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The Implementation of the Team Games Tournament Method to Improve Learning Outcomes and Motivation of Grade X Students

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ABSTRACT

This study aims to determine the effectiveness of implementing the Team Games Tournament (TGT) method in improving students' learning outcomes and motivation on the topic of sequences and series in class X-4 of SMA Negeri 2 Indramayu . The background of this study is based on the fact that students show low interest in mathematics and have difficulty understanding the abstract concepts of sequences and series. This research employed a Classroom Action Research (CAR) design conducted in two consecutive cycles. Each cycle consists of the stages of planning, implementation, observation, and reflection. These stages were used to evaluate the success of the action and to improve the learning process in the subsequent cycle. The research instruments included observation sheets for teacher and student activities, learning outcome tests to measure students' conceptual understanding, motivation questionnaires to examine the development of students' attitudes and learning interests, and documentation to support the field findings. The results showed a significant improvement in students' learning outcomes. The average score increased from 75.90 in Cycle I to 86.67 in Cycle II. The percentage of learning mastery also increased from 58.97% to 84.42%. Improved participation in group work and increased enthusiasm indicate that the implementation of the TGT method can help students learn more effectively.

Keywords: Team Games Tournament, Learning Motivation, Sequences and Series, Cooperative Learning, Learning Outcomes

1. Introduction

According to Article 3 of Law Number 20 of 2003, improving the quality of learning requires instructional strategies that can maximize students' potential. The Teams-Games-Tournament (TGT) method, a collaborative learning approach that integrates academic games, group work, and positive competition to enhance student participation and motivation, can meet this need in mathematics learning. Several recent studies (Aryani et al., 2024; Janah et al., 2025; and Ridwan et al., 2022) indicate that TGT not only improves students' learning outcomes but also enhances their activeness, responsibility, and social skills. Therefore, TGT plays an important role in helping students achieve academic goals by emphasizing a balanced development of cognitive aspects, cooperation, and character.

Student success is strongly influenced by learning motivation, which is a crucial component of academic achievement. TGT can foster students' intrinsic motivation through reward systems, team support, and healthy competition. The findings of Chuang et al. (2025) show that intrinsic goal orientation and task value significantly influence learning motivation. Meanwhile, a meta-analysis by Díaz and Estoque- Loñez (2024) reveals that gamification components are effective in strengthening social connectedness and increasing learners' willingness to engage in learning activities. In addition, formative assessment enhances social interaction and provides meaningful feedback in cooperative learning settings (Saekoko et al., 2025). Therefore, the development of motivation through TGT dynamics is essential for improving students' mathematical abilities.

Utilizing creative learning strategies and enhancing motivation significantly influence the achievement of optimal learning outcomes. A study conducted by Inayah et al. (2021) found that instructional methods such as the flipped classroom and problem-based learning can improve students' critical thinking skills and academic achievement. Afendi (2024) states that teachers' ability to develop effective instructional strategies greatly affects the quality of students' mathematics learning outcomes. In contrast, Goyibova et al. (2025) argue that effective learning interactions can increase students' interest in learning and enhance their academic performance. These findings suggest that the TGT model can be integrated with student-centered instructional approaches, particularly in mathematics learning, which requires deep conceptual understanding.

The importance of instructional strategies in improving learning outcomes is even more evident in the topic of sequences and series, which is often perceived as abstract by students. This topic requires strong reasoning, analytical skills, and conceptual understanding, making it challenging for many learners. Simanullang et al. (2025) show that realistic mathematics education and augmented reality (AR) help make mathematical concepts more visually and contextually understandable. Johansson and Sumpter (2025) found that algebraic thinking skills can be enhanced through mathematical discussions with peers. Furthermore, Mailizar (2025) reports that the use of e-learning in teaching sequences and series improves learning outcomes and students' acceptance of technology. These findings indicate that instruction on sequences and series should be designed to actively engage students, encourage collaboration, and promote deeper conceptual understanding.

Based on the identified problems, instructional methods that involve collaboration, healthy competition, constructive feedback, and meaningful learning activities are needed to support students' conceptual understanding. The academic tournament structure of the TGT model is considered appropriate, as it creates an active, enjoyable, and motivating learning environment that enhances students' understanding of sequences and series. Therefore, this study is entitled "The Implementation of a Student-Centered Teams Games Tournament (TGT) Model to Improve Learning Outcomes and Motivation in Sequences and Series for Grade X Students at SMAN Indramayu ." This research is expected to contribute to the development of innovative, effective mathematics learning approaches that align with students' characteristics and support the achievement of national education goals.

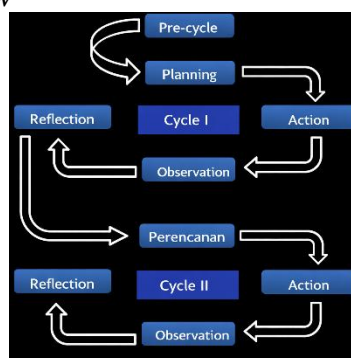
This study employed a Classroom Action Research (CAR) design conducted in two cycles. Each cycle consisted of four stages: planning, action, observation, and reflection, which were carried out systematically to improve the quality of mathematics learning and evaluate the effectiveness of the Team Games Tournament (TGT) method. The CAR design was selected because it allows continuous improvement of the teaching and learning process through reflective cycles. Although previous studies have demonstrated that the Teams Games Tournament (TGT) model improves students' learning outcomes and classroom engagement, most of these studies examined its implementation in general mathematics learning contexts. Limited studies have specifically investigated the application of TGT in teaching sequences and series, a topic that requires strong conceptual understanding due to its abstract nature. Therefore, this study contributes by examining the effectiveness of TGT in improving both learning outcomes and learning motivation specifically on sequences and series through a Classroom Action Research approach. The findings are expected to provide practical guidance for mathematics teachers in designing more engaging and effective instruction for this topic.

2. Method

This study employed Classroom Action Research (CAR), which is a form of applied research in which teachers implement systematic and iterative actions to improve the quality of

classroom instruction. In CAR, teachers act as both researchers and educators, actively participating in the design and implementation of instructional actions as well as in reflecting on the outcomes. The primary purpose of CAR is to bring about meaningful changes in classroom teaching practices. The research was conducted through several cycles, each consisting of the stages of planning, action implementation, observation, and reflection, which are interrelated and collectively contribute to the continuous improvement of the learning process.

Figure 1.
Classroom Action Research Flow



The Classroom Action Research (CAR) process used in this study is depicted in Figure 1. Two action cycles (Cycle I and Cycle II) came after the pre-cycle phase of the study. Planning, action, observation, and reflection were the four interrelated phases that made up each cycle. Because CAR is cyclical, researchers can use the results from the previous cycle to continuously assess and enhance the teaching and learning process. The researcher discovered the current issues with mathematics education during the pre-cycle, especially pupils' poor learning outcomes and lack of interest in the subject of sequences and series. To identify students' learning characteristics and choose the best instructional intervention, preliminary classroom observations and conversations with the subject teacher were undertaken. The researcher created lesson plans, instructional materials, learning media, observation sheets, motivation surveys, and learning outcome exams based on the Teams Games Tournament (TGT) learning model during the first phase of each cycle. During this phase, students were divided into learning groups and tournament activities that encouraged group learning were created.

The planned learning activities were carried out in the classroom during the second stage, action. In order to increase conceptual understanding and student involvement, students engaged in cooperative learning activities using the TGT model throughout this phase. These activities included group discussions, instructional games, and academic competitions. Using observation sheets, the researcher and collaborator methodically documented student learning activities, classroom interactions, engagement levels, and instructor performance during the third stage. At the conclusion of each cycle, post-tests and questionnaires were used to gather information on students' motivation and learning outcomes. The last phase was reflection,

during which all of the information gathered was examined to determine how successful the teaching exercises were. Each cycle's strengths and faults served as the foundation for the subsequent cycle's improved learning approach. For instance, the Cycle I reflection showed that time management in the classroom needed to be improved and that some students were still getting used to the TGT learning process. Better learning outcomes and increased student motivation resulted from the changes made in Cycle II, which included more engaging learning activities, better group management, and clearer instructional direction. Overall, the CAR cycle depicted in Figure 1 shows that the research was carried out through a process of ongoing planning, execution, assessment, and improvement, enabling instructional tactics to be methodically improved until the anticipated learning objectives were met.

Student X is subject study from State Senior High School 2 Indramayu For year academic year 2025–2026. This class chosen Because in accordance with the material being studied , namely sequences and series . In addition , researchers has learn environment school through PPL activities for understand characteristics student with Good before action carried out . All research processes implemented in a way directly on the environment learning class where students Study every day.

Action process done in two cycle . In every cycle , required planning activity learning use method team game tournament (TGT), implementation activity in accordance with design , supervision activity and interaction students , and reflection about How evaluate success action . The resulting reflection during every cycle used as base For develop improvement and refinement of learning strategies For cycle next , so that the research process become more .

A number of instrument used For produce data conclusions . Learning outcomes used For evaluate how much Good student control draft sequences and rows . Objective and essay questions are used For do it at the end every cycle . In addition , the questionnaire motivation , which consists of of 20 statements positive and negative with scale Likert , used For evaluate development enthusiasm and involvement student in learning TGT- based . Observation class done by the person watching class For take notes What is being done students , such as Work The same in group , participate in discussion , and diligent finish assignments . Activity photos , notes field and archives work student show dynamics learning during study .

For do data analysis , methods qualitative descriptive used for know how much effective use TGT method , percentage completeness Study students and improvement mark intercycle counted with N-Gain calculation . Questionnaire data motivation processed with consider score choice student For see development attitude Study they . Observation data analyzed as supporters For evaluate behavior Study direct students in class . At the end every cycle , all data is combined For give description complete about How results Study student increase , motivation them , and activities they after action applied . Analysis results used For determine success action and for make recommendation repair For cycle next .

3. Results and Discussion

Learning methods teams games tournament (TGT) is used in the material rows and rows For measure results learning and motivation student For Study mathematics . At every end cycle learning , students given questionnaire motivation and tests results

Study For measure achievement objective learning . Next , the results completeness Study student presented in the section following .

Table 1.

Effective and cognitive average

Mark Student Test

Information	Cycle I	Cycle II
Average mark results Study	75.90	86.67
Number of students complete	23	33
Presentation student complete Study mathematics	58.97%	84.62%
Average motivation Study student	3.6	3.7
Number student Which motivated in Study	13	18
Percentage motivation Study student	36%	46%

According to Table 1, the value student part big fulfil Criteria Achievement of Learning Objectives . Cycle I had 23 students who achieved completion , with results average learning score of 75.90. However , the completion Study classic Still low ; 33 students reach completion in Cycle II, and results average student learning increase to 86.67, indicating that improvement learning in Cycle II had an impact positive to understanding student about. Table 1 indicates that the implementation of the TGT method led to a substantial improvement in students' learning outcomes from Cycle I to Cycle II. The increase in the average score from 75.90 to 86.67 and the rise in classical learning mastery from 58.97% to 84.62% suggest that more students successfully achieved the learning objectives after improvements were made in the second cycle. Furthermore, the increase in students' motivation scores demonstrates that the collaborative and game-based learning activities encouraged greater participation, enthusiasm, and engagement during mathematics learning. These findings indicate that the refinement of the TGT implementation in Cycle II contributed not only to better academic achievement but also to a more positive learning atmosphere.

On cycle second , score motivation Study student increase to 3.7 with prediction by 46%. This shows that tournament game team (TGT) can help student more involved in lesson , good with participate in discussion group and with participate in tournament academic in class . Graphics following show percentage completeness results Study students and encouragement they For Study for each cycle .

Figure 2.

Percentage results Study Students and Motivation Study mathematics

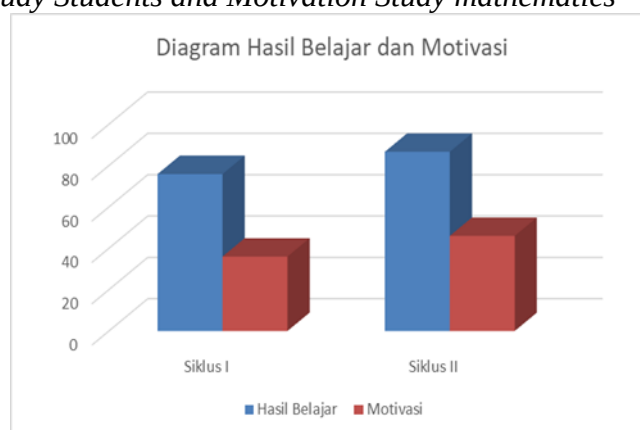


Figure 2 further illustrates the positive trend in both learning outcomes and students' learning motivation across the two research cycles. The graph shows a consistent increase in the average learning achievement, the percentage of students achieving learning mastery, and the level of learning motivation from Cycle I to Cycle II. This upward trend indicates that the instructional improvements implemented after the reflection stage of Cycle I successfully

addressed several challenges encountered during the initial implementation, including students' limited participation in group discussions, difficulties in adapting to the TGT learning procedures, and less effective classroom time management. As a result, students became more actively engaged in collaborative discussions, participated more confidently in academic tournaments, and demonstrated greater enthusiasm throughout the learning process. The competitive yet cooperative nature of the Team Games Tournament (TGT) method encouraged students to exchange ideas, solve mathematical problems together, and support one another in achieving group success. These learning experiences contributed to a deeper conceptual understanding of sequences and series, which was reflected in the improvement of students' academic performance. Furthermore, the increase in learning motivation suggests that the use of TGT created a more enjoyable, interactive, and student-centered classroom environment. Overall, the findings indicate that the systematic revisions made between cycles enhanced both the effectiveness of the instructional process and the quality of students' learning experiences, thereby supporting the successful achievement of the intended learning objectives.

3.1 Cycle I

a) Stages Planning

In cycle I, the researcher make tool learning that includes curriculum teaching modules independent with material rows and series . They also use method Teams Games Tournament (TGT). Instructional modules , post-test sheets , test sheets observation teacher and student activities , and game media the so -called learning flip bottle is a number of from device learning said . Planning This aim For increase results learning and motivation student through learning active and competitive .

b) Implementation Stage

Cycle I of learning starting on Friday , October 24, 2025, from 8:00 to 9:20 WIB. Learning started with activity introduction , which involves greetings , prayers , supervision presence , giving motivation and apperception For linking material studied moment This with material previously . In the core activity , the teacher discussed material line arithmetic with short and systematic . Next , students shared to in group homogeneous and given TGT games use technique bottle turn . Every group speak about method finish questions given . Then they speaking in front of class about what they discuss . Although activity learning very active , some student not enough involved . In the activity closing , teachers and students conclude lessons that have been studied . After that , the teacher distributed posttest sheet to student For measure results Study after implementation TGT method in cycle I. In addition , the teacher also distributed questionnaire motivation Study to student For know response and level motivation they to material lessons that have been done . Due to limitations time , the teacher does not own Enough time For give information about material meeting next .

c) Observation Stage

The following image show problems identified by the observer during implementation cycle I.

Figure 3.

Observation Results cycle 1

OBSERVASI		OBSERVASI	
PENERAPAN METODE TEAM GAME TOURNAMENT UNTUK MENINGKATKAN HASIL BELAJAR DAN MOTIVASI SISWA PADA MATERI BARISAN DAN DERET		PENERAPAN METODE TEAM GAME TOURNAMENT UNTUK MENINGKATKAN HASIL BELAJAR DAN MOTIVASI SISWA PADA MATERI BARISAN DAN DERET	
SIKLUS I		SIKLUS I	
No	Masalah	No	Masalah
1.	Pengertian barisan dan deret	1.	Pengertian barisan dan deret
2.	Pada barisan yang digunakan pada di peragaan, pemahaman konsep pada di kelas	2.	Pada barisan yang digunakan pada di peragaan, pemahaman konsep pada di kelas
3.	Pada barisan yang digunakan pada di kelas	3.	Pada barisan yang digunakan pada di kelas
4.	Motivasi siswa belajar pada saat kegiatan	4.	Motivasi siswa belajar pada saat kegiatan
5.	Uraian hasil belajar siswa	5.	Uraian hasil belajar siswa
6.	Pengalaman siswa	6.	Pengalaman siswa

Indramayu, 24 Oktober 2025
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Desmi Liana, S.Pd., M.Pd.

d) Reflection Stage

After the data from cycle I collected , reflection done For evaluate problems that arise during activity learning . Reflection results cycle I can used For increase performance cycle II or increase performance in a way overall .

Figure 4.

Reflection Results Cycle I

REFLEKSI		REFLEKSI	
PENERAPAN METODE TEAM GAMES TOURNAMENT UNTUK MENINGKATKAN HASIL BELAJAR DAN MOTIVASI SISWA PADA MATERI BARISAN DAN DERET KELAS X		PENERAPAN METODE TEAM GAMES TOURNAMENT UNTUK MENINGKATKAN HASIL BELAJAR DAN MOTIVASI SISWA PADA MATERI BARISAN DAN DERET KELAS X	
SIKLUS I		SIKLUS I	
No	MASALAH	No	MASALAH
1.	Pengertian barisan dan deret	1.	Pengertian barisan dan deret
2.	Pada barisan yang digunakan pada di peragaan, pemahaman konsep pada di kelas	2.	Pada barisan yang digunakan pada di peragaan, pemahaman konsep pada di kelas
3.	Pada barisan yang digunakan pada di kelas	3.	Pada barisan yang digunakan pada di kelas
4.	Motivasi siswa belajar pada saat kegiatan	4.	Motivasi siswa belajar pada saat kegiatan
5.	Uraian hasil belajar siswa	5.	Uraian hasil belajar siswa
6.	Pengalaman siswa	6.	Pengalaman siswa

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3.2 Cycle II

a) Planning stage

The results of cycle I form base For planning cycle II. In cycle this , researcher changing TGT learning strategies , making material more clear , and prepare the math Bingo media For increase skills students . In addition , posttest sheets , questionnaires motivation study , and sheets observation teacher and student activities returned to the place .

b) Implementation Stage

Cycle II will starting on Friday , October 30, 2025, from 2:00 PM to 3:00 PM WIB. Focus learning will is in the existing teaching module set previously . Activities learning started with greetings and questions lighter For connect material previously with material series arithmetic . In the core activity , the teacher conveys material series arithmetic through example customized contextual with group . Then , the method teams games tournament (TGT) is used For follow learning . During activities ongoing , students seen more active and enthusiastic in discussing , students looks more active and enthusiastic in talking , working same , and finish questions during activities . Focus on activities student make learning more lively and fun . In the activities closing , teachers and students Keep going learn material . After that , the teacher gives posttest sheet to student For measure results Study they after implementation actions in cycle II. Teachers also provide questionnaire motivation Study to

student For know how much enthusiastic they to material that has been they learn . Next , as learning In addition , the teacher discusses topic meeting next .

c) Observation Stage

The following image show problems identified by the observer during implementation cycle II.

Figure 5.

Observation Results Cycle II

OBSERVASI PENERAPAN METODE TEAM GAME TOURNAMENT UNTUK MENINGKATKAN HASIL BELAJAR DAN MOTIVASI SISWA PADA MATERI BARISAN DAN DERET SIKLUS II	
No.	Masalah
1.	Dituntut pembelajaran barisan contoh siswa terlihat bingung
2.	Pembahasan siswa kurang bisa memahami/mengingat
3.	Pembahasan siswa kurang bisa memahami/mengingat
4.	Pembahasan siswa kurang bisa memahami/mengingat
5.	Siswa kurang berminat

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OBSERVASI PENERAPAN METODE TEAM GAME TOURNAMENT UNTUK MENINGKATKAN HASIL BELAJAR DAN MOTIVASI SISWA PADA MATERI BARISAN DAN DERET SIKLUS II	
No.	Masalah
1.	Tidak bisa menjelaskan barisan dan deret
2.	Pembahasan siswa kurang bisa memahami/mengingat
3.	Pembahasan siswa kurang bisa memahami/mengingat
4.	Pembahasan siswa kurang bisa memahami/mengingat
5.	Pembahasan siswa kurang bisa memahami/mengingat

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d) Reflection Stage

The results of data collection on implementation cycle II is obtained problems that arise will evaluated with assistance of the person who sees . Based on reflection of the viewer , For start cycle next , some component must repaired . This includes :

Figure 6.

Reflection Results Cycle II

REFLEKSI PENERAPAN METODE TEAM GAMES TOURNAMENT UNTUK MENINGKATKAN HASIL BELAJAR DAN MOTIVASI SISWA PADA MATERI DERET ARITMETIKA KELAS X SIKLUS II	
No.	MASALAH
1.	Apa itu motivasi siswa
2.	Barisan dan deret
3.	Siswa yang tidak bisa memahami materi

Indramayu, 31 Oktober 2025
Dosen Pendamping Lapangan

Denni Imanandari, S.Pd., M.Pd.

REFLEKSI PENERAPAN METODE TEAM GAMES TOURNAMENT UNTUK MENINGKATKAN HASIL BELAJAR DAN MOTIVASI SISWA PADA MATERI DERET ARITMETIKA KELAS X SIKLUS II	
No.	MASALAH
1.	Tidak bisa menjelaskan barisan dan deret
2.	Pembahasan siswa kurang bisa memahami/mengingat
3.	Pembahasan siswa kurang bisa memahami/mengingat

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Student must own motivation For learn , to reach objective learning mathematics , especially in material sequences and series , which require understanding concepts and capabilities settlement problem . In research this method Tournament Team Match (TGT) is used For reach objective learning in accordance with criteria achievement objective learning (KKTP).

According to explanation above , the TGT method combines Work group , game educational and competitive Healthy For finish problem lower results learning and motivation . Research results show that method This make learning more interesting and interactive . The

result show improvement average value and percentage completeness Study students , as well as improvement motivation student For learning , which is shown with improvement activeness and enthusiasm student during the learning process .

Analysis repair results Study student strengthened with use N-Gain calculation for know how much effective action learning provided . Calculation results show N-Gain value of 0.4468, which is in range $0.30 \leq g < 0.70$, which indicates that improvement results Study student including in category moderate . This value show that although TGT technique not yet reach category high increase , That 's enough succeed in increase understanding student .

Study This use method study action Classroom (PTK). The process of planning , implementation , observation , and reflection is the phases that form PTK approach applied in a way cycle . The PTK method enables teachers to improve the learning process . every cycle with repair lesson based on problem real in class ..

Learning outcomes students in Cycle I are comparable with an average of 75.89 and a percentage completeness Study by 58.97%, or 23 students of 39 students , who achieved value 75 out of Criteria Achievement of Learning Objectives (KKTP). However , 13 students of 39 students show low desire For learning , or 36%. The results show that learning Cycle I is still Not yet fulfil all standard success classic . Some problems found including students who are still adapt with TGT method , management bad times , and activity students who do not evenly .

Reflection results Cycle I shows that Cycle II shows significant progress . Learning outcomes student increase to 86.67, and the percentage completeness Study increase to 84.62%, namely 33 students of the 39 students who were declared complete based on KKTP 75. Motivation Study students also increased to 46%, or 18 students of 39 students . Improvement This show that action learning Cycle II increases understanding student about material and involvement they in lesson .

Learning with TGT increasing results learning and interest students in cycles I and II. Although cycle I has shortcomings , researchers succeed show that improvements in cycle II allow learning walk with more good , improve results learn and improve interest student .

4. Conclusion

Research result action two cycle show that method Tournament Team Match (TGT) was successful increase results Study students and improve motivation they For material sequences and series in class X-4 of SMA Negeri 2 Indramayu . This is proven with improvement average value in the cycle second from 75.90 to 86.67 and an increase percentage completeness Study from 58.97% to 84.62%. Survey results motivation also shows that student more interested For do activity learn , participate in discussion , and follow tournament academic during cycle second .

In addition , the results N-Gain calculations show that its value is 0.4468, which is in student in category moderate ($0.30 \leq g < 0.70$), indicating level more learning good . Learning outcomes student has increased , according to data analysis after test Cycle I and Cycle II in general real and sufficient significant as consequence from implementation TGT method . With however , although There is a number of obstacles at the beginning implementation method , results reflection and improvement learning during every cycle make learning more directed , interactive , and fun , which improves desire student For Study .

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