

- Afandi M, Chamalah E, Wardani OP. (2013). *Model dan Metode Pembelajaran di Sekolah*. Semarang: Unissula Press.
- Arikunto S. (2014). *Prosedur Penelitian: Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.
- Arikunto S, Suhardjono, Supardi. (2014). *Penelitian Tindakan Kelas*. Jakarta: Bumi Aksara.
- Bahtiar. (2015). *Strategi Mengajar Sains (IPA)*. Mataram: IAIN Mataram.
- Faturrahman M. (2016). *Model-Model Pembelajaran Inovatif*. Yogyakarta: Ar-Ruzz Media.
- Hasan M, Milawati, Darodjat, Khairani H, Tahrim T. (2021). *Media Pembelajaran*. Tahta Media Group.
- Huda M. (2015). *Cooperative Learning*. Yogyakarta: Pustaka Pelajar.
- Huda M. (2014). *Model-Model Pengajaran dan Pembelajaran*. Yogyakarta: Pustaka Pelajar.

- Kemmis S, McTaggart R, Nixon R. (2014). *The Action Research Planner: Doing Critical Participatory Action Research*. Singapore: Springer.
- Lastia ID. (2021). Penerapan model pembelajaran kooperatif tipe STAD untuk meningkatkan hasil belajar matematika pada siswa. *Mimbar Pendidikan Indonesia*. 1(3).
- Lambetus. (2016). Pengaruh sikap siswa terhadap hasil belajar matematika melalui kombinasi model pembelajaran kooperatif. *Jurnal Pendidikan Matematika*. 7(2):105–124.
- Musdalipa, Razak F. (2022). *Buku Panduan Model Pembelajaran Kooperatif Tipe Teams Games Tournament (TGT) Berbasis Media Ular Tangga*. Makassar: Mitra Cendekia Media.
- Purwanto. (2013). *Evaluasi Hasil Belajar*. Yogyakarta: Pustaka Pelajar.
- Rachmawati DW. (2021). *Teori dan Konsep Pedagogik*. Cirebon: Insania.
- Sanjaya W. (2015). *Penelitian Tindakan Kelas*. Jakarta: Prenada Media.
- Shoimin A. (2014). *68 Model Pembelajaran Inovatif dalam Kurikulum 2013*. Yogyakarta: Ar-Ruzz Media.
- Siagian P. (2016). Kemampuan koneksi matematika dalam pembelajaran matematika. *Journal of Mathematics Education and Science*. 2(1).
- Slavin RE. (2015). *Cooperative Learning*. Bandung: Nusa Media.
- Sumantri MS. (2015). *Strategi Pembelajaran: Teori dan Praktik di Tingkat Pendidikan Dasar*. Jakarta: RajaGrafindo Persada.
- Yulia Pramusinta, Silvia Nur Faizah. (2022). *Belajar dan Pembelajaran Abad 21 di Sekolah Dasar*. Jawa Timur: Nawa Litera Publishing.
- Hartanto. (2023). Upaya meningkatkan keaktifan dan hasil belajar matematika melalui model pembelajaran kooperatif tipe Teams Games Tournament (TGT). *Jurnal Cendekia*. 7.
- Setianingsih D. (2021). Penerapan model pembelajaran Teams Games Tournament (TGT) untuk meningkatkan hasil belajar materi perkalian siswa kelas III SD Muhammadiyah 8 Surabaya. *Alpen: Jurnal Pendidikan Dasar*. 5(1).