



Enhancing Student Collaboration through TGT Match Domino: A Case Study at Sekolah Indonesia Kuala Lumpur

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<http://dx.doi.org/10.18415/ijmmu.v12i9.7099>

Abstract

Problem Statement: Student group work in elementary classrooms often lacks structure and is dominated by a few voices, leading to weak collaboration. At Sekolah Indonesia Kuala Lumpur, 5th-grade IPAS discussions suffer from uneven participation and low peer-to-peer interaction. This study introduces a Teams-Games-Tournament (TGT) Match Domino game—a question-and-answer domino activity to stimulate cooperative learning. Research indicates that well-designed cooperative tasks improve academic skills, develop strong working relationships, and increase class participation. **Significance:** This intervention blends game-based learning with proven cooperative strategies to make group learning more dynamic and inclusive. Grounded in Vygotskian social-constructivist principles, it posits that knowledge is co-constructed through interaction. A successful outcome would offer a replicable model for Indonesian curriculum settings, enriching literature on student-centered pedagogy and instructional design.

Keywords: *Teams-Games-Tournament (TGT); Game-Based Learning; Student Collaboration; Elementary Education*

Introduction

The primary objective of contemporary education has evolved. The focus has shifted from solely mastering subject matter to equipping students with tangible skills for the future, particularly communication and collaboration skills. This principle aligns with the philosophy of John Dewey, who believed that the most effective learning occurs when students are actively engaged in discussion and cooperation, rather than passively listening. This emphasis on fostering active student participation is now reflected in policies such as the Kurikulum Merdeka (Merdeka Curriculum) in Indonesia. As a practical application, group work within a cooperative learning framework has become a key strategy to encourage students to exchange ideas and deepen their understanding of lesson material.

Nevertheless, the implementation of group work at the elementary school level often faces significant challenges. Unstructured discussion processes are frequently dominated by a handful of more

vocal students, while the majority of other students tend to be passive. This general issue highlights the need for structured learning models that can foster more equitable participation and dynamic interaction in the classroom.

One such structured approach is the Teams-Games-Tournament (TGT) model. The structure of TGT (Slavin, 1994), which combines teamwork with tournament competition, has been proven to foster a sense of shared responsibility within groups. This is highly consistent with the fundamental principle of cooperative learning from Johnson & Johnson (1994), which posits that effective collaboration requires personal responsibility from each team member.

To further enhance engagement, the TGT model can be integrated with innovative learning media, such as the Match Domino game. This media is designed to function as scaffolding that triggers productive social interaction. The question-and-answer activity in this game is based on Vygotsky's (1978) principle of social constructivism, which states that knowledge is constructed through interaction within the Zone of Proximal Development (ZPD). In other words, the game creates an arena for more capable students to assist their peers in understanding concepts (Plass, Homer, & Kinzer, 2015; Sun, 2023). The combination of TGT and game-based media has been noted for its effectiveness in various contexts (Rahim & Atuna, 2019).

At the Sekolah Indonesia Kuala Lumpur (SIKL), a specific learning model integrating TGT with Match Domino is applied in the fifth-grade Natural and Social Sciences (IPAS) classroom. Given that the specific dynamics of student collaboration within this unique integration and in a multicultural environment are still rarely studied, this research becomes significant. Therefore, this survey research aims to describe and quantitatively measure the level of student collaboration within this particular learning context. This variable will be measured using a 4-point Likert scale questionnaire with concrete indicators (Brouwer et al., 2021). The results are expected to provide an objective picture of student collaboration in this setting, thereby enriching the literature on game-based cooperative learning at the elementary school level.

Theoretical framework

This research on enhancing student collaboration through the Teams-Games-Tournament (TGT) Match Domino activity is based on the following theoretical foundations and previous research:

1. Social Constructivism and the Zone of Proximal Development (ZPD)

According to Vygotsky (1978), learning is a social process wherein knowledge is constructed through interaction between more proficient students and those still developing within the Zone of Proximal Development (ZPD). Within the ZPD, peer support and learning tools enable students to achieve higher capabilities than if they were learning alone. In the TGT Match Domino model, team support and reciprocal questioning function as a scaffold that guides less proficient students, thereby allowing them to become actively involved in understanding science concepts.

2. Cooperative Learning and Positive Interdependence

Johnson & Johnson (1994) define cooperative learning as the use of small groups to have students work together to achieve common learning goals. Key elements include positive interdependence, individual accountability, promotive interaction, social skills, and group reflection. The TGT model implements these elements by forming heterogeneous teams, requiring each member to prepare and present answers, and incorporating a tournament element that makes students responsible for their team's success.

3. Game-Based Learning and Student Engagement

Plass, Homer, & Kinzer (2015) and Alotaibi (2024) emphasize that well-designed educational games increase motivation, foster deeper engagement, and support conceptual understanding through immediate feedback and intrinsic challenges. The Match Domino component transforms the question-and-answer activity into a fun, competitive game, thus motivating students to participate actively and receive direct formative assessment from their peers.

4. Scaffolding and the Role of Tutoring in Educational Games

Wood, Bruner, & Ross (1976) introduced the concept of scaffolding as temporary support that is gradually withdrawn as a student masters a task. Sun (2023) adds that scaffolding in games can be adapted to the learning needs of each student. In this study, the domino cards and discussion guides serve as scaffolding that helps students to discuss, which is then gradually removed as collaboration strategies are mastered.

Empirical Evidence of TGT Effectiveness

Meta-analyses and case studies by Rahim & Atuna (2019), Susilawati, Sukartiningsih, & Subroto (2020), as well as Anggoro & Khasanah (2024), demonstrate that TGT can enhance academic achievement and social skills in science and language subjects.

By integrating social constructivism, cooperative elements, game-based engagement, and adaptive scaffolding supported by empirical evidence the TGT Match Domino activity was selected to foster better collaboration among fifth-grade students in the context of Natural and Social Sciences (IPAS) learning at the Sekolah Indonesia Kuala Lumpur.

Research Methodology

This study was initiated by direct observation in the fifth-grade class of Sekolah Indonesia Kuala Lumpur (SIKL) during the instruction of Natural and Social Sciences (IPAS). This initial observation revealed a tangible problem, namely the low level of collaboration among students. This was evident from several behaviors, such as the tendency for many students to be passive, an inequitable division of tasks, and a lack of initiative to assist one another. This finding became the foundation for why this research was necessary. To address this problem, a learning model, Teams-Games-Tournament (TGT), was implemented using Match Domino card media.

Based on this background, the study was designed with a quantitative approach, meaning it relies on numerical data to obtain an objective picture. The design used was a non-experimental survey, which aimed to describe or portray the state of student collaboration in a measurable way after they had participated in learning with the TGT model. It is important to note that the objective of this study was not to statistically prove a cause-and-effect relationship as in an experiment, but rather to conduct a descriptive evaluation of the final condition within that specific class.

To measure the collaboration variable, the primary instrument used was a structured questionnaire. This questionnaire employed a 4-point Likert Scale (1 = Strongly Disagree to 4 = Strongly Agree) to capture student responses. The 4-point scale was deliberately chosen to encourage students to provide more definitive answers by eliminating a neutral option. The indicators measured included crucial aspects of collaboration, namely: active participation in discussions, task division, joint evaluation, assisting peers, and time management. The quality of this instrument was ensured through validity testing to guarantee measurement accuracy and reliability testing to guarantee the consistency of the results.

The subjects in this research were all fifth-grade students at SIKL in the current academic year, who comprised the same group as the one in the initial observation. The researcher applied a total sampling (census) technique, wherein all members of the population in that class were made respondents. This technique was selected because the research objective was to obtain a complete and in-depth understanding of the dynamics within this one specific group, not to generalize or assume the results are applicable to a broader population.

After all data from the questionnaires were collected, the subsequent stage was data analysis. The data were processed using descriptive statistical methods to summarize and describe the findings. The analysis procedure focused on calculating the mean score for each collaboration indicator. This mean score served to present a general overview of the students' achievement on each aspect measured. Subsequently, the results of this quantitative analysis will be presented in the form of a bar chart to facilitate a visual comparison between the aspects of collaboration that are already strong and those that still require improvement.

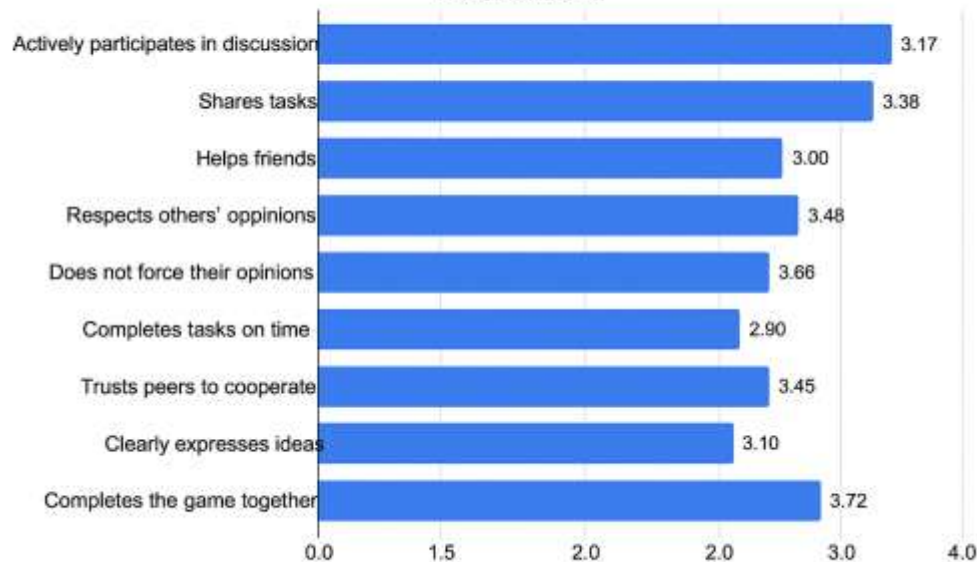
Result and Discussion

This section presents the quantitative findings of the study, gathered via questionnaire, followed by an in-depth discussion. The data analysis focuses on interpreting the findings regarding the level of student collaboration, linking the results to the Teams-Games-Tournament (TGT) model framework and supported by relevant prior studies. A statistical summary detailing the score for each collaboration indicator is presented in full in Table 1

Table 1: Summary of Average Scores for Student Collaboration Indicators

Statement	Average
Actively participates in discussion	3.17
Shares tasks	3.38
Helps friends	3.00
Respects others' opinions	3.48
Does not force their opinions	3.66
Completes tasks on time	2.90
Trusts peers to cooperate	3.45
Clearly expresses ideas	3.10
Completes the game together	3.59
Evaluates collaborative results	3.72

Summary of Average Scores for Student Collaboration Indicators



Overall, Table 1 indicates that the total mean score for student collaboration is 3.33, which falls into the "High" category. This figure represents a key finding, suggesting that the TGT Match Domino learning model was broadly successful in fostering a cooperative learning environment. This success can be attributed to the concept of positive interdependence from cooperative learning theory (Slavin, 1996). Essentially, the TGT structure fosters an awareness in each student that their individual success is contingent upon the success of their teammates, which motivates them to collaborate actively toward a common goal.

Upon closer examination, the specific strengths of this learning model become apparent. The two indicators with the highest scores are 'Evaluation of group work results' (3.72) and 'Refraining from imposing personal opinions' (3.66). This highly positive result is logical when considering the operational rules, or game mechanics, of TGT. The rules, which require students to take turns and collectively evaluate answers to earn points, inherently foster a more equitable and democratic atmosphere. This structure acts as a 'regulator' that ensures participation from all students and prevents one or two individuals from dominating the discussion. This reinforces the findings of De-Marcos et al. (2016), who argued that game rules can be an effective tool for balancing student participation.

Nevertheless, the findings also highlight areas that remain challenging. The indicator 'Assisting peers in difficulty' shows a lower score of 3.00. This figure suggests a paradox between the collaborative spirit within teams and the competitive ethos between them during the tournament. In other words, while students cooperate for the practical purpose of winning, the competitive drive may make them less incentivized to proactively assist peers who they perceive might slow the team down. This finding aligns with research by Putra et al. (2020), which concluded that social skills like empathy need to be taught directly and cannot be assumed to emerge spontaneously in group work settings.

Another challenge is evident in the indicator for 'Timely task completion', which received the lowest score (2.90). This score should not be interpreted as negligence but rather as a side effect of the students' high level of focus and engagement in the learning activity. When students are deeply engaged in an enjoyable activity, they often enter a state of intense focus, losing track of time. This phenomenon is consistent with research by Brouwer et al. (2021), which suggests that during engaging tasks, teachers

should provide explicit time management aids (such as an on-screen timer) to help students maintain awareness of time allocation.

In conclusion, the TGT model assisted by Match Domino is highly effective in encouraging students to participate actively, respect one another's opinions, and collaborate equitably. However, to achieve holistic and comprehensive cooperation, additional attention is required to cultivate social awareness and time management skills. Therefore, practical recommendations for educators include awarding bonus points to the most supportive teams and using visual time-keepers in the classroom.

Conclusion

This research demonstrates that the implementation of the Teams-Games-Tournament (TGT) cooperative learning model, integrated with Match Domino game media, significantly enhanced collaboration among fifth-grade students at Sekolah Indonesia Kuala Lumpur during Natural and Social Sciences (IPAS) instruction. Overall, student collaboration achieved a high mean score of 3.33 out of 4. This indicates that the implemented intervention successfully addressed the previously observed problems of low participation and student interaction.

Specifically, the TGT model proved highly effective in fostering democratic and cohesive group dynamics. The most robust aspects of collaboration were evident in the students' ability to collectively evaluate group work outcomes (mean score: 3.72) and to refrain from imposing personal opinions (mean score: 3.66). This finding aligns with the research objective of creating a more dynamic and inclusive learning environment.

However, the study also identified areas requiring further attention. The aspects with the lowest scores were "timely task completion" (2.90) and "assisting peers" (3.00). This suggests that although teamwork was well-established, the reinforcement of individual responsibility and the initiative for proactive mutual support remain challenges.

Therefore, it is concluded that the TGT model assisted by Match Domino is a highly promising and effective strategy for enhancing collaboration. For future implementation, it is recommended that instructional practices place greater emphasis on strengthening personal accountability and interpersonal communication skills to further refine the collaborative learning experience. The success of this model offers a replicable framework for other contexts within the Indonesian curriculum, serving to enrich the repertoire of student-centered pedagogy.

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