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Efforts to Improve Student Learning Outcomes in Natural Science Lessons Material Plant Body Parts Through Cooperative Type Team Games Tournament in MI Negeri 4 Asahan

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Abstract: This research aims to improve the learning outcomes of students in the Natural Sciences subject, especially in the material "Parts of the Plant Body" through the application of a cooperative learning model of the Team Games Tournament type at Madrasah Ibtidaiyah Negeri 4 Asahan. The background of this research is based on the low learning outcomes of students which can be seen from the number of students who have not yet reached the Minimum Completion Criteria (KKM). The research method used is Classroom Action Research which is carried out in two cycles, and each cycle consists of stages of planning, implementation, observation, and reflection. The subjects of this research are 25 class IV students. Data collection techniques include tests of learning outcomes, observation of teacher and student activities, as well as documentation. The results of the research show that there is a significant increase in student learning outcomes from pre-cycle to cycle I, and from cycle I to cycle II. In the first cycle, the average grade of students increased but the completeness of learning was not yet maximal. After the improvement of learning in cycle II, the learning outcomes of students experienced a higher increase, and the completion of learning reached more than 88%. In addition, the TGT learning model also increases active participation, cooperation, and student learning motivation during the learning process. From the results of this research, it can be concluded that the application of the cooperative learning model of the Team Games Tournament type is effective in improving student learning outcomes in IPA subjects, especially plant body material. Therefore, this learning model can be used as an alternative learning strategy that is interesting and enjoyable for primary school students, especially in primary madrasahs.

Keywords: learning outcomes, cooperative learning, team games tournament.

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INTRODUCTION

Education is one of the most important pillars for the development of individuals and societies. It serves as a means to transfer knowledge, values, and skills from one generation to another. In the context of primary education, science plays a crucial role in

shaping the way students perceive the world around them. Natural Science, in particular, introduces students to basic concepts of biology, physics, and chemistry, and helps them build critical thinking, observation, and inquiry skills from an early age. Despite its significance, the teaching and learning of science at the elementary level often faces a number of challenges that hinder students from achieving optimal learning outcomes. At Madrasah Ibtidaiyah Negeri 4 Asahan, the teaching of Natural Science, especially in the topic of "Parts of Plants," has encountered several obstacles. Initial observations and test results indicated that many students have difficulty understanding and retaining the basic structure and function of plant organs. These difficulties are reflected in their low scores, lack of engagement, and limited participation in classroom activities. The conventional teaching methods applied in the classroom, which primarily consist of lectures and textbook-based instruction, appear to be insufficient in motivating students or facilitating meaningful learning.

The topic of "Parts of Plants" is foundational in the study of biology and is essential for understanding more complex topics in later years, such as plant reproduction, photosynthesis, and ecosystems. Therefore, it is crucial that students grasp these basic concepts accurately and thoroughly. However, due to the abstract nature of scientific concepts and the lack of interactive learning methods, students often perceive science as a difficult and uninteresting subject. This perception contributes to their disinterest, leading to a cycle of poor performance and decreased confidence. Traditional approaches to teaching science tend to position students as passive recipients of information. In these methods, teachers dominate the learning process, while students are expected to memorize facts without fully understanding the underlying principles. Such approaches do not cater to the diverse learning styles of students, nor do they encourage collaboration, creativity, or curiosity all of which are essential for scientific inquiry. Consequently, there is an urgent need for alternative teaching strategies that can stimulate active learning and improve student outcomes.

One promising alternative is the cooperative learning model, which emphasizes teamwork, shared responsibility, and mutual support among students. Cooperative learning has been shown to improve academic achievement, develop social skills, and increase student motivation. One specific type of cooperative learning that is particularly engaging is the Team Games Tournament (TGT) model. TGT combines academic content with game-based elements, transforming the learning environment into one that is competitive yet collaborative. Through this model, students are motivated not only to learn for personal success but also to support their teammates. The TGT model involves students working in diverse groups to study material together, followed by participation in academic tournaments where they compete in answering questions related to the subject matter. This approach creates a sense of excitement and accountability, as students must rely on both their own understanding and the cooperation of their team to succeed. The element of structured competition can increase focus, effort, and enthusiasm, especially among younger learners who are naturally inclined to enjoy games.

In the context of teaching about plant parts, the TGT model can be particularly effective. Visual aids, diagrams, and hands-on group activities allow students to physically interact with the subject matter, improving comprehension and retention. By turning learning into a collaborative game, students are more likely to engage with the content and apply their knowledge in meaningful ways. Additionally, team-based interactions can help students articulate their understanding and correct misconceptions through peer discussion. Research has shown that students in cooperative learning environments tend to outperform their peers in traditional classrooms. They exhibit greater engagement, stronger retention of information, and a deeper understanding of content. Furthermore, cooperative learning promotes the development of important soft skills such as communication, leadership, problem-solving, and empathy. These skills are essential not only for academic success but also for students' personal and social development.

In the case of Madrasah Ibtidaiyah Negeri 4 Asahan, applying the TGT model offers a strategic solution to the problem of low learning outcomes in science. The model aligns with the characteristics and needs of elementary school students, who often learn best through interaction, exploration, and play. Moreover, it supports the values of cooperation and togetherness that are central to Islamic educational institutions. The model can help foster a more inclusive and engaging learning atmosphere where all students feel valued and motivated.

Preliminary data collected before the intervention highlighted the pressing need for pedagogical reform. Students were disengaged, participation was minimal, and test scores were below the expected competency levels. This pattern suggested that students were not just struggling with the content but were also disconnected from the learning process itself. The introduction of a student-centered, game-based approach like TGT was therefore not only timely but necessary. It is also important to acknowledge the role of the teacher in implementing innovative teaching strategies. Teachers must be willing to shift from traditional roles as information providers to facilitators of learning. This requires thoughtful lesson planning, a clear understanding of the TGT structure, and the ability to manage classroom dynamics effectively. Training and professional development may be needed to support teachers in making this transition successfully.

The motivation behind this research was not only to raise test scores but to create a learning environment where students are actively engaged and empowered. By introducing a method that transforms routine classroom instruction into an exciting and collaborative experience, the aim is to change how students perceive science moving from fear and confusion to interest and confidence. The ultimate goal is to foster lifelong learners who are curious about the world around them and capable of applying their knowledge in real-world contexts. Additionally, this study intends to contribute to the broader discourse on improving science education in Indonesia, particularly within madrasah institutions. It addresses the gap between curriculum objectives and classroom realities, offering practical insights that can be adapted by other schools facing similar challenges. By documenting the process and outcomes of this intervention, the research serves as a model for implementing cooperative learning in primary science education.

The involvement of students in cooperative and competitive academic settings also encourages responsibility and accountability. As each student contributes to their team's success, they become more committed to mastering the material and helping their peers. This dynamic supports a more equitable classroom, where individual differences are valued and where every learner has a role in the collective achievement.

Moreover, the implementation of TGT can also enhance classroom management. When students are engaged in purposeful activities, behavioral issues often decrease. The structure of TGT, which includes clear rules, goals, and rewards, provides a framework that supports positive discipline and focused learning. Teachers can utilize this structure to channel students' energy into constructive academic efforts. The relevance of this topic extends beyond academic achievement. Understanding plant biology is crucial for developing environmental awareness and promoting sustainable practices. When students understand how plants function and contribute to life on Earth, they are more likely to appreciate nature and take action to protect it. Early science education, therefore, lays the foundation for responsible citizenship and environmental stewardship. This research is also an opportunity to assess how game-based learning methods align with national educational standards and learning competencies. While the curriculum outlines what students should learn, methods like TGT provide guidance on how students can best achieve those objectives. It bridges the gap between theory and practice, ensuring that learning is both meaningful and measurable.

It is equally important to consider the cultural and religious context of the students. Madrasah environments emphasize values such as cooperation, respect, and discipline—all of which are inherently supported by the TGT model. By integrating these values into

the instructional method, teachers can reinforce both academic content and moral education simultaneously.

Another factor that justifies the implementation of this model is the increasing diversity of learners in today's classrooms. Students come with varying levels of ability, background knowledge, and learning styles. A cooperative learning model allows for differentiation, peer tutoring, and inclusive participation, ensuring that no student is left behind. The research also takes into account the role of assessment in guiding and improving instruction. The TGT model includes formative and summative components that allow teachers to monitor student progress in real-time and provide timely feedback. This continuous assessment process supports more accurate and comprehensive evaluations of student learning. Finally, this study serves as a response to the need for innovative, evidence-based solutions to improve the quality of science education in Indonesian primary schools. The TGT model represents a promising strategy that is both practical and adaptable, capable of transforming the learning experience and raising educational standards. By focusing on both process and outcome, the research aims to create sustainable improvements that benefit students, teachers, and the school community as a whole.

METHODS

This research employed a Classroom Action Research (CAR) approach, which was chosen due to its suitability for solving practical teaching and learning problems within the classroom setting. The main objective of this research was to improve students' learning outcomes in Natural Science, specifically on the topic of plant parts, through the implementation of the cooperative learning model known as Team Games Tournament (TGT). CAR is a reflective process where teachers identify instructional issues, implement interventions, and evaluate their impact systematically to enhance student achievement. The study was conducted in two cycles, each comprising four stages: planning, action, observation, and reflection. The cyclical nature of this model allowed for continuous refinement and improvement based on the results of each phase. The use of CAR enabled the researcher, who also served as the classroom teacher, to be actively involved in diagnosing learning problems and collaboratively seeking solutions. This method supports both pedagogical improvement and professional development.

The participants of this study were 25 fourth-grade students of Madrasah Ibtidaiyah Negeri 4 Asahan, consisting of a mix of boys and girls with varied academic abilities. This class was selected based on preliminary observations and prior assessment data that indicated underachievement in the subject of Natural Science. By focusing on one intact class, the researcher ensured consistency in instructional delivery and minimized external variables. Prior to the intervention, a baseline assessment was conducted to determine students' existing understanding of the parts of plants. This pre-test served as a diagnostic tool to identify knowledge gaps and conceptual misunderstandings. It also established a point of comparison for evaluating progress throughout the research cycles. The results confirmed that many students lacked a clear understanding of the structure and function of plant organs.

In the planning stage of Cycle I, the researcher designed a detailed lesson plan incorporating the TGT cooperative learning model. The plan included the formation of heterogeneous student teams, instructional activities using visual and manipulative aids, structured review sessions, and the organization of academic tournaments. Learning materials were carefully developed to align with the curriculum and to accommodate the diverse learning styles present in the classroom. Each team in the TGT model was composed of students with varying academic performance levels to promote peer teaching and equal participation. Students were encouraged to collaborate, support one another, and take collective responsibility for their team's success. The grouping strategy was

based on previous test scores and teacher observations to ensure balanced distribution of abilities across all teams.

During the action stage, the researcher implemented the lesson plan over a series of classroom meetings. Each meeting began with a brief introduction and explanation of the topic, followed by team-based study sessions. Students used flashcards, diagrams, and real plant specimens to explore the parts of plants. These resources provided concrete experiences that supported the transition from abstract concepts to meaningful understanding. The game and tournament components were introduced after the team discussions. Students participated in academic games that tested their knowledge of plant parts. The competitive yet supportive nature of the tournaments created a sense of excitement and motivation among the learners. The scores from the tournaments were recorded and used as a basis for team rewards, further encouraging active engagement. Throughout the implementation phase, observation sheets were used to monitor student behavior, engagement, and collaboration. The researcher, along with a co-observer, documented the level of participation, communication within teams, and the effectiveness of the teaching aids. These observations provided valuable qualitative data to complement the quantitative test results. The reflection phase involved analyzing student performance, observing classroom dynamics, and identifying areas for improvement. After the completion of Cycle I, it became evident that although learning outcomes had improved, certain students still exhibited misunderstandings about the specific functions of plant organs. Additionally, some teams were less cohesive, indicating a need for further scaffolding and team-building activities.

Based on these findings, adjustments were made in the planning of Cycle II. The learning materials were revised to include more explicit explanations and simplified vocabulary. New cooperative strategies such as peer tutoring roles within the teams were introduced to support weaker students. Tournament questions were also modified to better match the students' comprehension level and to challenge higher-order thinking skills. Cycle II followed the same structure as Cycle I, with lessons structured around team-based study and tournament participation. However, greater emphasis was placed on formative assessment and immediate feedback. The teacher provided mini-reviews between each activity to reinforce key concepts and address misconceptions before progressing to the next stage. Student engagement significantly increased during Cycle II. Teams functioned more effectively, and students demonstrated greater responsibility in helping their teammates learn. The improvement in classroom atmosphere was notable, with a visible increase in confidence and enthusiasm among students. Tournament results showed more balanced performance across all teams, indicating that peer learning was taking place successfully. To collect data for the study, a combination of qualitative and quantitative methods was employed. The primary instrument for measuring academic achievement was a test on plant parts, administered at three points: pre-test, post-Cycle I, and post-Cycle II. These tests assessed students' ability to identify plant structures, explain their functions, and apply their understanding to simple real-life scenarios.

In addition to tests, observation checklists were used to record student interactions, team collaboration, and classroom management indicators. These checklists focused on specific behaviors such as contributing ideas, listening to peers, staying on task, and respecting others' opinions. The observational data provided rich insights into how the cooperative learning environment influenced student behavior. The researcher also used student reflection sheets to gain insights into their perceptions of the learning process. These reflections revealed how students felt about working in teams, participating in games, and their personal understanding of the content. Students expressed greater enjoyment of the learning process and reported feeling more confident when supported by their peers.

Teacher journals were maintained throughout the research period to document instructional challenges, successful strategies, and personal reflections. These journals served as an essential tool for continuous improvement and decision-making throughout

the cycles. They also provided evidence of the researcher's evolving pedagogical perspective and commitment to student-centered learning. Data analysis involved comparing the mean scores of pre- and post-tests, identifying patterns in observation notes, and categorizing responses from reflection sheets. The triangulation of data sources ensured that the findings were both valid and reliable. The combination of numerical and descriptive data offered a comprehensive view of the intervention's impact.

Ethical considerations were also taken into account during the study. Students and their parents were informed about the research objectives, and participation was entirely voluntary. All data collected were kept confidential and used solely for research purposes. Care was taken to ensure that no student felt embarrassed or pressured during the competitive activities. Limitations of the study included the relatively short time frame and the small sample size, which may affect the generalizability of the results. Additionally, as the researcher was also the classroom teacher, there was a risk of bias in observation and interpretation. To minimize this, a co-observer was included to provide an external perspective.

Despite these limitations, the research methodology was carefully designed to ensure that the data collected were sufficient to answer the research questions. The structure of CAR allowed for continuous monitoring and improvement, which contributed to the successful implementation of the TGT model. The cooperative learning model of Team Games Tournament proved to be not only feasible but highly effective within the context of a madrasah setting. It provided a structured yet flexible framework for engaging students in active learning and fostering collaboration. Its alignment with Islamic values of teamwork and mutual support made it particularly suitable for the school environment.

In summary, the methodology of this study combined a clear problem-solving structure with participatory and reflective practices. By involving students in their own learning process and encouraging collaboration, the TGT model transformed the classroom from a teacher-centered to a learner-centered environment. This methodological approach ensured that the research was both contextually relevant and pedagogically sound. The success of the methodology demonstrates the importance of using classroom-based research to address specific teaching challenges. It also highlights the role of innovative, research-driven strategies in transforming science education at the primary level. Through careful planning, execution, and reflection, this study serves as a model for other educators seeking to enhance learning outcomes using cooperative learning methods.

RESULTS

The implementation of the Team Games Tournament (TGT) cooperative learning model at Madrasah Ibtidaiyah Negeri 4 Asahan yielded significant improvements in students' learning outcomes in Natural Science, specifically on the topic of plant parts. The research was conducted over two cycles, each comprising four stages: planning, action, observation, and reflection. The results were systematically analyzed to determine the effectiveness of the intervention. In Cycle I, a pre-test was administered to assess students' initial understanding of plant parts. The average score was found to be 55%, indicating a basic level of comprehension. Following the introduction of the TGT model, students engaged in team-based activities that included discussions, games, and tournaments designed to reinforce their knowledge. The post-test results revealed an average score of 70%, demonstrating a notable improvement of 15 percentage points.

Observations during Cycle I indicated that students were more engaged and participatory compared to traditional teaching methods. The competitive yet collaborative nature of the TGT model encouraged active involvement, and students displayed increased enthusiasm in learning activities. The use of visual aids and hands-on materials further enhanced their understanding of plant structures and functions. In Cycle II, based on reflections from Cycle I, several adjustments were made to optimize the learning

experience. The lesson plans were refined to include more interactive elements, and additional resources such as real plant specimens were incorporated to provide concrete learning experiences. The grouping strategy was also modified to ensure a more balanced distribution of abilities among teams.

The pre-test in Cycle II showed an average score of 58%, slightly higher than in Cycle I, indicating a gradual improvement in students' baseline knowledge. After the implementation of the revised TGT activities, the post-test results demonstrated a significant increase, with an average score of 85%. This marked a 27 percentage point improvement from the pre-test, reflecting the effectiveness of the enhanced intervention. Qualitative data collected through student reflections and teacher observations highlighted several positive outcomes. Students reported feeling more confident in their understanding of plant parts and expressed greater interest in science lessons. They appreciated the opportunity to collaborate with peers and valued the interactive nature of the learning activities.

Teachers noted improvements in classroom dynamics, with increased student interaction and cooperation. The TGT model facilitated a more student-centered learning environment, where learners took responsibility for their own and their peers' learning. The teacher's role shifted from a traditional lecturer to a facilitator, guiding students through the learning process. The assessment of students' cognitive, affective, and psychomotor domains further substantiated the positive impact of the TGT model. In the cognitive domain, the significant increase in test scores from the pre-test to the post-test indicated enhanced understanding and retention of the material. In the affective domain, students demonstrated greater interest and motivation in learning, as evidenced by their active participation and positive attitudes toward science. In the psychomotor domain, students exhibited improved skills in identifying and categorizing plant parts during hands-on activities.

The cooperative nature of the TGT model fostered the development of essential social skills among students. They learned to communicate effectively, collaborate with others, and resolve conflicts within their teams. These skills are crucial not only for academic success but also for personal and social development. The implementation of the TGT model also contributed to improved classroom management. The structured activities and clear expectations reduced instances of disruptive behavior and created a more conducive learning environment. Students were more focused and engaged, leading to a more productive classroom atmosphere. The findings of this research align with previous studies that have demonstrated the effectiveness of the TGT cooperative learning model in enhancing student learning outcomes. For instance, a study by Ni'am and Widodo (2020) found that the application of the TGT model in teaching the human excretory system led to significant improvements in students' cognitive, affective, and psychomotor domains. Similarly, research by Maharani et al. (2023) reported that the use of TGT with domino card media improved students' cognitive learning outcomes in physics.

The success of the TGT model in this study suggests that it can be a valuable strategy for improving science education in primary schools. By promoting active learning, collaboration, and critical thinking, the TGT model addresses the diverse needs of students and enhances their overall learning experience. The positive outcomes observed in this research have implications for future teaching practices. Educators are encouraged to consider incorporating cooperative learning models like TGT into their instructional strategies to foster a more engaging and effective learning environment. Professional development opportunities should also be provided to equip teachers with the necessary skills and knowledge to implement such models successfully. In conclusion, the application of the Team Games Tournament cooperative learning model at Madrasah Ibtidaiyah Negeri 4 Asahan led to substantial improvements in students' learning outcomes in Natural Science. The combination of cooperative activities, interactive learning materials, and a supportive classroom environment contributed to enhanced understanding, motivation, and social skills among students. These findings underscore

the potential of cooperative learning models in transforming science education and promoting holistic student development.

DISCUSSION

The findings of this study demonstrate that the implementation of the Team Games Tournament (TGT) cooperative learning model significantly improved students' learning outcomes in Natural Science, particularly in understanding the parts of plants. This improvement was evident in the increased test scores, higher levels of student participation, and greater classroom engagement. These results reinforce the view that active, student-centered learning models are more effective than traditional teacher-centered methods, especially in primary school settings. Students responded positively to the use of games and structured team collaboration as part of the learning process. The incorporation of game elements transformed what might otherwise be perceived as routine learning activities into exciting and engaging classroom experiences. This engagement translated into better retention and comprehension of scientific concepts, confirming that enjoyment and motivation are key drivers in effective learning.

A critical aspect of the success observed in this research was the design of the learning activities to be collaborative in nature. By organizing students into heterogeneous teams, the TGT model created a supportive learning environment in which peers helped each other understand the material. Weaker students benefited from explanations offered by their teammates, while stronger students consolidated their understanding through teaching others. This reciprocal learning process fostered not only academic growth but also interpersonal skill development. The structure of the TGT model encouraged accountability, both individually and collectively. Since each student's performance contributed to their team's overall standing in the tournament, they were motivated to study and participate actively. This competitive element added a layer of excitement and urgency to the learning experience, driving students to put forth their best effort while maintaining a cooperative spirit.

Another significant observation was the way the TGT model facilitated the internalization of complex scientific ideas through hands-on and visual learning. The topic of plant parts, though seemingly basic, includes abstract elements that are often difficult for young learners to grasp without direct interaction. The use of visual aids, plant samples, and manipulatives helped bridge the gap between theory and real-life examples, allowing students to connect classroom learning to the natural world. The change in classroom dynamics was also noteworthy. The teacher's role shifted from the sole knowledge provider to a facilitator of learning, guiding students through exploration and discussion rather than delivering one-way instruction. This shift empowered students to take control of their own learning processes, boosting their confidence and encouraging self-expression.

Feedback collected through student reflection forms highlighted a general increase in motivation and enjoyment during science lessons. Many students reported feeling more confident when learning through games and team activities. They valued being able to ask questions freely and contribute ideas during group discussions, which contributed to the development of their communication skills and sense of belonging within the classroom. In addition to academic growth, the implementation of TGT had positive implications for the development of soft skills. Students demonstrated improvements in collaboration, problem-solving, leadership, and empathy. Working in diverse teams allowed them to recognize and appreciate different perspectives, encouraging respectful dialogue and cooperative problem-solving.

The success of this learning model was also evident in the improved classroom behavior and discipline. Students were more focused and less likely to engage in disruptive behavior, likely due to the structured nature of the activities and the novelty of the learning approach. The competitive but friendly nature of the tournament instilled a

sense of purpose and direction in the students, which helped maintain their attention and cooperation throughout the lesson. Comparing the pre-test and post-test scores, there was a clear upward trend in learning achievement. This improvement indicates not only the effectiveness of the TGT model but also the potential of well-structured interventions to make significant differences in student performance within a relatively short time. The consistent increase from Cycle I to Cycle II further demonstrates the value of reflective practice in refining teaching strategies.

Teacher reflections and journals during the research process revealed increased satisfaction with the classroom atmosphere and student responsiveness. Teachers found the TGT model more enjoyable to implement and observed that students were more willing to take initiative in their learning. The shift in classroom energy—from passive reception to active participation—was transformative for both the educator and the students. It is important to note that the improvement observed in Cycle II was due in part to the adjustments made after analyzing the results of Cycle I. These adjustments included clearer instructions, more relatable examples, simplified vocabulary, and better alignment of questions in the tournament. This highlights the value of the cyclical process in Classroom Action Research, where continual reflection and modification lead to enhanced outcomes. The findings support constructivist theories of learning, which emphasize the importance of social interaction and experiential learning in the construction of knowledge. Students learned most effectively when they were actively involved in the process and could relate new information to existing knowledge and real-world contexts. The TGT model effectively operationalized these principles within the classroom setting.

In terms of curriculum alignment, the activities conducted during the TGT-based lessons were well-suited to the learning objectives outlined in the national curriculum for Natural Science. The lessons covered the required content while simultaneously addressing cross-disciplinary competencies such as collaboration, communication, and critical thinking, in line with 21st-century education goals. Another critical component of the success of the TGT model was the role of formative assessment. Through continuous observation, questioning, and team feedback, the teacher was able to monitor student understanding in real time and intervene when necessary. This responsiveness ensured that misconceptions were addressed promptly and that all students remained on track with the learning objectives.

The inclusive nature of the TGT model also supported differentiated instruction. Because students worked in mixed-ability teams, instruction could be naturally tailored through peer support. This arrangement allowed each student to participate at their level while being challenged to grow. The game structure provided multiple entry points for learning, making the experience accessible and enjoyable for all. Challenges encountered during the implementation were primarily logistical in nature, such as managing time effectively and organizing the tournaments efficiently. However, with careful planning and classroom management strategies, these challenges were minimized. Teachers who intend to replicate this model may benefit from clear timelines and the use of student roles to streamline group activities.

The TGT model may also contribute to long-term academic benefits by fostering a positive attitude toward science. Early experiences with interactive and enjoyable science instruction can shape students' perceptions of the subject and encourage continued interest. As such, the model supports not only short-term academic achievement but also long-term engagement with scientific learning. Considering the broader educational implications, the success of this model in a madrasah context underscores its adaptability across diverse educational settings. The cooperative values inherent in the TGT model resonate well with Islamic educational philosophies, which emphasize mutual help, respect, and community responsibility. This cultural alignment strengthens the relevance and sustainability of the model in similar school environments.

One of the more profound impacts observed during the research was the way in which the TGT model contributed to a culture of learning that extended beyond the

classroom. Students began to engage with one another academically outside of formal lessons, discussing science concepts during break times and helping peers review for tournaments. This organic learning community is a testament to the model's effectiveness in creating lasting interest and motivation. In relation to student equity, the TGT model helped close the achievement gap between high-performing and struggling students. Because of the peer teaching structure and team-based accountability, students who previously underperformed began to experience success, which improved their self-efficacy and overall academic confidence.

The teacher's reflective practice throughout the research process proved critical in driving improvements and ensuring fidelity to the TGT model. By documenting observations, analyzing results, and making evidence-based changes, the teacher demonstrated a commitment to continuous improvement, which directly influenced student outcomes. This research also highlights the importance of teacher professional development in adopting innovative teaching strategies. The successful implementation of TGT requires familiarity with cooperative learning principles, group management techniques, and formative assessment practices. Supporting teachers through workshops and peer collaboration can enhance the success of such interventions.

In light of the positive results, it is recommended that schools consider integrating cooperative learning models like TGT into their regular teaching practices. While the initial planning may require effort, the long-term benefits to student learning and classroom climate are substantial. School administrators should also provide the necessary resources and time for teachers to implement these models effectively. It is equally important to conduct follow-up studies to examine the sustainability of the learning gains achieved through the TGT model. Longitudinal research could explore how well students retain the knowledge acquired and whether their improved attitudes toward science persist in higher grade levels.

Future research could also explore how technology can be integrated into the TGT model to further enhance learning. Digital games, interactive quizzes, and virtual plant dissections could complement physical activities and cater to students who learn best through digital media. In sum, this discussion affirms that cooperative learning models such as Team Games Tournament can lead to meaningful, measurable improvements in primary science education. The model's flexibility, alignment with educational values, and ability to foster both cognitive and social development make it a powerful tool for educators seeking to transform their classrooms into vibrant learning communities. Ultimately, this study contributes to a growing body of evidence supporting active and cooperative learning strategies. As the educational landscape continues to evolve, innovative approaches like TGT will be instrumental in equipping students with the knowledge, skills, and attitudes necessary for academic and lifelong success.

CONCLUSION

The results of this classroom action research clearly demonstrate that the implementation of the Team Games Tournament (TGT) cooperative learning model significantly enhanced students' understanding and retention of material related to the parts of plants. Through structured group collaboration, engaging academic games, and supportive peer interaction, students not only improved their academic performance as evidenced by increased test scores but also developed critical social skills such as communication, teamwork, and responsibility. The learning process became more active, enjoyable, and student-centered, fostering a more positive classroom environment conducive to meaningful learning. Furthermore, the cyclical nature of the research consisting of planning, action, observation, and reflection enabled the teacher to adapt and refine instructional strategies based on students' responses and progress. The improved outcomes from Cycle I to Cycle II reflect the importance of continuous reflection and evidence-based adjustments in the teaching process. Overall, the TGT model proved to be

an effective and practical method for improving science learning outcomes at the primary school level and can be considered a valuable pedagogical alternative for other subjects and educational contexts.

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