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THE IMPLEMENTATION OF CANVA-ASSISTED TEAM GAMES TOURNAMENT MODEL TO IMPROVE STUDENTS' MATHEMATICS LEARNING OUTCOMES

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ABSTRACT

This study aims to improve students' mathematics learning outcomes on sequences and series material through the Teams Games Tournament (TGT) cooperative model assisted by Canva. The research involved 21 students from class X-A at SMA Negeri 1 Pinolosian during the 2024-2025 academic year. Using Classroom Action Research (CAR) conducted in two cycles, each stage included planning, acting, observing, and reflecting. The results showed significant improvements in both process and output. Teacher activity progressed from 'Fair' (C) in Cycle I to 'Good' (B) or 'Excellent' (SB) in Cycle II. Similarly, student activity improved from the 'Fair' category to 'Excellent' as enthusiasm and collaboration increased through Canva's visual media and healthy competition. Most notably, students' classical mastery jumped from only 43% in Cycle I to 90% in Cycle II, successfully surpassing the 80% success indicator. The integration of Canva helped visualize abstract concepts, while the TGT tournament element effectively boosted student motivation and teamwork. It can be concluded that the TGT model assisted by Canva is an effective strategy to enhance mathematics learning outcomes for tenth-grade students.

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INTRODUCTION

Mathematics is a mandatory subject that is highly useful in daily life, both in social aspects and in the development of technology and economy. As a foundational science, mathematics serves as a tool for studying other disciplines and helps students actively engage in discovering and applying concepts to solve problems. Therefore, a strong understanding of concepts is crucial, as learning outcomes serve as a benchmark for a student's success in mastering the material

taught by the teacher. Mathematics is also one of the subjects that must be taken by all students, from elementary school to higher education. Mathematics learning is a field of knowledge that is needed and beneficial in everyday life within social aspects, including the fields of science, technology, economics, and others. Mathematics is a basic science that has become a tool for studying other sciences (Purwandari, A., & Wahyuningtyas, D. T. 2017). (Pauweni, Uwange, Ismail, & Kobandaha 2022) state that mathematics is a branch of science that studies concepts enabling students to be actively involved in discovering concepts, applying them, and being able to solve mathematical problems. (Malanua, Pomalato, and Damayanti 2024) argue that mathematics learning holds significant control over human development. According to Irfah & Rahmah (2017), providing questions to students in mathematics learning is a very strategic element (Pontoh, Pauweni, and Takaendengan 2025). On the other hand, mathematics as a subject helps shape students into individuals capable of thinking critically and analytically in facing various situations and conditions (Ainurrohimah et al., 2024). (Abdullah, Achmad, and Fahrudin 2020) state that learning outcomes can be used as a benchmark to determine the level of success of students in knowing and understanding a particular subject.

Based on the results of initial interviews and observations conducted by the researcher with several mathematics teachers at SMA Negeri 1 Pinolosian, it was found that the curriculum implemented at the school is the *Merdeka Curriculum*; however, its implementation has not been optimal. Furthermore, information obtained from mathematics teachers at SMA Negeri 1 Pinolosian indicates that, in applying instructional models, teachers more frequently use conventional teaching models. This conventional learning model is considered the easiest to implement. However, students tend to feel bored and less active during the learning process because the model is teacher-centered. In addition to using conventional models, teachers at SMA Negeri 1 Pinolosian occasionally apply cooperative learning models. Although cooperative learning, such as group discussions, has been implemented at the school, its application has not yet been maximized. It was also stated that the school's facilities are adequate, including computers, LCD projectors, and internet access; however, the utilization of these facilities remains limited or not optimal due to the extensive preparation required.In the mathematics learning process, teachers mainly provide practice problems, while students only listen and work on the given tasks. This condition contributes to students' low learning outcomes. In reality, efforts to improve mathematics learning outcomes still face serious challenges, both generally and specifically at the research site. Low learning outcomes are often caused by ineffective learning processes, in which teachers continue to use conventional models that make students feel bored, unmotivated, and perceive mathematics as difficult.

This problem was clearly identified at SMA Negeri 1 Pinolosian, particularly in class X-A, where the average student score on the topic of sequences and series reached only 45.33, which is far below the Minimum Learning Achievement Criteria (*Kriteria Ketuntasan Tujuan Pembelajaran* / KKTP) of 75. This condition is reflected in students' learning outcomes in the 2023–2024 academic year on the topic of sequences and series. These conditions can be seen in Table 1 below.

Table 1. Students' Mathematics Learning Outcomes

No	KKM Score	Number of Students	Percentage	Description
1	≥ 75	9	43%	Passed
2	< 75	12	57%	Not Passed
Total		21	100%	

Table 1 shows that only about 45.33% of students achieved the minimum mastery criteria for learning objectives in the sequences and series material. This data serves as the foundation for the researcher to conduct further investigation.

Based on the aforementioned problem, it is necessary to implement an innovative learning model that can improve students' mathematics learning outcomes. As a solution to these issues, the Teams Games Tournament (TGT) cooperative learning model is applied to create a more active and enjoyable learning atmosphere through teamwork and academic competition. The effectiveness of this model is supported by evidence from various previous studies, such as those conducted by Novianti Nabila and Jufri Ade (2022) as well as Widya Putri Ramadhani and Andi Gita Indrawati (2018), which demonstrate that TGT is significantly capable of improving students' mathematics learning outcomes. This model also provides opportunities for all students, regardless of their ability status, to play an active and responsible role within their groups. According to Rusman (in Amanda Purwandari 2017:164), cooperative learning is a model that places students in learning groups consisting of 5-6 members with diverse ability levels, genders, and ethnicities or races to complete tasks or understand the subject matter under the teacher's guidance. At the end of the lesson, a tournament is held to ensure all students collaborate effectively. One type of cooperative learning model that is conducive to creating an active learning environment is the Teams Games Tournament (TGT) type.

In addition to selecting the appropriate learning model, teachers must also be able to provide suitable learning media. (Sude, Djakaria, and Machmud 2021) suggest that media plays a vital role in supporting the learning process, particularly in overcoming student boredom and helping to instill an understanding of the concepts being taught. One such medium is the use of the Canva application. In this study, Canva functions as an auxiliary tool to visualize concepts and create teaching materials—such as student worksheets (LKPD), modules, and question cards—that are more attractive and interactive. Although research regarding TGT and Canva has been conducted by other researchers, such as Diah Putri Sari et al. (2023), the novelty or research gap of this study lies in their specific integration to address the issue of low learning outcomes in sequences and series material at SMA Negeri 1 Pinolosian through Classroom Action Research (CAR). According to Pardede (2023), Canva media is an alternative that can be utilized in the mathematics learning process to attract interest or concentration and is capable of improving student learning outcomes (Rahmatia et al., 2025).

The main objective of this study is to improve the mathematics learning outcomes of Grade X students at SMA Negeri 1 Pinolosian on the topic of sequences and series after the implementation of the TGT cooperative learning model assisted by the Canva application. Through this integration, it is expected that the quality of the learning process will improve, enabling students to become more enthusiastic and to achieve the established learning mastery standards.

METHOD

This research is a type of Classroom Action Research (CAR) conducted in two cycles. Each cycle follows the model developed by Kemmis and McTaggart, which consists of four main stages: planning, acting, observing or evaluating, and reflecting. The participants or subjects of this study were the students of Class X-A at SMA Negeri 1 Pinolosian during the even semester of the 2024-2025 academic year, with a total of 21 students, comprising 7 males and 14 females.

The instruments used to collect data included observation sheets to monitor teacher and student activities during the learning process, as well as learning outcome tests in the form of essay questions to measure students' cognitive achievement at the end of each cycle. Additionally, the researcher utilized the Canva application as the primary auxiliary tool to design interactive teaching materials, such as teaching modules, student worksheets (LKPD), question cards, and

presentation materials. Before being administered, these test instruments underwent validity testing (both theoretical and empirical) and reliability testing using the Cronbach's Alpha formula to ensure the quality of the research measurement tools. The research steps were carried out systematically, starting from the planning stage, which involved preparing Canva-based learning tools, followed by the implementation of learning using the TGT model syntax, which includes class presentations, heterogeneous group work, games using question cards, and academic tournaments. Throughout this process, the researcher conducted observations of classroom activities, concluding with an evaluation through tests. During the reflection stage, the data were analyzed to determine whether the actions in that cycle had achieved the success indicators or if it was necessary to proceed to the next cycle with specific improvements.

Data analysis techniques were conducted using quantitative and qualitative descriptive methods to provide an overview of improvements in learning outcomes. Observation data were analyzed using percentage formulas to determine activity criteria (such as Good or Very Good), while learning outcome test data were analyzed to assess students' classical learning mastery. The indicator of success for this study was defined as at least 80% of all students achieving the minimum threshold of the Learning Objective Mastery Criteria (KKTP) score of 75.

Each set of observation data was collected and analyzed after obtaining data from each observation result by calculating the average percentage for each existing aspect criterion. The formula for the average percentage used to calculate students' average learning outcomes is as follows

$$x = \frac{\sum X}{\sum N}$$

Description:

x = Average score

$\sum X$ = Total score of all students

$\sum N$ = Total number of students

In this study, the action will be considered successful if the data analysis results from the research instruments meet the following success indicators: (1) At least 80% of the observation results from all aspects of teacher activities in implementing the learning process achieve a minimum criterion of "Good." (2) At least 80% of the observation results from all aspects of student learning activities achieve a minimum criterion of "Good." (3)At least 80% of the students' learning test results reach the Minimum Mastery Criterion (KKM) of 75 for the topic of sequences and series.

RESULTS AND DISCUSSION

Result

The research was conducted in two cycles, with each cycle consisting of three meetings: two meetings for teaching and learning activities and one meeting for the learning outcomes test. This structure was applied in both Cycle I and Cycle II.

1. Cycle Results I

a. Teacher Activity Observation

The quality of the teacher's actions in managing the learning process was not yet optimal, as shown by the observation results of the teacher's activities, which remained in the 'Fair' (C) category. This was due to the teacher not being optimal in guiding the tournament, providing insufficient appreciation, and being less than maximal in facilitating group discussions.

Consequently, the observation assessment of the teacher's teaching activities in the learning process using the Teams Games Tournament (TGT) cooperative model has not yet met the established success indicators. Therefore, improvements are necessary for Cycle II. The action is considered successful if the observation results indicate that all aspects of the teacher's activities in conducting the learning process reach the 'Excellent' (SB) or 'Good' (B) category.

b. Student Activity Observation

Based on the observations conducted by the researcher as an observer, the results of student activity monitoring during the learning process—using the Teams Games Tournament (TGT) cooperative learning model assisted by the Canva application—showed that student enthusiasm and participation were not yet optimal, with student activity remaining in the 'Fair' (C) category. The identified constraints included a lack of interest in learning, low group cohesion, and a lack of sportsmanship during the tournament phase.

c. Mathematics Learning Test Results

To measure students' learning outcomes in Cycle I, the researcher conducted a learning evaluation through a test consisting of six essay questions. The scoring process referred to the marking scheme and assessment rubric for each test item, as provided in the appendix. The mastery score was based on the Learning Objective Mastery Criteria (KKTP) of 75, with the indicator of success set at 80%. The results of the mathematics learning test are presented in Table 2 below:

Table 2. Student Learning Outcomes Test Results Cycle I

No	KKM Score	Number of Students	Percentage	Description
1	≥ 75	9	43%	Passed
2	< 75	12	57%	Not Passed
Total		21	100%	

Based on Table 4.3, out of 21 students, 9 students achieved the learning mastery level with scores ≥ 75, representing 43%. Meanwhile, 12 students did not meet the mastery criteria, obtaining scores < 75, which corresponds to 57%. The students' learning outcomes in Cycle I did not meet the indicator of action success. The learning outcomes were considered successful if 80% of the total number of students achieved the Learning Objective Mastery Criteria (KKTP) score of 75.

2. Cycle Results II

a. Teacher Activity Observation

The quality of the teacher's actions in managing the learning process also showed consistent improvement. Following reflection and corrective measures, teacher activity reached the 'Good' (B) to 'Excellent' (SB) criteria. Consequently, the observational assessment of the teacher's activities in the learning process using the Teams Games Tournament (TGT) cooperative model assisted by the Canva application indicated that all instructional aspects have met the established success indicators.

b. Student Activity Observation

Based on the observations conducted by the researcher as an observer, the monitoring results of student activity during the learning process—using the Teams Games Tournament (TGT) cooperative learning model assisted by the Canva application—showed that student enthusiasm and participation increased alongside the implementation of healthy competition and Canva's visual media. Student activity improved to the 'Good' (B) or 'Excellent' (SB)

categories. Students became more active in discussions, collaborated effectively in completing the student worksheets (LKPD), and participated enthusiastically in the quizzes/tournaments using Canva media. Consequently, the observational assessment of student activity in the learning process using the TGT model assisted by Canva has achieved the established success indicators, namely the 'Excellent' (SB) or 'Good' (B) categories.

c. Mathematics Learning Test Results

To measure student learning outcomes in Cycle II, the researcher conducted a learning evaluation through a test consisting of 5 essay questions. The grading process for the answers referred to the marking scheme and assessment rubrics for each test item, as attached in the appendix. The mastery score was based on the Minimum Learning Mastery Standard (KKTP) of 75, with a predetermined success indicator of 80%. The results of the mathematics learning test are presented in Table 4.6 below:

Table 3. Student Learning Outcomes Test Results Cycle II

No	KKM Score	Number of Students	Percentage	Description
1	≥ 75	19	90%	Completed
2	< 75	2	10%	Not Completed
Total		21	100%	

Based on Table 3, out of 21 students, 19 students achieved the learning mastery level with scores ≥ 75, representing 90%. Meanwhile, 2 students did not meet the mastery criteria, obtaining scores < 75, which corresponds to 10%. These results demonstrate that students' learning outcomes in Cycle II reached 90%, indicating that the indicator of action success was achieved. Learning outcomes were considered successful if at least 80% of the total number of students attained the Learning Objective Mastery Criteria (KKTP) score of 75.

Discussions

This study was conducted using Classroom Action Research (CAR) on grade X students at SMA Negeri 1 Pinolosian, implementing the cooperative learning model of the Teams Game Tournament (TGT) type, assisted by the Canva application as a tool for teachers in preparing teaching materials. The study aimed to improve students' mathematics learning outcomes on the topic of Arithmetic and Geometric Sequences. During the research process, several aspects were observed, including the teacher's activities in applying the TGT cooperative learning model and the students' activities while using the TGT model. At the end of each cycle, a mathematics test was conducted to measure the students' learning outcomes for that cycle. It was clearly observed that the TGT model had a positive impact on the learning process by providing opportunities for students to actively participate during the lessons.

The results in Cycle I, which were observed during the learning process using the Teams Game Tournament (TGT) cooperative learning model, showed that several aspects of both teacher and student activities had not yet reached optimal levels. Observations of teacher and student activities using the TGT model revealed that, out of the 13 teacher activity indicators observed, several aspects of teacher performance had not yet met the success criteria. Consequently, the assessment of teacher activity during the learning process using the TGT cooperative learning model, assisted by the Canva application, did not yet meet the predetermined success indicators. This also affected student activities. Students still showed a lack of attention to the teacher's explanations, were less active during the learning process, demonstrated limited interaction and cooperation with peers, and were hesitant to express their opinions in group discussions. Additionally, students showed insufficient collaboration with group members, were less involved in solving problems, did not fully appreciate their peers' contributions, and had

difficulty summarizing the material learned. Thus, several aspects of student activity had not yet met the success indicators. As a result, the assessment of student activity during the learning process did not meet the established standards. Since both teacher and student activities had not reached the success indicators, this also impacted students' learning outcomes. Out of 21 students, only 9 students achieved the Minimum Mastery Criteria (KKM) with a percentage of 43%, while 12 students did not achieve the KKM, representing 57%. Therefore, it can be concluded that students' learning outcomes in Cycle I had not reached the classical mastery level, which requires at least 80% of students to achieve the learning completeness criteria of 75.

The results in Cycle II demonstrate an improvement in the observation results of teacher activities, student activities, and mathematics learning outcomes. The observations of teacher activities while managing the TGT learning model reached the 'Excellent' criteria. This improvement occurred because several aspects of teacher activity that received a 'Fair' rating in Cycle I were rectified in Cycle II, including: the teacher providing motivation to passive students so they felt responsible for their tasks and fostering a closer teacher-student relationship; the teacher building students' self-confidence and convincing them to respect one another; the teacher creating a more relaxed and supportive atmosphere so students felt comfortable expressing their opinions without fear; and the teacher re-explaining the Teams Games Tournament (TGT) cooperative learning model assisted by the Canva application. Consequently, every aspect of teacher and student activity improved from Cycle I to Cycle II and met the established success indicators, reaching the 'Excellent' (SB) or 'Good' (B) categories. As a result, students' mathematics learning outcomes also increased, reaching a classical mastery of 90%.

The implementation of the Teams Games Tournament (TGT) cooperative learning model assisted by the Canva application at SMA Negeri 1 Pinolosian shows highly positive results in terms of both the learning process and student output. The increase in classical mastery from 43% in Cycle I to 90% in Cycle II proves that the collaboration between an active learning model and digital visual media is capable of addressing the challenges of low mathematics learning outcomes. The success in improving learning outcomes in this study is in line with the findings of Ai Solihah (2016), who stated that the TGT model has a higher influence on mathematics learning outcomes compared to other cooperative models. This proves that the competitive element in TGT is able to spur student motivation to master the material more deeply.

The use of the Canva application as a supporting medium in this research reinforces the results of Diah Putri Sari et al. (2023), which showed that Canva media is effective in increasing student concentration and interest, thereby having a direct impact on the rise of mathematics learning outcomes. The findings regarding the improvement of teacher activity reaching the 'Excellent' criteria in Cycle II support the statement by Noviyanti Nabila and Jufri Ade (2022) that a teacher's precision in choosing varied models can elicit student initiative to ask questions and be actively involved in learning. The high level of student enthusiasm during the academic tournament phase in this study is consistent with the theory of Tanjung and Faiza (2019), which states that visual support from digital media such as Canva facilitates students' understanding of presentation materials and enhances the appeal of the learning process. Methodologically, the success of Cycle II after reflecting on the shortcomings of Cycle I reinforces the effectiveness of the Classroom Action Research (CAR) procedure as proposed by Kemmis and McTaggart, where continuous improvement of teacher actions and student responses is proven capable of solving practical learning problems in the classroom. Through these five comparisons, it can be concluded that the integration of TGT and Canva is a relevant and empirically tested strategy to improve the quality of mathematics learning, particularly in the

topic of sequences and series. Thus, the action hypothesis is confirmed: 'If the Teams Games Tournament (TGT) cooperative learning model assisted by Canva media is implemented, then student learning outcomes on the sequences and series material in class X-A of SMA Negeri 1 Pinolosian will increase."

CONCLUSION

Based on the results of the classroom action research that has been conducted, it can be concluded that the implementation of the **Teams Games Tournament (TGT)** cooperative learning model assisted by the **Canva** application effectively improves the mathematics learning outcomes of Class X-A students at SMA Negeri 1 Pinolosian on sequences and series material. The answer to the research problem is evident from the significant increase in students' classical learning mastery, which reached only 43% in Cycle I and then increased drastically to 90% in Cycle II. This result has surpassed the established success indicator of 80%. This improvement in learning outcomes was driven by a shift in the classroom atmosphere toward a more active and enjoyable environment, where the use of Canva media helped students understand abstract concepts by making them more visual and engaging, while the tournament element in TGT spurred motivation and teamwork among students.

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