Implementation of the Teams Games Tournament Learning Model in Lesson Study to Improve the Quality of Mathematics Learning

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Abstract

This study aims to improve the quality of mathematics learning through the implementation of the Teams Games Tournament (TGT) learning model in Lesson Study activities. This study uses a descriptive qualitative method to evaluate the effectiveness of the Teams Games Tournament (TGT) model in improving the quality of learning in the classroom. The research subjects were 34 students in class XI F1 in the 2025/2026 academic year. The researcher acted as the model teacher, while the mathematics subject teacher acted as the supervisor. Peers or students from the same study program acted as second observers. Data collection was carried out through the Lesson Study approach, which included three stages: Plan, Do, and See. This study showed that the application of the TGT model, especially when combined with active learning strategies and Kahoot-based interactive quizzes, was able to improve the quality of learning in the classroom, as indicated by increased student engagement and motivation in classroom learning.

Keywords: *Kahoot Quiz; Lesson Study; Learning Quality; Teams Games Tournament.*

Abstrak

Penelitian ini bertujuan untuk meningkatkan kualitas pembelajaran matematika melalui implementasi model pembelajaran Teams Games Tournament (TGT) dalam kegiatan Lesson Study. Penelitian ini menggunakan metode kualitatif deskriptif untuk mengevaluasi efektivitas model Teams Games Tournament (TGT) dalam meningkatkan kualitas pembelajaran dikelas. Subjek penelitian adalah siswa kelas XI F1 yang terdiri dari 34 anak pada tahun ajaran 2025/2026. Peneliti berperan sebagai guru model, sedangkan guru mata pelajaran matematika bertindak sebagai supervisor. Teman sejawat atau mahasiswa progyam studi yang sama berperan sebagai observer kedua. Pengumpulan data dilakukan melalui pendekatan Lesson Study yang mencakup tiga tahapan: Plan, Do, dan See. Penelitian ini menunjukkan bahwa penerapan model TGT, terutama ketika dikombinasikan dengan strategi active learning dan kuis interaktif berbasis Kahoot mampu meningkatkan kualitas pembelajaran dikelas dengan ditandai meningkatnya keterlibatan serta motivasi siswa dalam pembelajaran dikelas.

Kata Kunci: Kahoot Quiz; Lesson Study; Learning Quality; Teams Games Tournament.

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INTRODUCTION

The quality of learning is one of the most important factors in education, especially in mathematics, which is often considered difficult by students. The quality of learning can be seen from various indicators that reflect the success of the educational process and outcomes. One of the educational factors that greatly determines the success of education is the aspect of teachers or educators. The role of teachers or educators in education is very decisive in the sense that they play a very large role in guiding students towards success in education (Falah, 2015).

Teacher performance is a teacher's ability to carry out their duties in accordance with the responsibilities assigned to them during a certain period in the school system to achieve organizational goals (Yulianingsih & Sobandi, 2017). In order to support the success of the teaching and learning process, teachers need to use appropriate and effective learning methods for the material being taught. Conventional methods such as lectures, discussions, demonstrations, hands-on practice, and modeling, which are characterized by direct interaction between teachers and students during lessons, remain commonly used and widely accepted methods, but these methods have significant weaknesses. One of the main limitations of these methods is the difficulty in giving individual attention to each student, which can reduce the overall level of student engagement (Saadah et al., 2025). During the activity, students rarely ask questions related to the material and only listen to the teacher's explanations. As a result, some students may become less active or have difficulty understanding the material thoroughly.

In this traditional learning method, the teacher is the center of activity, while students tend to be passive. Students show little enthusiasm for learning because learning is done individually rather than in groups. A new paradigm is needed by teachers in the learning process, from teacher-centered learning to innovative, student-centered learning (Lase & Telaumbanua, 2024). Another reason why students are not interested in mathematics, according to Febriandi (2020), is that students are not interested in mathematics because teachers still use traditional teacher-centered learning methods in their teaching, which makes

students bored and lose interest in learning mathematics. Educators or teachers are required to have good teaching skills. These teaching skills include teaching techniques, which can help improve the quality of learning (Abimanyu et al., 2024).

Teachers must be more creative in choosing the right learning model so that students are more active in learning. Teachers must be able to give clear instructions that can create a conducive classroom atmosphere. In facing these problems, innovative learning strategies are needed to improve the quality of learning in the classroom. One of the proposed approaches is the application of the Teams Games Tournament (TGT) learning model. Research shows that the use of the TGT learning strategy not only stimulates student activity but also contributes positively to a significant improvement in their learning outcomes in mathematics (F. Septi, N. Agusdianita, Yusnia, 2025). TGT also offers a cooperative learning approach that encourages students to work together, increases motivation, and deepens understanding through fun and interactive activities. The application of TGT as a game-based learning approach is not only effective but also attracts interest in learning. This model is also flexible for use with both complex and simple material (Wahida et al., 2025). According to Asmat (2022), the implementation of learning using the TGT learning model has had a positive impact on increasing students' interest in learning in the classroom.

RESEARCH METHODS

This study uses a qualitative method with a descriptive approach. Qualitative methods are in-depth and comprehensive research approaches to understand and explain phenomena in their natural context (Rachman, 2024).The purpose of this study is to explore the effectiveness of the Teams Games Tournament method in improving the quality of learning in the classroom. The research was conducted during the PLP program from September 8 to October 31, 2025. This research was conducted at Muhammadiyah 7 High School in Yogyakarta. The subjects of this study were 34 students in class XI F1 in the 2025/2026 academic year. In this study, PLP students acted as model teachers,

while mathematics teachers acted as supervisors. Students from the same study program or peers placed in the same PLP acted as second observers. Data collection was conducted using Lesson Study. According to Saito et al., there are three stages of Lesson Study, namely Plan, Do, and See (Sari et al., 2023).

1) Plan

In the planning phase, model teachers prepare all materials needed for learning activities, incorporating observations, feedback, and suggestions from math teachers and a colleague. This phase involves identifying learning outcomes, formulating learning objectives, and determining learning pathways. Model teachers develop comprehensive lesson plans, including teaching modules, teaching materials, media, and assessment instruments. All plans are refined based on feedback to ensure alignment with student development goals and effective teaching delivery (Herlindawati et al., 2021).

2) Do

During the implementation phase, the model teacher carried out the planned learning activities (Hikmawati et al., 2018). Observers, including the mathematics teacher and a colleague, recorded observations and findings related to instructional delivery and student engagement.

3) See

The reflection phase involved collaborative discussions between the model teacher, mathematics teacher, and peer observer. Feedback from these discussions provided insights into student behavior and teaching effectiveness. This reflection informed adjustments to teaching strategies and preparations for subsequent sessions (Tanujaya & Mumu, 2020). The study utilized various instruments, including observation sheets for peer observers and mathematics teachers, as well as test instruments for students. Qualitative data included feedback, critiques, video documentation of lessons, and observer notes, which were analyzed descriptively to identify areas for improvement.

RESULTS AND DISCUSSION

The results of observations and discussions with mathematics teachers show that learning activities need to be aligned with the school's goal of creating quality learning. This is in line with Juano's (2019) research, which confirm that lesson study is believed to be successful in improving learning practices, where teachers plan, implement, and reflect on the results of the teaching that has been given to be used for further improvement. In line with this, Hidayat's (2019) research also states that lesson study can improve the quality of learning. To improve student learning outcomes, lesson study was implemented over two cycles, covering the planning, implementation, and reflection stages. The following are the results of each stage of lesson study:

First Cycle

1) Plan

Before starting the Lesson Study teaching practice, observation is required. This observation is carried out with the aim of observing the learning situation and conditions in the classroom. During this observation, the model teacher directly delivers the material in the classroom where the mentor teacher teaches. The material taught is Matrices. The learning tools created to assist the learning process are teaching modules. These teaching modules contain identities, learning steps, and learning evaluations. The creation of teaching modules is then consulted with the mentor teacher.

The learning model applied in the first lesson study was Teams Games Tournament (TGT) combined with discussion and question-and-answer methods. This model was chosen based on observations showing that some students were still lacking focus, such as playing with their cell phones and not taking notes in their notebooks. These conditions indicated that the previous learning approach had not been able to attract students' attention optimally. Through the TGT model, teachers sought to increase student engagement by presenting more interactive and competitive learning activities through academic games and group work. Meanwhile, the discussion and question-and-answer methods were used to encourage students to participate actively,

exchange ideas, and strengthen their understanding of concepts directly. With this strategy, the learning process was expected to become more interesting, minimize distractions, and increase students' focus and motivation to learn.

2) Learning Practice Activities (Do)

The learning activity began with greetings, a group prayer, and checking student attendance. After that, the teacher asked questions related to the matrix material that had been studied in the previous meeting. The students responded enthusiastically, showing that they understood the material because they were able to remember and answer every question asked. Next, the teacher provides an overview and motivation regarding the use of matrices, which play an important role in various fields of modern technology. The students appear enthusiastic in listening to and observing the explanation. Overall, the presentation of the general overview of the material has been carried out well, as has the explanation of the learning activity steps. The model teacher also successfully relates the concept of matrices to contextual situations and conveys the mathematical concept appropriately and accurately.

In applying the Teams Games Tournament (TGT) cooperative learning model, the lesson begins with the teacher demonstrating the rules and mechanics of the game that will be used. This step is important so that students understand the flow of activities and know how they should participate during the tournament. Then, the teacher divides the students into four groups, each consisting of about 6-7 students. The division of groups is done by considering the diversity of students' abilities so that discussion and cooperation within the group can run optimally. The teacher then prepares a number of questions related to the matrix material as competition material. To determine the pairs of groups that will face each other in the initial round of the game, each group sends one representative to come forward. Once the pairs of groups have been determined, the game begins with two groups competing to solve the questions given. In the rules of the game, the group that is able to answer the most questions correctly will emerge as the winner in each round.

Figure 1. Learning in the First Cycle

During the activity, learning using the TGT model appeared to be very effective. Students seemed enthusiastic about working with their group members, discussing with each other, and trying to solve problems as quickly and accurately as possible. Active interaction and a healthy competitive atmosphere made the learning process more lively and meaningful. To increase motivation, the teacher prepared rewards for the two groups with the highest points. These rewards were not only intended to show appreciation, but also to encourage students to be more enthusiastic and involved in the next learning process. Thus, the TGT model can create an interactive, positively competitive learning environment that supports students' understanding of matrix material.

3) See (Reflection)

During the reflection stage, the model teacher and observer held a discussion to evaluate the learning process using the Teams Games Tournament (TGT) model for the matrix material. In general, the learning process went well and created an active and positively competitive classroom atmosphere. Students showed high enthusiasm when participating in the games, especially when working together to solve matrix problems. However, the reflection results showed that there were still several things that needed improvement.

Although most students appeared active, there were still some students who did not pay attention and were busy playing with their cell phones. This indicates the need for lesson planning that can increase the active participation of all students. Second, the time allocated for completing the questions in the

tournament needs to be managed more effectively because some groups felt they ran out of time when completing more complex questions. With better time management, all groups can participate in the tournament more optimally. Overall, the reflection activity shows that the use of the TGT model has a positive impact on student engagement and motivation in learning matrix material. With some adjustments in subsequent meetings, learning is expected to become more effective and able to improve student understanding more evenly.

Second Cycle

1) Plan

From reflections on previous meetings, it appears that although most students are active, there are still some students who are less involved and tend to play with their cell phones during class. This shows the need for learning activities that can encourage more equal active participation from all students. To overcome this, the model teacher decided to implement an active learning model using technology such as cell phones, so that students can remain focused on the material. In its implementation, the teacher uses Kahoot-based interactive quizzes to check students' understanding, while also making the learning atmosphere more interesting and competitive. The use of these quizzes allows each student to participate directly, thereby reducing the risk of students being distracted by other things. In addition, giving rewards to students or groups who answer correctly and quickly provides additional motivation, encouraging them to be more enthusiastic about participating in the learning process. With this strategy, the learning process is not only more interactive and enjoyable, but also more effective in increasing student engagement, focus, and understanding of the material being taught.

2) Do

The activity began with an opening greeting, a group prayer, and checking student attendance. The educator then asked questions about the previous lesson to refresh the students' memories. Next, the perception and

motivation activities were carried out quite well. The students responded enthusiastically to each question asked by the educator. In the core activity stage, a general explanation of the learning material and procedures was explained coherently, so that the students could understand what activities would be carried out in today's lesson. The model teacher linked the material to everyday life.

In practice, model teachers conduct lessons with the help of PowerPoint to facilitate the delivery of material and make explanations clearer and more structured. The material taught in this meeting was determinants and matrix inverses. During the activity, students showed considerable enthusiasm and appeared to pay close attention to the teacher's explanations. To encourage active student participation and evaluate their understanding independently, the model teacher applied an active learning strategy through an interactive quiz using the Kahoot platform. In this quiz, students could participate directly via their cell phones, work together in groups or individually, and compete to answer questions correctly and quickly. This approach not only made the learning process more interactive and enjoyable, but also helped the teacher assess each student's abilities. Examples of questions on Quizizz can be seen in Figure 2.

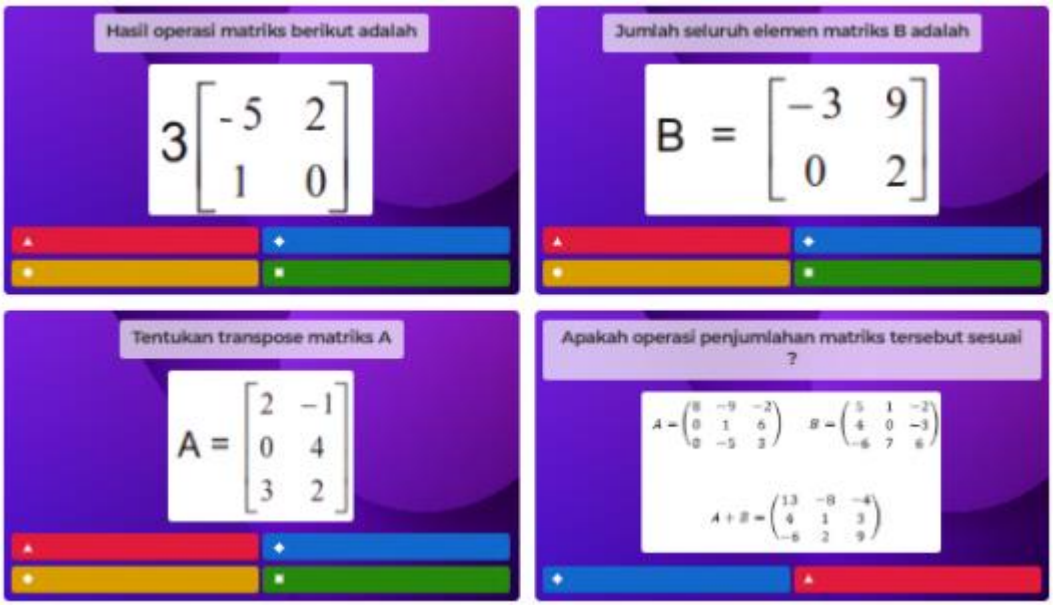

Figure 2. Example Kahoot Questions

At the end of the activity, the model teacher and students drew conclusions from the lesson. The model teacher also gave homework assignments to reinforce the material that could be done at home.

3) See

Overall, the reflection shows that the combination of PowerPoint, active learning, interactive quizzes, and rewards can increase the effectiveness of learning matrix determinants and inverses. For the next meeting, it is recommended that teachers prepare a variety of more challenging quiz questions and divide roles in groups more clearly, so that each student can contribute maximally and the active involvement of all students can be achieved evenly.

CONCLUSION

Based on the results of the implementation and reflection of two learning cycles, it can be concluded that the gradual application of the learning model has a positive impact on student engagement and understanding. In the first cycle, the use of the Teams Games Tournament (TGT) model successfully created a positive, active, and competitive classroom atmosphere. Students appeared enthusiastic about working together in groups to complete the matrix questions, although there were still some obstacles, such as the lack of involvement of some students and time management issues. To overcome this, in the second cycle, an active learning strategy was implemented with Kahoot-based interactive quizzes using students' cell phones. This approach was able to increase the active participation of all students, enable teachers to evaluate understanding in real time, and create a more enjoyable and competitive learning atmosphere. Giving rewards to students or groups with the highest scores also proved to be effective in increasing motivation and enthusiasm for learning.

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