

IMPROVING MATHEMATICS LEARNING OUTCOMES THROUGH THE MEDIA-ASSISTED TGT MODEL *FRACTION CARD*

MENINGKATKAN HASIL BELAJAR MATEMATIKA MELALUI MODEL TGT YANG BERBANTUAN MEDIA KARTU PECAHAN

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Abstrak

Matematika selalu menjadi momok menakutkan bagi siswa, sehingga pencapaian hasil belajar matematika selalu menjadi perhatian bagi guru dan bahkan lembaga pendidikan. Penelitian ini bertujuan untuk meningkatkan hasil belajar matematika siswa melalui penerapan model pembelajaran kooperatif Team Games Tournament (TGT) yang didukung oleh media kartu pecahan. Penelitian ini dilatarbelakangi oleh rendahnya hasil belajar matematika siswa kelas V SDN Balong, dengan nilai rata-rata 48,42 dari Kriteria Ketuntasan Minimal (KKM) 70. Penelitian ini merupakan Penelitian Tindakan Kelas (PTK) yang dilaksanakan dalam dua siklus, yang masing-masing mencakup perencanaan, pelaksanaan, observasi, dan refleksi. Subjek penelitian adalah 19 siswa kelas V SDN Balong pada Tahun Ajaran 2024/2025. Teknik pengumpulan data meliputi dokumentasi, wawancara, observasi, dan tes. Validitas data diuji dengan triangulasi sumber dan metode. Hasil penelitian menunjukkan bahwa penerapan model Team Games Tournament (TGT) yang dibantu dengan kartu pecahan dapat meningkatkan keterampilan guru, aktivitas siswa, dan hasil belajar matematika. Hal ini dibuktikan dengan hasil belajar yang tercapai pada siklus I, yang mencapai 68,42% ketuntasan kognitif, yang meningkat menjadi 78,94% pada siklus II. Aktivitas siswa dan keterampilan guru juga mengalami peningkatan yang signifikan. Dengan demikian, model pembelajaran kooperatif TGT efektif dalam meningkatkan kualitas pembelajaran matematika.

Abstract

Mathematics has always been a daunting subject for students, making the achievement of mathematics learning outcomes a constant concern for teachers and educational institutions. This study aims to improve students' mathematics learning outcomes through the implementation of the Team Games Tournament (TGT) cooperative learning model supported by fraction card media. This study is motivated by the low mathematics learning outcomes of fifth-grade students at SDN Balong, with an average score of 48.42, below the Minimum Completion Criteria (KKM) of 70. The research is a Classroom Action Research (CAR) conducted in two cycles, each including planning, implementation, observation, and reflection. The research subjects were 19 fifth-grade students at SDN Balong in the 2024/2025 academic year. Data collection techniques included documentation, interviews, observations, and tests. Data validity was tested through triangulation of sources and methods. The results of the study indicate that the implementation of the Team Games Tournament (TGT) model, supported by fraction cards, can improve teacher skills, student activities, and mathematics learning outcomes. This is evidenced by the learning outcomes achieved in Cycle I, which reached 68.42% cognitive learning completion, increasing to 78.94% in Cycle II. Student activity and teacher skills also showed significant improvements. Therefore, the TGT cooperative learning model is effective in enhancing the quality of mathematics learning.

Citation :

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INTRODUCTION

Basic education plays a central role in shaping the foundations of students' thinking and character. In the 21st century, rife with global challenges and technological developments, education is required to produce not only cognitively competent individuals but also individuals capable of collaboration, critical thinking, and adaptation to change. Alpian (2019) states that education plays a crucial role in eradicating ignorance, reducing poverty, and improving the standard of living and national dignity. The government continues to strive to improve the quality of education through various policies and budget allocations. Even more importantly, it continues to make breakthroughs and innovations in various ways to increase opportunities for students and the general public to receive education at all levels of education. Therefore, the learning process in elementary schools needs to be designed in an innovative and transformative manner, especially in subjects considered fundamental and problematic, such as mathematics. Regarding education in Indonesia, the current curriculum being implemented is the Merdeka curriculum. In 2013, the curriculum used an integrated thematic concept, which combines several subjects into one subject. Both curricula focus on students' involvement in learning activities. This is related to Wannesia's opinion in Daimah and Suparni (2023) that the Independent Learning Curriculum is a form of evaluation of the 2013 Curriculum. The concept of the Independent Learning Curriculum leads to project-based learning that aims to build soft skills such as leadership, integrity, communication skills, and good teamwork, as well as creating characters that are aligned with the profile of Pancasila students.

According to Fianingrum, Novaliyosi, and Nindiasari (2023), the independent learning curriculum gives schools the freedom to develop a mathematics curriculum that focuses more on real-life practices, helping students understand the benefits of mathematics in everyday life. Mathematics itself holds a strategic position in the national curriculum due to its contribution to the development of logical, analytical, and systematic thinking skills. This is in accordance with what Nurwulandari and Rafiq (2020) stated that mathematics is crucial for solving everyday problems. Mathematics learning can improve creative, analytical, logical, critical, systematic, and cooperative thinking skills. According to Daimah and Suparni (2023), mathematics learning is defined as an interactive process between teachers and students to develop learning models for thinking and logic. Teachers use approaches that enable students to learn mathematics more effectively and efficiently. Furthermore, Widayati (2022) also stated that mathematics is one of the most important fields in human life. Teaching mathematics in schools helps achieve national education goals and build an Indonesian nation that is innovative, creative, productive, and insightful. Students need mathematics to solve problems and meet real-world needs. However, in practice, mathematics learning at the elementary school level still often faces various obstacles, both from the conventional pedagogical approach and from the low participation of students. Based on an initial observation study in grade V of SDN Balong, it was found that the average score of students' mathematics learning outcomes was 48.42, far below the Minimum Completion Criteria (KKM) of 70. This condition indicates obstacles in the teaching and learning process that need to be immediately addressed through structured pedagogical interventions..

Wilujeng (2013) stated that implementing an appropriate learning model is a crucial component of successful learning. Collaborative learning is highly effective in strengthening relationships between students with diverse backgrounds. Social psychology learning theory supports this, stating that learning requires interaction rather than individual learning. As stated by Slavin (2010) in Fauziyah and Anugraheni (2020), one effective learning approach to improving learning outcomes is the cooperative learning model. *Team Games Tournament (TGT)* This model

emphasizes learning through teamwork in a healthy competitive format. The advantages of the cooperative learning model type *Team Game Tournament (TGT)* including the following: (1) At the class presentation stage, the model *Team Games Tournament* able to train students to be brave enough to ask and answer questions from the teacher; (2) Group learning stage, model *Team Games Tournament* train the courage to share opinions and create more relaxed learning; (3) At the stage *game* and tournaments, models *Team Games Tournament* train students to obey the rules and increase their enthusiasm and passion during learning. (4) At the group appreciation stage, the use of the group appreciation model *Team Games Tournament* can train students to appreciate the efforts of others and accept decisions. Furthermore, this model integrates the learning process with fun academic tournament activities, thus encouraging active and collaborative engagement in heterogeneous groups. As students become accustomed to expressing ideas in groups, they will gradually gain the courage to share their ideas in class, as stated by Rofiq (2019).

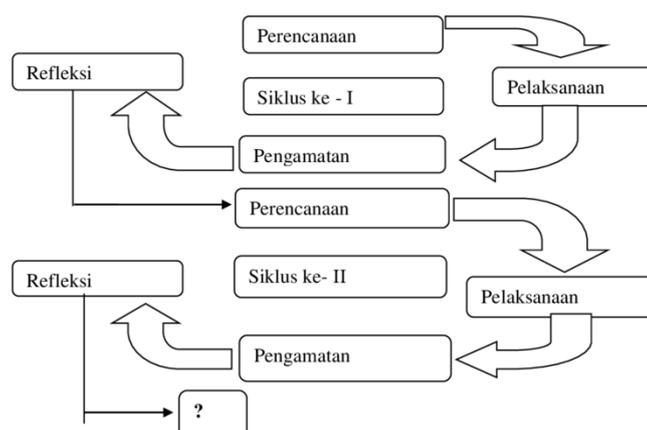
Utilization of concrete learning media such as *fraction card* It has also been empirically proven to bridge the gap between abstract mathematical concepts and students' concrete understanding. According to Wiratmojo and Sasonohardjo in Junaidi (2019) During the teaching orientation stage, the use of learning media greatly supports the learning process and the distribution of information and lesson materials. In line with this, according to Zaini, H., & Dewi (2017) With learning media, teachers can avoid boredom and saturation of students in the learning process by providing them with tools. Fraction cards not only clarify the visual representation of the material, but are also able to increase interest and motivation in learning because they are manipulative and interactive. Kartika (2012) in Agnes (2019) states that the use of fraction cards is in accordance with the cognitive development stage of elementary school students who are at the concrete operational stage (Piaget), where understanding concepts is more effective through direct experience. Learning media will have a significant influence on learning. This is because the level of student interaction with the teaching materials is a tangible manifestation of all teaching and learning activities (Pratiwi and Latifah, 2019) in Mariyani, Rofiq, and Tiantoko (2023). According to Rohaeni (2023), there are rules for using fraction cards. They are used to advance students' understanding of basic fraction concepts, improve their ability to compare fractions, and enhance their memory. The advantages of fraction cards include: (*Fraction Card*) are as follows: (1) Makes learning more fun; (2) Involves students in thinking, predicting, and calculating; and (3) Improves students' understanding and ability to compare fractions. However, apart from its advantages, there are also disadvantages to fraction card media (*Fraction Card*) includes: (1) Requires more time, (2) Requires certain arrangements and costs, and (3) Requires discussion after the game to ensure students' understanding. Use of media *fraction card* combined with the cooperative learning model type *Team Games Tournament (TGT)* is a novelty in this research. *Fraction Card* designed for use in tournament-based educational games and to help students understand the concept of fractions. This is what makes it different *fraction card* from conventional media, which are usually only used as static props.

Based on the problems that have been described, one alternative solution to the existing problem is to use a cooperative learning model. *Team Game Tournament (TGT)* combined with media *fraction card* to improve the quality of learning and mathematics learning outcomes. This learning model is not only able to improve cognitive learning outcomes, but also encourages increased social skills, active participation, and the development of teacher skills in managing a more varied and structured learning process. The objectives of this research are as follows: (1) To describe the improvement in students' mathematics learning outcomes after the implementation of the cooperative learning model type *Team Game Tournament (TGT)* media-assisted *fraction card* ; (2)

Analyze the increase in student learning activities during the learning process; (3) Assess the increase in teacher skills in managing mathematics learning through learning models *Team Game Tournament* (TGT) and *fraction card*. Thus, this research is expected to provide theoretical and practical contributions in developing more effective and enjoyable learning strategies at the elementary school level, especially in 21st-century competency-based mathematics teaching.

METHOD

This research uses a Classroom Action Research approach, according to Azizah (2021) Classroom action research comes from the English term *Classroom Action Research*, PTK, known by its abbreviation, is research conducted in class by teachers/researchers to determine the effects of actions applied to a research subject in that class. PTK was chosen because of its characteristics, which aim to improve learning practices directly in the classroom through a cycle of repeated actions. In this study, the researchers used the Kemmis and McTaggart model in Susilo, H., Chotimah, H., & Sari (2022), which consists of four main stages in each cycle, namely: (1) Planning (*Planning*), (2) Execution of Actions (*Action*), (3) Observation (*Observation*), (4) Reflection (*Reflection*), in picture form is as follows:



Picture 1. Research Design model Kemmis & Mc Taggart

This research was conducted in class V of Balong Elementary School, Jepon District, Blora Regency in the even semester of the 2024/2025 academic year. The research subjects were 19 class V students, consisting of male and female students with diverse academic ability backgrounds. The research was conducted in collaboration between researchers and class teachers as the main partners in implementing the action. Data sources in this study are classified into two main categories: (1) Primary data, according to Rukhmana (2021) Primary data is an important source of information collected directly by researchers during study activities. Primary data in this study include student learning test results, observations of learning activities, and interviews with teachers and students. (2) Secondary data, secondary data is a source of study data obtained indirectly through intermediary media, namely supporting data obtained from school documents, such as daily test scores, teaching modules, student attendance lists, and visual documentation of learning activities.

Data collection techniques in this study were carried out using several complementary techniques, namely:

1. Observation: According to Herdayati, S. P., Pd, S., & Syahrial (2019), observation is the first method used in conducting scientific research. Observation is a measuring tool used to analyze insights related to an individual's behavior.

2. Interview : According to Arikunto in Adhimah (2020), interviews are conducted by asking structured questions, which are then further explored through further research. The interviews in this study were conducted before any interventions were taken.
Documentation:
3. Documentation is accurate evidence created by researchers when conducting observations on research subjects. According to Sugiyono in Susanti, Halin, and Kurniawan (2018), documentation is the minutes of events that have occurred. Documentation generally includes images, videos, or individual works.
4. Test : A test is a tool used to measure the performance of something and collect data. According to Arikunto in Mafruhah (2019), a test is a question or exercise used to measure the level of skill, intelligence, ability, and talent possessed by a group or individual.

Researchers used data analysis with a mixed approach (*mixed methods*), namely:

1. Qualitative Analysis, according to Huberman and Miles in Kurniasari, Pribowo, and Putra (2020) states that the activity in data analysis is data reduction (*data reduction*), data presentation (*data display*), drawing conclusions (*conclusion drawing/verification*).
2. Quantitative Analysis, the quantitative data of this study is in the form of the results of students' cognitive tests which are analyzed using descriptive statistics, by calculating:
 - a. Average Value :

$$\text{Value} = \frac{\text{Total Student Scores}}{\text{Number of Students}}$$

- b. Percentage of learning completion,

$$\text{Percentage of classical learning completion} = \frac{\sum \text{Students who complete}}{\sum \text{Students who achieve maximum results}} \times 100\%$$

- c. Categorization of teacher skill scores and student activities

Table 1. Teacher Skills Criteria

Score	Criteria
25-32	Very Good (A)
17-24	Good (B)
9-16	Enough (C)
0-8	Less (D)

Table 2. Student Activity Criteria

Score	Criteria
17-24	Very Good (A)
13-16	Good (B)
7-12	Enough (C)
0-6	Less (D)

The instruments used in this study included: student activity observation sheets, teacher skills observation sheets, interview guidelines, and learning outcome evaluation documents. The indicators achieved in the study were classical completion reaching 75%. Success was marked by students achieving the Minimum Completion Minimum (KKM) and classical completion of at least 75%. If not achieved in cycle I, continued to cycle II. The collected data consisted of learning outcome scores and observation results, then analyzed to assess the effectiveness of the action.

Table 3. Research achievement indicators

NO	Measured Aspects	Target	Achievements
1.	Student Activities	B	(13 - 16)
2.	Teacher Skills	B	(17 - 24)
3.	Learning outcomes	75%	Complete KKM

RESULT AND DISCUSSION

Result

This research was conducted in two cycles, but before each cycle, there was a pre-cycle activity or initial observation to obtain initial data as a benchmark before the cycle activities were carried out. In each cycle, there are stages that are implemented including planning, implementation, observation and reflection. Meanwhile, at the end of each cycle, an evaluation test is held to determine the percentage of completeness that has been achieved. It is hoped that in each process, students experience improvement so that they are able to improve their learning outcomes from each process. This research has experienced an increase from the pre-cycle to cycle 1 as well as in cycle 1 to cycle 2 also experienced an increase. It can be seen in the table below which can clarify the increase in student learning outcomes in the pre-cycle to cycle 1 and to cycle 2. Learning is carried out through the cooperative learning model type *Team Games Tournament* (TGT) media mix *fraction card* able to improve the learning outcomes of class V SDN Balong participants. This improvement can be seen from the comparative analysis table of pre-action and post-action cycle scores. I and cycles II in the assessment using the cooperative learning model type *Team Games Tournament* media-assisted *fraction card*.

a. Pre-action Data

Classroom action research at SDN Balong. The total number of teachers and staff at SDN Balong is 10, including the principal, teachers, and school guards. School facilities at SDN Balong include a teacher's room, classrooms, a prayer room, a health unit (UKS), a library, a canteen, bathrooms, a warehouse, and a parking lot. The subjects of the classroom action research were 19 fifth-grade students, comprising 13 boys and 6 girls.

The following is the initial data for the final semester exam scores for the mathematics subject for class V at SDN Balong:

Table 4. Interval of final semester test scores for mathematics subjects for pre-action students

No	Value Range	Frequency	Percentage (%)	Information
1	11-25	3	15,79%	Not Completed
2	26-40	7	36,84%	Not Completed
3	41-55	2	10,53%	Not Completed
4	56-69	1	5,26%	Not Completed
5	70-85	6	31,57%	Completed
6	86-100	-	-	
	Amount	19		
	< KKM (70)	13	68,42%	
	> KKM (70)	6	31,57%	
	The Highest Score	83		
	Lowest Value	21		

This is evident in the average class score of only 48.42 out of 19 students, with 6 students able to complete the learning completion (KKM 70) with a percentage of 31.57%. However, 13 students still did not achieve the learning completion score, with a percentage of 68.42%. Based

on this, the researcher tried to use the cooperative learning model type *Team Games Tournament* with the help of media *fraction card* because this model and media can increase students' learning activities.

b. Results of Cycle 1 Actions

1. Planning

- 1) Preparing teaching modules with a cooperative model type *Team Games Tournament* with the media *fraction card*. In cycle I, researchers prepared teaching modules with material ranging from introducing fractions to comparing fractions.
- 2) Preparing learning media, researchers prepare media *fraction card* containing images of fractions and their values to introduce fractions to students. Researchers also prepared quizzes to be used in games during the learning process.
- 3) Preparing research instruments (observation sheets for teacher skills, student activities, affective learning outcomes, psychomotor learning outcomes and field minutes)

2. Implementation

Researchers use models *Team Games Tournament* with media *Fraction card* and supporting facilities during the learning process, aligned with several steps in the teaching module. The researcher acted as an observer. During the learning process, the researcher also assessed student activities and teacher skills. The results of cycle 1 are as follows.

Table 5. Learning Outcomes of Students in the Cognitive Domain in Cycle

No	Value Range	Frequency	Percentage (%)	Information
1	11-25	-		
2	26-40	-	-	
3	41-55	3	15,78%	Not Completed
4	56-69	3	15,78%	Not Completed
5	70-85	10	52,63%	Completed
6	86-100	3	15,78%	Completed
	Amount	19		
	< KKM (70)	6	31,56%	
	> KKM (70)	13	68,42%	
	The Highest Score	100		
	Lowest Value	50		
	Average	72,5		

Table 5. Shows that the results of learning Mathematics through the cooperative learning model type *team games tournament* with media *fraction card* In cycle I, the average score of fifth grade students at SDN Balong was 72.36 with a classical learning completion of 68.42%, namely 13 students completed their learning by obtaining a score of ≥ 70 . In cycle I, the highest score was 100 and the lowest was 50.

3. Observation

Observations were conducted by the researcher as an observer, assisted by fellow researchers, and for documentation purposes. These observations included observations of teacher skills and student activities during the learning process. Observations of student activities were conducted during the learning process, with the observer making observations based on a prepared observation sheet. The results of the presentation or observations were then used as the basis for

reflection in cycle 1. Below are the results of observations of teacher skills and student activities in cycle 1:

Table 6. Data from Observation Results of Teacher Skills in Cycle I

No	Teacher Name	Indicator								Amount	Category
		1	2	3	4	5	6	7	8		
1.	Eka Wahyu Ariyanti	4	4	2,5	4	2,5	3,5	2,5	3	26	A

Table 7. Data from Observation Results of Student Activities in Cycle I

Indicator						Amount	Category
1	2	3	4	5	6	Score	
3,94	2,81	2,86	3,15	2,92	3,34	19,02	A

In the presentation of tables 6 and 7, it appears that the results of observations of teacher skills and the activities of class V students at SDN Balong during the Mathematics learning process using the model *Team Games Tournament* with media *fraction card* in cycle I obtained scores of 26 and 19.02 and entered the very good category.

4. Reflection

Based on the findings from cycle I, information was obtained in the form of field notes, assessments of teacher skills, observations of student activities, and student learning outcomes from written tests at the end of Mathematics learning using the model *Team Games Tournament* with media *Fraction card*, including:

1) Teacher Skills

- a) The teacher has not implemented the model *Team Games Tournament* in an orderly manner, there were several students who were noisy and disturbed their friends.
- b) Teachers have not yet guided students who encounter difficulties.
- c) The teacher has not yet asked questions to the students
- d) The teacher has not motivated students in discussion activities.

2) Student Activities

- a) Students have not written down the important things contained in the teacher's explanation.
- b) Students are still not brave enough to ask teachers about things they don't understand.
- c) Students were still noisy when the discussion was taking place
- d) There are several students who are less able to appear in front of the class

3) Learning outcomes

The cognitive domain learning outcomes of students in cycle I obtained from test scores were 72.36 with classical learning completion of 68.42%, namely 13 students completed learning with a score of ≥ 70 and there were still 6 students or 31.58% who had not completed it. Teachers are required to provide guidance to students, especially students who received scores below the KKM.

c. Results of Cycle 2 Actions

1. Planning

- 1) Preparing teaching modules with a cooperative model type *Team Games Tournament* with the media *fraction card*. In cycle I, researchers prepared teaching modules with material ranging from introducing fractions to comparing fractions.
- 2) Preparing learning media, researchers prepare media *fraction card* containing images of fractions and their values to introduce fractions to students. Researchers also prepared quizzes to be used in games during the learning process.
- 3) Preparing research instruments (observation sheets for teacher skills, student activities, affective learning outcomes, psychomotor learning outcomes and field minutes)

2. Implementation

Researchers use models *Team Games Tournament* with media *Fraction card* and supporting facilities during the learning process, aligned with several steps in the teaching module. The researcher acted as an observer. During the learning process, the researcher also assessed student activities and teacher skills. The results of cycle 2 learning are as follows:

Table 8. Learning Outcomes of Students in the Cognitive Domain in Cycle 2

No	Value Range	Frequency	Percentage (%)	Information
1	11-25	-		
2	26-40	-		
3	41-55	-		
4	56-69	4	21,05%	Not Completed
5	70-85	7	36,85%	Completed
6	86-100	8	42,10%	Completed
	Amount	19		
	< KKM (70)	4	21,05%	
	> KKM (70)	15	78,95%	
	Tha Highest Scores	100		
	Lowes Value	60		
	Average	81,84		

Table 8. Shows that the results of learning Mathematics through the cooperative learning model type *Team Games Tournament* with media *fraction card* In cycle 2, class V students at SDN Balong obtained an average score of 81.84 with classical learning completion of 78.95%, namely 15 students completed learning with a score of ≥ 70 . In cycle 2, the highest score was 100 and the lowest was 60.

3. Observation

The observations were carried out by the researcher as an observer, assisted by fellow researchers, and for documentation purposes. The observations included teacher skills and student activities during the learning process. The observers conducted observations based on a prepared observation sheet. The results of the presentation or observations were then used as the basis for reflection in cycle 1. Below are the results of observations of teacher skills and student activities in cycle 1:

Table 9. Data from Observation Results of Teacher Skills in Cycle II

No	Teacher Name	Indicator								Amount Score	Category
		1	2	3	4	5	6	7	8		
1.	Eka Wahyu Ariyanti	4	4	3,5	4	3	3,5	3	4	29	A

Table 10. Data from Observation Results of Student Activities in Cycle II

Indicator						Amount Score	Category
1	2	3	4	5	6		
4	3,07	3,34	3,68	3,52	4	21,61	A

In the presentation of tables 9 and 10, it can be seen that the results of observations of teacher skills and the activities of class V students at SDN Balong during the Mathematics learning process using the model *Team Games Tournament* with media *fraction card* in cycle I obtained scores of 29 and 21.61 and entered the very good category.

4. Reflection

This reflection stage aims to analyze the data. Based on the description and observation results in cycle 2, the reflections obtained are as follows:

1) Teacher Skills

Observations of teacher skills in Cycle II revealed a score of 29, categorized as very good. These results indicate that teacher skills in Cycle II met the success indicators established by the researchers. This indicates that overall teacher skills in Cycle II showed progress.

2) Student Activities

Based on observations in cycle 2, student activity scored 21.61, falling into the very good category. This result indicates that student activity in cycle 2 met the success indicators set by the researchers, which were in the very good category. Student activity in cycle 2 also showed improvement.

3) Learning Outcomes

The results of student learning in cycle 2 in the cognitive domain indicate that there has been progress compared to the results in the previous cycle. The overall learning completion in cycle 2 reached 78.95%, where 15 students have completed learning with a score of ≥ 70 . The overall learning completion level in cycle II has reached the success indicator set by the researcher, which is $\geq 75\%$.

From the results of the reflection on cycle II, the conclusion was obtained that mathematics learning using the model *Team Games Tournament* media-assisted *Fraction Card* has achieved the success indicators. To ensure continuous improvement in learning, teachers need to strive to continually increase interaction with students, provide motivation, and create a peaceful classroom atmosphere, so that the teaching and learning process generally proceeds appropriately.

d. Comparison of Action Results

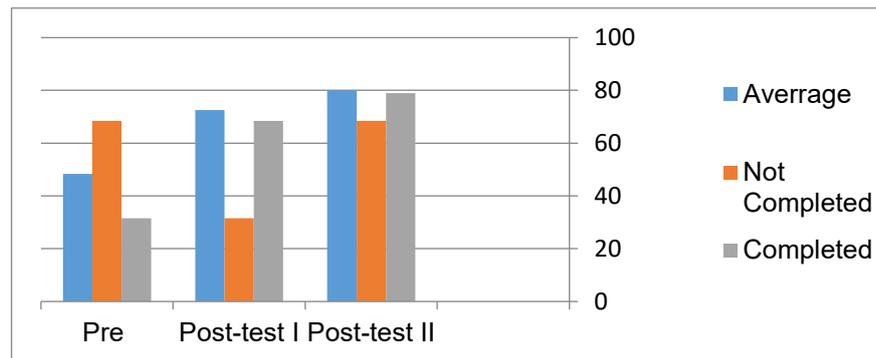
1. Comparison of Learning Outcomes Pre-Action, Cycle 1 and Cycle 2

Learning is carried out through learning models *Team Games Tournament* media mix *fraction card* able to improve the learning outcomes of class V SDN Balong participants. This improvement can be seen from the comparative analysis table of pre-action and post-action cycle scores. I and cycles II on assessment using learning models *Team Games Tournament* media-assisted *fraction card*.

Table 11. Improvement in Student Learning Outcomes in Pre-Cycle, Cycle I and Cycle II

No	Information	Pre Cycle	Cycle I	Cycle II
1.	The Highest Score	83	100	100
2.	Lowest Value	21	50	60
3.	Completed	6/31,57%	13/68,42%	15/78,94%
4.	Not Completed	13/68,42%	6/31,57%	4/21,05%
5.	Average	48,42	72,36	81,84

From the table above, you can see the increase from pre-cycle to cycle 2. To clarify, you can also see the diagram below.



Picture 2. Graph of Improvement in Learning Outcomes Pre-Cycle, Cycle 1 and Cycle 2

Based on the data, it appears that the average pre-cycle class score was 48.42 with a completion percentage of only 31.57%, which means that out of 19 students who took the test, only 6 students achieved learning completion while 13 other students still had not achieved learning completion. In cycle I, the average class score increased to 72.36 with the completion percentage increasing to 68.42% or 13 students received a complete score while 6 other students had not received a complete score. And in cycle II, the average student score increased much more than the percentage of cycle I, namely with a learning completion percentage of 78.95% and a percentage of incompleteness of only 21.05%, which means that out of all students who took the test, only 4 students had not achieved learning completion. The average class percentage also increased to 81.84, this percentage has reached the target of the research achievement indicator.

Comparison of Observation Results of Teacher and Student Skills in Cycle 1 and Cycle 2

Analysis of the results of observations of the application of the steps of the learning model *Team Games Tournament* media-assisted *fraction card* regarding teacher skills and student activities in cycle 1 and cycle 2 are:

Table 12. Comparison of Observation Results of Teacher Skills in Cycle 1 and Cycle 2

Cycle	Score	Category
I	26	A (Very Good)
II	29	A (Very Good)

Based on table 12, it can be seen that teacher skills in cycle I obtained a score of 26 in the very good category, and in cycle II there was another increase with a score of 29 in the very good category.

Table 13. Comparison of Observation Results of Student Activities in Cycles I and II

Cycle	Score	Category
I	19,02	A (Very Good)
II	21,61	A (Very Good)

in table 13, it can be seen that student activity in cycle I obtained a score of 19.02 in the very good category and in cycle II there was another increase with a score of 21.61 in the very good category.

Discussion

Implementation of the cooperative learning model type *Team Games Tournament (TGT)* media-assisted *fraction card* able to improve student learning outcomes. In cycle 1, the results of observations conducted by observers on teacher skills received a score of 26 and obtained a very good category. Meanwhile, the results of observations of student activities in cycle 1 received a score of 19.02 with a very good category. Meanwhile, the cognitive learning outcomes of the total number of students, namely 19, only 13 students received a pass mark while 6 others were not yet completed or in percentages of 68.42% of students completed and 31.57% of students were not yet completed. The highest score in cycle 1 was 100 and the lowest score was 50 with an average score of 72.36. This percentage has not reached the target of the research achievement indicator that the researcher wants to achieve, which is around 75% completion. Therefore, the teacher will provide maximum explanations of the material again so that students are able to better understand the material and can improve the mathematics scores for those who have not received a pass mark.

The results of observations on teacher skills and student activities as well as student learning outcomes in cycle 2, namely, the results of observations made by observers on teacher skills increased from the previous cycle with a score of 26 increasing to 29 and entering the very good category, from this explanation it can be said that the cooperative learning model type *Team Games Tournament (TGT)* with media *Fraction card* able to improve teacher skills. This is in accordance with Rani (2022) research, the results of which show that *Team Games Tournament (TGT)* It can improve teachers' skills in learning. This is also supported by research by Nisai, Fathurohman, and Purbasari (2020), whose results also showed an increase in teachers' skills with the learning model *Team Games Tournament (TGT)*. This increase can occur because of the learning model *Team Games Tournament (TGT)* can stimulate teacher motivation. Meanwhile, the results of observations of

student activities also showed an increase from a score of 19.02 to a score of 21.61, which is categorized as very good. From this explanation, it means that the learning model is effective. *Team Games Tournament (TGT)* through media *Fraction card* able to increase student activity during learning. This is in line with research by Putri and Wati (2020), whose results showed that the learning model *Team Games Tournament (TGT)* successfully applied to mathematics learning, thereby improving student activity and learning outcomes. This is also supported by research by Rosyadi and Fauzi (2024), whose research results also prove that by implementing media *Fraction card* able to increase student activity during learning. The cognitive learning outcomes of students in cycle II, from the total number of students, namely 19 who received a passing grade, increased to 15 students, while 4 others did not receive a passing grade, or in percentages of 78.94% of students who completed the course and 21.05% of students who did not complete the course. The highest score in cycle II was 100 and the lowest score was 60, and the average score also increased to 81.84. Therefore, it can be concluded that the percentage has reached and exceeded the target of the research achievement indicator, namely with a completion percentage of 75%. This is in line with previous research conducted by Rohaeni (2023) which proves that with the media of fractional cards (*fraction card*) Student learning outcomes can improve. This is in line with research conducted by Jacob et al. (2020), which states that learning activities carried out in two cycles will experience improvements.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research conducted in class V of SDN Balong in the second semester of the 2024/2025 academic year, it can be concluded that the application of the cooperative learning model type *Teams Games Tournament (TGT)* media-assisted *Fraction Card* can improve student learning outcomes, student activities and teacher skills. This is evidenced by the increase in each cycle. This can be seen in the increase in teacher skills in each cycle, the results of observations in cycle I, the teacher got a score of 26 with category A, in cycle II there was another increase with a score of 29 with and included in category A. Student activity also increased, this is shown by the results of observations of student activities in cycle I getting a score of 19.02 with category A, in cycle 2 there was another increase with a score of 21.61 category A. Student learning outcomes in mathematics learning also increased, this is evidenced by an increase in learning outcomes in cognitive tests, attitude assessments and skills in each cycle. Based on the results of cognitive tests conducted in cycle I, the percentage of completion was 68.64% while in cycle 2 the percentage of classical completion was 78.95%.

Based on the conclusions outlined, suggestions for teachers and prospective teachers are to become accustomed to implementing a learning model in the classroom so that students receive various variations in the learning process so that they do not get bored in participating in learning, and their learning outcomes can also improve. Principals should provide recommendations for teachers to be able to use several learning models, especially *Teams games Tournament (TGT)*, It is hoped that students will be more active and able to practice the knowledge they have learned in their daily lives. It is hoped that authors will be able to develop broader research.

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