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Implementing Teams Games Tournament Cooperative Learning Model to Improve Ecosystem Learning Outcomes for 5th Grade Students:

Class Action Research in Ecosystem Learning at Metta Maitreya Primary School, 2023

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Abstract

Teacher posed an important role in the classroom as a crucial factor in increasing students' curiosity and attention in learning. However, there are indications that so far, the teacher has been using the same learning model for all lessons, delivering lessons too fast and not systematically, and the lack of guidance in learning. This causes students to have less opportunity to develop their potential. Another impact is that students become passive in learning science so that student learning outcomes and activities decrease. Therefore, this study seeks to improve student learning outcomes through the application of the Times Games Tournament (TGT) cooperative learning model in Ecosystem learning, utilizing a class action research approach. The research was carried out in two improvement cycles using natural science ecosystem material. The results showed that student learning outcomes increased; in the pre-cycle, the students' scores were ≥ 70, 43%, in cycle 1, students' mastery scores were ≥ 70, 54%. Meanwhile, in the second cycle, students' mastery scores ≥ 70 increased to 89%. It can be concluded that the use of the Times Games Tournament (TGT) method, combined with class action research, can significantly improve learning outcomes for the 5th-grade class A, Metta Maitreya Primary School, Pekanbaru, Marpoyan Damai District, Pekanbaru City.

Key Words : Learning outcomes, Natural Science, Times Games Tournament, cooperative learning

A. Introduction

Education is an important tool for the growth and survival of every person, and even a nation. Education is a concrete activity that is carried out deliberately so that students have a good

intelligence, character, and personality. Education at the school environment is generally a more formal type of education, and teachers as school educators are formally prepared for it (Angilia, 2019; Nasution et al., 2022). When delivering lessons in class, the teacher does not only convey material through methods or strategies, but the teacher must also master several learning models (Kurnia, 2021; Aldila & Susanti, 2022, Nopita et al, 2023). The learning model is part of a broader learning structure. This includes learning methods, strategies, and techniques (Hayati, 2017).

A substantial body of literature highlights several common obstacles encountered in educational settings. One prominent challenge is the issue of student motivation and engagement, with studies indicating that low motivation can hinder learning outcomes and student progress (Ryan & Deci, 2000; Fredricks et al., 2011). Moreover, classroom disruptions and behavior management have been recognized as recurring challenges for educators, affecting the learning environment and overall instructional effectiveness (Emmer & Sabornie, 2015; Walker et al., 2017). Additionally, the diverse learning needs and abilities of students present a complex challenge, necessitating differentiated instruction and personalized learning approaches to accommodate individual variations (Tomlinson & Allan, 2000; Kavale & Forness, 2000). Another important area of concern is the impact of technology on education, with research indicating both the potential benefits and challenges of integrating digital tools into the learning process (Hew & Brush, 2007; Ertmer, 2010). By acknowledging these challenges, researchers and educators can gain valuable insights for developing effective strategies and interventions to improve the overall learning experience and outcomes for students.

In reality, however, 5th grade students at class A who are learning at SD Metta Maitreya Pekanbaru, Marpoyan Damai District, Pekanbaru City, tend to be passive in the science learning process, due to the lack of using learning models that are relevant to learning materials. Based on problem identification, researchers were able to find several factors causing the emergence of several problems in learning science in the said class of SD Metta Maitreya Pekanbaru. This problem occurs because the presentation of the material is not systematic and too fast, there is no direction in the learning process, there is a lack of opportunities for students to increase their potential, which results in considerably bad learning outcomes.

If learning methods are not improved for primary students, it can have various negative consequences on their educational outcomes and overall development. Outdated or ineffective learning methods may lead to reduced engagement and motivation among students, resulting in lower academic performance (Dolmans et al., 2016). Uninspiring teaching methods can lead to

disinterest in learning, leading to a decline in active participation and engagement in the classroom (Vedder-Weiss & Fortus, 2011). Inequitable access to quality learning methods can exacerbate achievement gaps between students from different socio-economic backgrounds or diverse learning needs (Reardon, 2011). Additionally, insufficient focus on critical thinking, problem-solving, and creativity in the learning process can hinder the development of essential skills required for future success (P21, 2007). Inadequate or repetitive teaching approaches can foster negative attitudes towards education and a reluctance to explore new concepts (Ferreira, 2016). Disengaged students may be more likely to drop out of school, leading to decreased educational attainment and limited opportunities in the future (Lauermann & Karabenick, 2011). Furthermore, frustration with learning can have a detrimental effect on students' self-esteem and emotional well-being (Boekaerts, 1999).

From a number of learning methods, researchers believes the Times Games Tourament (TGT) cooperative learning model is suitable for overcoming these learning problems. The Teams Games Tournament (TGT) collaborative learning model is a form of learning in which students participate in learning and invite students to become tutors in games, regardless of status. The Team Games Tournament (TGT) learning model can build trust between members, cooperation and competition among group members. The steps taken in the Teams Games Tournament (TGT) learning model are (1) delivering material, (2) dividing into several groups, (3) games, (4) inter-group matches, (5) giving prizes. The Teams Games Tournament (TGT) model can increase and develop student potential to improve student learning outcomes, especially in the Science class (Alyannida & Syofyan, 2022).

Previous research has explored the implementation of the Teams Games Tournament (TGT) model in various educational settings. Studies have shown that the TGT cooperative learning approach can positively impact student engagement, collaboration, and learning outcomes (Slavin, 1995; Johnson & Johnson, 2009). By dividing students into small teams and incorporating competitive elements, the TGT model fosters a supportive and interactive learning environment where students work together to achieve common goals. Additionally, the model encourages individual accountability and rewards collective effort, promoting a sense of responsibility and teamwork among students (Hänze & Berger, 2007).

Despite the evident benefits of the TGT model, there are still areas that can be improved to enhance its effectiveness further. One potential area of improvement is to consider the diversity of students' learning styles and abilities within the teams. Implementing differentiated instructional strategies and providing targeted support to accommodate individual needs can help maximize the

benefits of cooperative learning for all students (Gillies, 2007). Additionally, integrating technology into the TGT model may offer new opportunities to facilitate communication and collaboration among team members, allowing for more efficient information sharing and data analysis (Kim, 2016). Furthermore, conducting long-term studies to assess the sustained impact of the TGT model on students' academic performance and social skills would provide valuable insights into its long-lasting effects (Roseth et al., 2008). By addressing these aspects, educators can refine the TGT model and ensure its continued success in promoting effective cooperative learning experiences for primary students.

The role of the teacher in learning has a very crucial role in guiding students, acquiring knowledge and expressing their thoughts. In order for face-to-face teaching to be effective, educators must have basic knowledge of the learning concept system. The learning model is part of a larger learning structure, including learning methods, strategies, methods, and techniques (Sri Hayati, 2017). The nature of each student is different, so the teacher must be able to manage these differences to achieve one goal, namely acquiring knowledge while learning. The model used in learning plays an important role in the classroom because the learning model helps teachers achieve the learning objectives that are carried out.

From the background above, this research tries to answer the question; "How can optimizing the application of the cooperative learning model of the Times Games Tournament (TGT) type improve student learning outcomes in VA class SD Metta Maitreya Pekanbaru in Ecosystem learning?. Researchers perfect learning in the use of the Teams Games Tournament (TGT) learning model which makes it possible to maximize student learning outcomes, especially science learning, ecosystem material. Researchers found that students liked teamwork, playing and competing, which encouraged students to be more active in seeking their curiosity and encouraged students to compete with their peers. The aim of the study was to increase the science learning outcomes of VA class students at SD Metta Maitreya Pekanbaru by using the Times Games Tournament (TGT) cooperative learning in ecosystem learning.

The results of this study will greatly help students improve ecosystem learning outcomes and student engagement in class by using the Times Games Tournament (TGT) collaborative learning model. For teachers it is useful to improve the science learning process, provide various innovative learning models for teachers and increase teacher effectiveness in the classroom by implementing the Times Games Tournament (TGT) collaborative learning model. So that learning in class is more meaningful for students. For schools as material for reflection and input in making decisions

regarding the implementation of teaching and improving teacher skills in learning, it can improve professional skills and teacher performance, as well as help achieve teaching in schools. For researchers as an increase in learning in class, increasing learning activities, and providing opportunities for researchers to broaden their knowledge and skills through various learning methods, one of which is the Times Games Tournament (TGT) learning model.

B. Theories / Concepts

There are several concepts to back up this research as follows:

1. Class Action Research

According to Kemmis, action research is self-reflection research in which participants engage in social (including educational) situations to enhance their own actions. According to Hopkins and Kunandari, educational action research is research that aims to help individuals act in a practical way in a crisis and achieve shared social sciences within a mutually agreed upon ethical framework. (You Juanda, 2016).

Classroom action research is a teacher's need to improve their professional abilities as a teacher. Teachers can use PTK to find solutions to the problems they face in their classes. This can be done through the application of various learning theories and techniques. In addition, PTK is carried out simultaneously with the implementation of the teacher's main duties, namely teaching in the classroom, there is no need to leave students. Therefore, according to researchers, PTK is natural research for teachers that highlights the real problems faced by teachers in the area. In implementing PTK, teachers are expected to play a dual role, both as practitioners and researchers.

1.1. Strengths and Weaknesses of Classroom Action Research

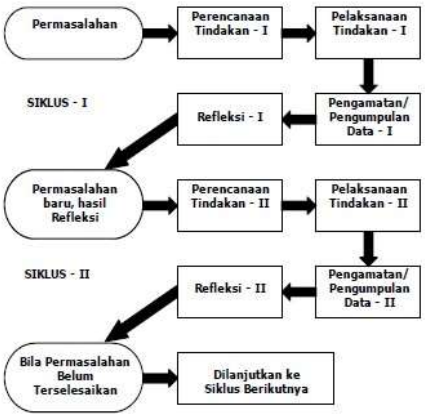
The strength of PTK is that PTK is not carried out by just one person, but in collaboration with many parties, which can give trust to teachers, especially because the privileges of PTK lead to more meaningful collaboration. So that it can produce something more creative and innovative because students have the opportunity to express their critical opinions, the results or conclusions obtained are the results of conventions of all parties that increase the validity and reliability of research results, CAR is the results obtained are applied directly by the teacher.

The weaknesses of PTK are the lack of researchers (teachers) in the basic techniques of CAR, lack of skills and knowledge, practical problems faced by teachers, so that conclusions are not universal and usually take a long time..

1.2. Class Action Research Steps

The purpose of action research is to find out the causes of problems and at the same time propose solutions to these problems. The most important steps form a cycle until fixed. The first cycle and the next cycle. The cycle has four parts, namely, the planning stage, the action stage, the observation stage, and the reflection stage. After the implementation of the cycle, especially reflection, a redesign is carried out which is carried out in the form of a separate cycle. This classroom action research activity takes place in different phases and cycles.

Figure 1. Cycle of Classroom Action Research (CAR) Activities (Candra Wijaya, 2013)



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2. Learning Achievement

Learning is an activity aimed at each individual, which provides a change in behavior before learning and after the implementation of learning. Learning activities require educators to have skills, abilities, perspectives, and mastery of various learning models to achieve learning goals. Educators can also create a learning environment that is fun, encouraging, not forcing, and varied so that learning activities are delivered in accordance with learning objectives (Alyannida Alfiradan Harlinda Sofyan, 2022). Learning is essentially an individual event, namely an event in which behavior changes as a result of individual experience. At the same time, learning is about creating the conditions that lead to student learning. Learning is an interaction between children and their

environment. Providing a rich, stimulating learning environment means helping students grow and develop.

According to Nugraha, learning outcomes are skills that a student acquires after being assessed in learning activities. These changes take the form of changes in students' knowledge, feelings, and behavior. Learning outcomes according to Susanto are skills acquired by students through the learning activities carried out (Alyannida Alfira and Harlinda Syofyan, 2022). According to psychologists, learning behavior is a psychological process of a person interacting with the natural environment (Sri Hayati, 2017). Learning outcomes are the maximum achievement achieved by students through conscious effort. Acquisition of these achievements is done consciously to bring about changes in knowledge, skills, or attitudes. The next learning outcome is the ability to do something based on existing knowledge, experience, and skills. Thus, the more achievements he has, the greater his ability to do in the next period (Candra Wijaya and Sayhrum, 2013).

3. Characteristics of Science Learning

According to H.W. Fowler, science is a systematic and structured knowledge relating to material reality primarily based on observation and reasoning. Furthermore, according to Aly and Rahman, science is theoretical knowledge obtained through special observations with experimental research, decisions, theory development, experiments, observations etc. by combining one method with another. According to Wahyana, natural science is an organized series of facts, whose use is generally limited in natural reality. Its development is characterized not only by a body of facts, but also by the scientific method and scientific attitude. From the various opinions submitted, it was concluded that science is knowledge about the results of human activities obtained through scientific stages in the form of the scientific method, as well as the results of experiments and observations that are general in nature so that they continue to be perfect (Gunarto, 2013).

4. Developmental Characteristics of Elementary School-aged Children

Elementary school-age children usually show different characteristics in their developmental phase. Teachers must understand the characteristics of elementary school children in order to identify learning models that are appropriate for students' conditions. The development of elementary school children is between 6 and 12 years. There are many ways to make learning fun for children. Adults believe that good learning methods are not necessarily compatible with the

child's mind and understanding, but simple methods without effort and fun please the child's eye and hold his attention. The easiest way is to play.

In a happy state, children feel less stressed, not bored, and are able to explore and discover themselves optimally. Playing is the best way to improve students' skills. The development of play as a form of learning must be adapted to the age development and abilities of students. Gradual transition from more game elements to more learning elements in learning (Sumantri, 2014).

Play gives children a context to practice acquiring new skills and also helps develop the ability to perform difficult tasks and solve complex problems they may or may not be able to do. The goal is for children to use their five senses while playing. All of that can be done for children with pleasure and without any burden.

5. Minimum Completeness Criteria (KKM)

In science learning class VA SD Metta Maitreya Pekanbaru, Marpoyan Damai District, the Minimum Completeness Criteria score is 70.

C. Research methods

The research carried out aimed at increasing learning in the science subject at Metta Maitreya Elementary School was classroom action research. The research design was carried out in two cycles. In this cycle, the researcher investigates as a planning leader, who plans, acts, observes, and reflects on what has been learned.

The research subjects totaled 28 students, consisting of 16 male students and 12 female students. The research was conducted in Metta Maitreya Pekanbaru's VA class, West Tangkerang Village, Marpoyan Damai District, Pekanbaru. This research was carried out in two cycles on: Cycle I, meeting 1 Wednesday, 26 October 2022 and meeting 2 Thursday, 27 October 2022. Cycle II, meeting 1 Tuesday, 01 November 2022 and meeting 2 Thursday, 03 November 2022. This learning improvement is classroom action research conducted to solve problems in class.

The data analysis technique used is qualitative data analysis. The research data collected is the evaluation of student learning outcomes. Data were analyzed descriptively using the percentage method. The completeness of student learning uses the KKM reference provided. From the observations collected, scores are calculated and analyzed using the following formula: (Gunarto, 2013).

$$\text{Skor} = \frac{B}{N} \text{ x } 100$$

Assessment of student learning completeness using the following formula:

$$\% = \frac{\textit{Jumlah siswa yang tuntas}}{\textit{Jumlah seluruh siswa}} \text{ x } 100\%.$$

Student learning outcomes are said to meet indicators of success when: meet the minimum completeness criteria (KKM) at 70. This improvement in learning is considered successful when 70% of students achieve a score of 70 or more.

D. Research and Discussion Results

The purpose of this research is to enhance student learning outcomes through the implementation of the Times Games Tournament (TGT) cooperative learning model in Ecosystem learning, utilizing a class action research approach. The study aims to address the observed issues of using the same learning model for all lessons, delivering lessons too fast and without a systematic approach, and the lack of guidance in learning, which has resulted in reduced opportunities for students to develop their potential and decreased engagement in learning science. To achieve this goal, the research was conducted in two improvement cycles, focusing on natural science ecosystem material. The data obtained from the study will be presented through the comparison of student learning outcomes between the pre-cycle and the two improvement cycles.

Analysis of the results of this study was carried out using the percentage formula for and is an observation of the final test results. Evaluation is used to assess students' abilities after learning through the Times Games Tournament learning method used.

Table 1. Pre-Cycle Student Learning Outcomes

Score Range	Volume	%	T/TT
0-59	14	50%	**TT**
60-69	2	7%	
70-89	10	36%	**T**
90-100	2	7%	
Total	28	100%	

From the table above, 14 students scored 0–59, 2 students scored 60–69, 10 students scored 70–89, and 2 students scored 90–100. To be more clearly reported in the following graph:

Graph 1. Pre-Cycle Student Learning Outcomes

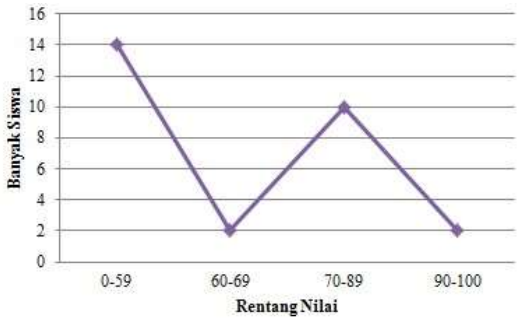


Table 2. Student Learning Outcomes Cycle I

Score range	Volume	%	T/TT
0–59	6	21%	**TT**
60–69	7	25%	
70–89	10	36%	**T**
90–100	5	18%	
Total	28	100%	

From the table above, 6 students scored 0–59, 7 students scored 60–69, 10 students scored 70–89, and 5 students scored 90–100. To be more clearly reported in the following graph:

Graph 2. Student Learning Outcomes in Cycle I

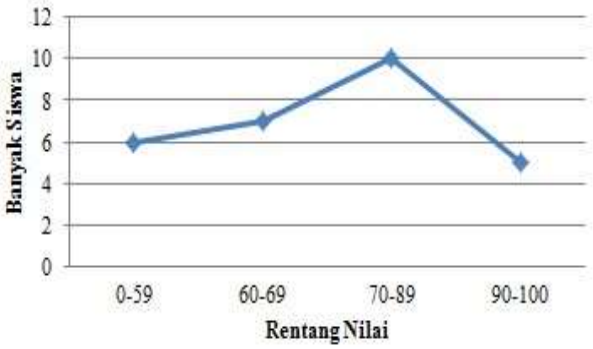
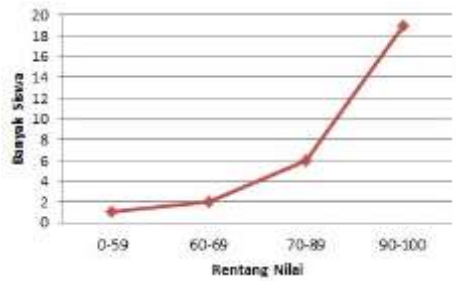


Table 3. Student Learning Outcomes Cycle 2

Score Range	Volume	%	T/TT
0-59	1	4%	**TT**
60-69	2	7%	
70-89	6	21%	**T**
90-100	19	68%	
Total	28	100%	

From the table above, 1 student scored 0–59, 2 students scored 60–69, 6 students scored 70–89, and 6 students scored 90–100. To be more clearly reported in the graph below:

Graph 3. Student Learning Outcomes Cycle 2



Discussion of Learning Improvement Research Results

The results of the class action research demonstrate a significant improvement in student learning outcomes through the application of the Team Games Tournament (TGT) collaborative learning model. In the pre-cycle, only 12 students or 43% scored ≥ 70, but in cycle 1, this number increased to 15 students or 54%. However, reflections on cycle 1 revealed certain factors contributing to the lack of learning outcomes, such as students' unfamiliarity with the learning methods, insufficient encouragement during group learning, and a lack of practice questions provided by the teacher. In response to these observations, adjustments were made for cycle 2.

Remarkably, student learning outcomes in the 2nd cycle surpassed those of the 1st cycle. In cycle 1, only 15 students or 54% scored ≥ 70, while in cycle 2, this figure significantly rose to 25 students or 89%. These findings indicate a positive correlation between the implementation of the TGT learning model and improved student learning outcomes. The study's results align with previous research on collaborative learning, which has consistently shown its effectiveness in enhancing student engagement and academic performance (Slavin, 1995; Johnson & Johnson, 2009). The present research provides valuable evidence to support the application of TGT as a successful cooperative learning strategy for promoting positive educational outcomes for primary students.

Table 4. Student Learning Outcomes

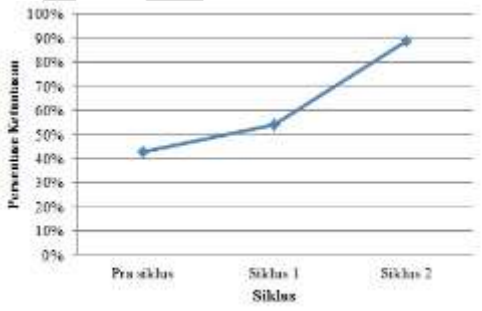
No.	Cycle	Volume	Completeness Percentage

1.	Pra siklus	12	43%
2.	Siklus 1	15	54%
3.	Siklus 2	25	89%

From the table above, student learning outcomes have increased in each cycle, in the pre-cycle the student scores ≥ 70 were only 12 students or 43%. In cycle 1, there were 15 students or 54% of students' scores ≥ 70. Based on the results of the reflections carried out, there are several causes for the lack of learning outcomes in cycle 1, namely students do not know the learning methods to be used, lack of encouragement from students in studying material during the group learning stage, lack of practice questions given by the teacher. Then the improvement of learning is done again in Cycle 2.

Student learning outcomes in the 2nd cycle were better than the 1st cycle. If in cycle 1 the student scores ≥ 70 were only 15 students or 54%, in cycle 2 the student scores ≥ 70 increased by 25 students or 89%. From this discussion, it was concluded that using the Teams Games Tournament (TGT) learning model can improve student learning outcomes, as evidenced by the increase in student learning outcomes in each cycle. To be more clearly reported in the following graph:

Graph 4. Student Learning Outcomes



E. Conclusion

Based on the results of class action research and the discussions conducted as elaborated above, the implementation of the Team Games Tournament (TGT) collaborative learning model has been proven to improve the learning outcomes of 5th-grade students in class A at SD Metta Maitreya Pekanbaru. In the pre-cycle of 28 students, only 12 students or 43% scored ≥ 70. In cycle I of 28 students, only 15 students scored ≥ 70 or 54%. However, in cycle 2 of 28 students the value of students ≥ 70 increased by 25 students or 89%. So, the results of the percentage of students in

Cycle 1 and Cycle 2 increased by 35%. This further proved how this method can be one of the best methods in teaching 5th grade students regards to Ecosystem material.

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