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The Effectiveness of the Teams Games Tournament Model Using Blooket Games Media on Fourth-Grade Science Learning Outcomes

Novelita Ayu Rahma Dani*, Nafiah, Agus Wahyudi, Dewi Widiana Rahayu

Faculty of Teacher Training and Education FKIP, Universitas Nahdlatul Ulama Surabaya, Surabaya, 57141, Indonesia

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* Corresponding author:

E-mail: rnovelitaayu@gmail.com

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ABSTRACT

This study examines the effectiveness of the Teams Games Tournament (TGT) cooperative learning model supported by Blooket media on student learning outcomes in Grade IV Science and Social Studies (IPAS) at SD Iskandar Said, Surabaya. The study was conducted in response to low student learning outcomes associated with the use of conventional instructional methods and limited utilization of interactive learning media. A quantitative approach was employed using a one-group pretest-posttest pre-experimental design. The research sample consisted of 25 students from Class IVA. Data were collected through learning outcome tests (pretest and posttest), observation sheets of learning implementation, and student response questionnaires. The results indicated that the mean pretest score of 48.80 increased to 85.60 in the posttest. The N-Gain value of 0.73 was categorized as high, indicating a substantial improvement in learning outcomes. Observation results showed a score of 62, categorized as good, reflecting consistent implementation of the learning model. Student response questionnaire results indicated a positive level of engagement, with a percentage of 95%. These findings suggest that the application of the TGT learning model supported by Blooket media contributes to improved learning outcomes and encourages active student participation in the learning process.

1. Introduction

Education in the modern era demands innovation in learning methods to improve the quality of student learning outcomes. Natural and Social Sciences (IPAS) subjects are often considered difficult and boring by students, especially at the elementary school level, due to their complex and abstract concepts. This leads to low student learning outcomes, as identified at SD Iskandar Said Surabaya, where the average IPAS score is still below the Minimum Completion Criteria (KKM).

Teachers tend to rely on the lecture method and textbooks, which are less interesting and interactive.

Low student learning outcomes in IPAS subjects are still a problem in many primary schools. At SD Iskandar Said, the pretest results show that most students have not reached the Minimum Completion Criteria (KKM). One of the causes is the learning process, which is still dominated by the lecture method and the use of textbooks, without involving interesting media or methods. This condition makes students less interested and passive in participating in learning. Margiati et al. (2015) also shows that student learning outcomes in science lessons at SDN 25 Ambarang are still low because learning is one-way and does not actively involve students. Similarly, Izzah & Sukmawati (2022) found that students who understand the concepts of IPAS well will have critical thinking and problem-solving skills that are important for the future.

To address this issue, interactive learning media assisted by technology can be utilized. Augmented Reality (AR) offers an innovative approach by overlaying digital content onto real-world environments, making abstract concepts more tangible and engaging. Studies have demonstrated the effectiveness of AR-based media in enhancing learning outcomes: Khusnunnisa & Andriani (2025) developed interactive multimedia with AR for human sensory materials, which increased student engagement; Septiani et al. (2025) showed that AR-integrated learning media on atomic theory significantly improved high school students' learning outcomes; Zahro et al. (2024) found that AR-based Big Book media enhanced understanding of plant structure and function for elementary students; Jannah et al. (2025) reported increased reading interest through AR-based storybooks; and Muti'ah et al. (2024) demonstrated that fraction pop-up books using AR improved numeracy skills. These findings indicate that AR can make learning more interactive and support students' conceptual understanding in IPAS subjects.

Another approach to improve learning outcomes is through structured learning modules. E-modules provide guided learning steps, problem-solving exercises, and interactive media that encourage active student participation. Maisaroh et al. (2025) highlighted that multiple-representation physics modules improve conceptual understanding and scientific attitudes. Similarly, Setiawan & Widiyanti (2025) showed that CNC learning modules enhance technical skills, while Putri et al. (2025) emphasized the importance of needs analysis in developing multimedia modules to support science learning. These studies suggest that e-modules, when combined with engaging learning media such as AR or gamified platforms, can significantly enhance students' comprehension and motivation.

One effective solution is the Teams Games Tournament (TGT) cooperative learning model based on Blooket Games media. This model combines group work with educational games that make learning more fun. Adiningsih (2024) showed that the use of Blooket games in IPA learning increased students' engagement and learning outcomes. Combining cooperative learning models with AR-based media and e-modules can potentially further enhance motivation, understanding, and overall learning achievement in elementary IPAS classes.

Despite numerous studies highlighting the effectiveness of Augmented Reality, digital media, and structured learning modules in improving learning outcomes, limited research has specifically examined the integration of the Teams Games Tournament (TGT) cooperative learning model with digital game-based platforms such as Blooket in elementary IPAS classrooms. Most previous studies have focused either on AR-based media, e-modules, or cooperative learning models separately, without combining structured cooperative competition and interactive digital games within the same instructional design, particularly at the fourth-grade elementary level. Furthermore, empirical evidence regarding the effectiveness of this integrated approach in improving IPAS learning outcomes in primary school settings remains limited. Therefore, this study aims to examine the effectiveness of the Teams Games Tournament (TGT) cooperative learning model assisted by Blooket Games media in improving the learning outcomes of fourth-grade students in IPAS at SD Iskandar Said Surabaya.

2. Methodology

This study employed a quantitative approach using an experimental research method with a Pre-Experimental Design, specifically the One Group Pretest–Posttest Design. This design involves administering a pretest prior to the treatment and a posttest after the treatment. The difference between pretest and posttest scores was used to identify changes in students' learning outcomes following the implementation of the Teams Games Tournament (TGT) cooperative learning model assisted by Blooket Games media. Figure 1 illustrates the One Group Pretest–Posttest Design proposed by Emzir (2014).

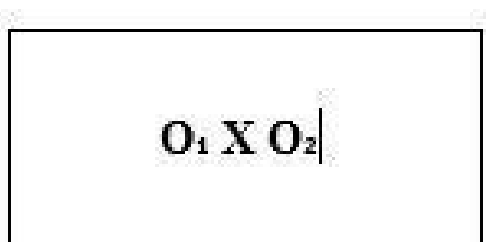


Figure 1. One Group Pretest-Posttest Design by Emzir (2014)

Description:

- O1 : Pre-test results before Teams Games Tournament learning is implemented.
- O2 : Post test results after the implementation of Teams Games Tournament learning.
- X : Treatment that is applied using Blooket Games media.

Although the One Group Pretest–Posttest Design allows researchers to measure changes in learning outcomes before and after treatment, this design has methodological limitations. The absence of a control group makes it difficult to fully attribute improvements solely to the treatment, as external factors such as maturation, prior knowledge development, or environmental influences may also contribute to the observed changes. In addition, the relatively small sample size and

the use of a single class limit the generalizability of the findings. Therefore, while this design provides preliminary evidence regarding the effectiveness of the TGT model assisted by Blooket Games, the results should be interpreted cautiously. Future studies are recommended to employ quasi-experimental or true experimental designs with control groups to obtain stronger causal inferences.

The research was conducted at SD Iskandar Said Surabaya with 25 fourth-grade students as participants. All students were included using a saturated sampling technique due to the small population size, ensuring comprehensive representation. Data were collected using three instruments: achievement tests in the form of pretest and posttest to measure cognitive learning outcomes, observation sheets to assess the implementation of the Teams Games Tournament (TGT) learning model assisted by Blooket Games, and student response questionnaires to identify students' perceptions of the learning process and media used.

The validity of the instruments was established through content validity, with reviews by an elementary education lecturer and a fourth-grade IPAS teacher, focusing on the relevance of items to learning objectives, indicators, and instructional materials. Revisions were made based on expert feedback to ensure accurate measurement of the intended variables. Instrument reliability was also examined to guarantee consistency, and only instruments meeting acceptable reliability criteria were used in data collection, ensuring that results were stable and trustworthy.

Data collection involved administering pretests and posttests, conducting classroom observations, and distributing student response questionnaires after the learning implementation. Observation data were analyzed descriptively using percentage calculations, with each indicator scored, summed, and converted into percentage categories according to the learning implementation scale presented in Table 1. This approach allowed the researchers to evaluate both the effectiveness of the TGT learning model assisted by Blooket Games and the students' engagement and responses during the learning process.

Table 1. Learning Implementation Conversion Scale

Score Range %	Category
81-100	Excellent
61-80	Good
41-60	Fair
21-40	Deficient
0-20	Very Deficient

Pretest and posttest scores were analyzed using the N-Gain test to evaluate the improvement in students' learning outcomes. This analysis provided a clear measure of how much students' understanding increased after the learning activities, allowing educators to see which concepts were well understood and which still needed reinforcement. The N-Gain index offers a standardized way to quantify learning progress, making comparisons across different groups or classes possible. By categorizing the results into high, medium, low improvement, or decrease, teachers can identify which students benefited most from the learning

intervention and which students may require additional support. Pretest and posttest scores were analyzed using the N-Gain test to see the improvement in learning outcomes, with the following categories:

$$N\text{ Gain} = \frac{\text{Skor Posttest} - \text{Skor Pretest}}{\text{Skor Ideal} - \text{Skor pretest}}$$

This approach also helps assess the effectiveness of teaching methods, learning materials, and learning media. For example, if the majority of students show high or moderate improvement, it indicates that the learning strategy is effective in improving understanding. Conversely, low or decreasing improvement may signal the need to revise the learning approach, provide additional practice, or incorporate more engaging media. Table 2 shows that N-Gain analysis is a practical tool in educational research, providing quantitative evidence of learning gains and guidance for improving teaching practices (Wahab et al., 2021).

Table 2. Category of N-gain Test Results

N-Gain Index	Category
$G > 0,70$	High Improvement
$0,30 < g \leq 0,70$	Medium Improvement
$G \leq 0,30$	Low Improvement $G = 0,00$
$-1,00 \leq g < 0,00$	Decrease

Source: (Wahab et al., 2021)

In addition, to measure the increase in student learning outcomes, a gain test was conducted. This gain test aims to determine how much change occurs in student learning outcomes before and after using Blooket Games media. Student responses were analyzed using a Likert scale (Riduwan, 2015). The results from this analysis provide insight into students' engagement and perception of the learning process, complementing the quantitative data obtained from the N-Gain test. The Likert scale scoring criteria used in this study are presented in Table 3.

Table 3. Score Table

Learner Answer Categories	Score for Item	
	Positive	Negative
STS	1	1
TS	2	2
S	3	3
SS	4	4

Source: (Manisa et al., 2018)

Description:

STS = strongly disagree

TS = disagree

S = agree

SS = strongly agree

To determine the criteria for each indicator, the interpretation guidelines proposed by Khabibag (2019) were applied, as presented in the following table. Table 4 guidelines provide a structured framework for categorizing student responses, allowing for consistent and objective assessment of each indicator. By using this approach, the analysis can accurately reflect the level of student engagement, understanding, and participation, ensuring that both qualitative and quantitative aspects of the learning outcomes are considered.

Table 4. Student Response Category

Percentage	Category
85% -100%	Very Positive
70% - <85%	Positive
50% -< 70%	Moderately Positive
< 50%	Not Positive

3. Results and Discussion

Observation data were obtained through direct observation during learning activities in Class IV at SD Iskandar Said Surabaya. The observations were conducted by the 4A homeroom teacher, Mrs. Indah, using a structured observation sheet. She recorded important aspects such as student activeness, the teaching methods employed, the use of learning media, and communication between teachers and students. The observation sheet was filled out during the lesson to ensure that the data collected were accurate and reflected real-time classroom dynamics. This approach allowed for the identification of both strengths and weaknesses in the learning process, providing a detailed picture of how students interacted with the lesson content and instructional methods. By systematically documenting these observations, it was possible to monitor engagement levels, participation patterns, and the effectiveness of the media used. The results also helped to assess whether the TGT learning model with Blooket Games facilitated active learning and improved classroom interaction. Overall, the data offered a foundation for evaluating and refining teaching strategies to enhance student learning outcomes.

The observational data served not only as a record of classroom activities but also as an evaluation tool for improving the quality of learning. These results were analyzed to determine how the implementation of the TGT learning model with Blooket Games influenced student motivation and understanding. Patterns identified from the observations provided insight into effective teaching practices and areas that required adjustment, such as media usage, instructional pacing, and teacher-student communication. By comparing these findings with learning outcomes, educators could make informed decisions about future lesson planning. The observation results are summarized in Table 5, highlighting the key aspects of student engagement, teacher performance, and the role of learning media in enhancing the educational experience.

Tabel 5. Teacher Observation Results

Learning Activities	Activity description	Score		
		1	3	4
		2		
Introduction				
Orientation	The teacher gives greetings and gives directions for prayer together.			√
	The teacher takes attendance of students			√
Apperception	The teacher reviews the previous material by linking the material that will be learned today			√
Providing Motivation	The teacher motivates students to be more enthusiastic in learning			√
Delivering Objectives	The teacher conveys the learning objectives to be achieved and provides encouragement to be motivated to learn			√
Providing Information	The teacher conveys information to students through live presentations			√
Forming Groups	The teacher divides groups of 5 students according to attendance			√
Explaining Tasks	The teacher explains and assigns tasks for each group to be discussed together			√
Providing facilities and infrastructure	The teacher provides worksheets according to the material, objectives and number of students			√
Core Activities				
Assisting students	The teacher asks students to answer the questions on the question sheet.			√
Guiding and directing groups in completing LK	The teacher monitors the situation by going around to see each group			√
Implementing games tournament	The teacher asks students to ask questions that have not been understood			√
Carrying out evaluation tests	The teacher asks students to ask questions that have not been understood and work on questions individually			√
Final Activities				
Responding to learning activities	The teacher encourages students to make conclusions and gives reinforcement to students			√
Ending the lesson	The teacher motivates students to study hard and closes the lesson with greetings.			√
Amount				62

Based on the observation results, the implementation score reached 62, which falls within the “good” category (61%–80%). This indicates that most learning indicators were successfully implemented. Students actively participated in group discussions, showed enthusiasm during the tournament session, and engaged positively with the Blooket Games media. The structured nature of the TGT model, combined with the interactive features of Blooket, allowed students to collaborate effectively and maintain focus throughout the lesson. The observations also showed that the teacher’s use of media and clear instructions contributed to smoother classroom

management and better student participation. These findings align with Agustin et al. (2024), who reported that integrating the TGT model with Blooket significantly increased student activeness and classroom interaction. Similarly, Armidi (2022) found that TGT encourages student participation through structured competition. In addition, the results support previous research by Adiningsih et al. (2024), which highlighted that digital learning media like Blooket can make abstract concepts in science subjects more engaging and easier to understand for students at the elementary level.

However, unlike Armidi's study, which did not incorporate digital media, this study demonstrates that the inclusion of Blooket Games enhances student motivation and engagement, particularly for elementary school learners who are accustomed to interactive digital environments. The observation data and learning outcomes together provide a comprehensive view of the effectiveness of this blended learning approach. Table 6 shows the comparison of students' learning outcomes before and after the application of the TGT learning model assisted by Blooket Games. The table includes pretest scores, posttest scores, and N-Gain values to determine the level of improvement in students' understanding of IPAS material. Overall, combining TGT with digital game-based media not only supports active learning but also helps teachers identify which instructional strategies are most effective in enhancing both engagement and comprehension (Wahab et al., 2021).

Table 6. Student Score Data

No.	Student Name	Pretest Results	Posttest Results	Post-pre	N-Gain	N-Gain Score	Description N-Gain
1.	DZA	40	80	40	0,67	67%	Moderate Improvement
2.	DE	60	80	20	0,50	50%	Moderate Improvement
3.	INT	60	100	40	1,00	100%	High Improvement
4.	AVA	40	100	60	1,00	100%	High Improvement
5.	KYS	60	100	40	1,00	100%	High Improvement
6.	RAA	40	80	40	0,67	67%	Moderate Improvement
7.	BIL	40	80	40	0,67	67%	Moderate Improvement
8.	DEV	60	100	40	1,00	100%	High Improvement
9.	NAJ	40	100	60	1,00	100%	High Improvement
10.	RAN	60	80	20	0,50	50%	Moderate Improvement
11.	VI	60	80	20	0,50	50%	Moderate Improvement
12.	ROB	20	80	60	0,75	75%	High Improvement
13.	EZ	40	80	40	0,67	67%	Moderate Improvement

14	BIL	40	80	40	0,67	67%	Moderate Improvement
15.	ZUL	40	100	60	1,00	100%	High Improvement
16.	ANG	60	80	20	0,50	50%	Moderate Improvement
17	EVN	60	80	20	0,50	50%	Moderate Improvement
18	ABY	40	100	60	1,00	100%	High Improvement
19	SYF	60	100	40	1,00	100%	High Improvement
20	MRT	60	80	20	0,50	50%	Moderate Improvement
21	HA	40	80	40	0,67	67%	Moderate Improvement
22	AIS	40	80	40	0,67	67%	Moderate Improvement
23	RZL	40	60	20	0,33	33%	Moderate Improvement
24	NAD	60	80	20	0,50	50%	Moderate Improvement
25	ADL	60	80	20	0,50	50%	Moderate Improvement
- Pretest average: 8.80							
- Posttest average: 85.60			1220	2140	920	17,75	
- Average Improvement: 364.88,080poin			85,60	36.8	0.71	71.00	

The N-Gain test results showed an average of 0.71 (71%), which is in the "high" improvement category. A total of 9 students (36%) showed high improvement, and 16 students (64%) showed moderate improvement. There were no students who experienced low or decreased improvement. This proves that the TGT learning model assisted by Blooket Games media is very effective in improving the learning outcomes of IPAS grade 4 students. Blooket Games media successfully creates fun, competitive, and interactive learning, which is in line with the findings of previous research.

The effectiveness of the TGT model assisted by Blooket Games can also be explained from a theoretical perspective. According to Slavin (2022), cooperative learning models succeed because they allow every student to contribute, regardless of their ability level. Students with higher achievement help their peers, while those with lower achievement are motivated to keep up with the group's progress. When this principle is combined with digital interactivity, students are more likely to remain engaged and enthusiastic (Hartati, 2025). Blooket Games, for instance, not only present questions in an enjoyable format but also provide instant rewards, points, and rankings that stimulate intrinsic and extrinsic motivation. This aligns with the concept of gamification, where elements of play are applied in non-game contexts to increase engagement.

Another important aspect is the development of 21st century skills, which are considered essential for students' future success. The integration of TGT and

Blooket encourages collaboration, communication, critical thinking, and creativity the so-called “4Cs” of modern education. During the tournament, students must communicate effectively, analyze questions critically, and apply problem-solving strategies in real time. Such activities train students to be more confident in expressing opinions and to respect teamwork dynamics. In addition, the friendly competition created by Blooket reduces learning anxiety, as students feel that mistakes are part of the game rather than a sign of failure. This creates a supportive learning climate that enhances both academic and non-academic outcomes. Therefore, the effectiveness of the model is not only evident in test score improvement but also in shaping positive learning attitudes and behaviors among elementary students.

After participating in IPAS learning with Blooket Games media, fourth grade students of SD Iskandar Said were asked to fill out a questionnaire. The purpose is to know their opinion about the learning that has been done. The questionnaire contains questions about the clarity of the material, the appearance of the media, the variety of questions, and the enthusiasm of students to learn. The questionnaire results showed that most students gave positive responses. They feel that learning becomes more interesting, fun, and helps them understand the material more easily. the following table shows the results of the student response questionnaire. Table 7 presents the results of the student response questionnaire administered after the learning activities. This table reflects students’ perceptions of the use of Blooket Games in IPAS learning, including clarity of material, media appearance, variety of questions, and learning enthusiasm.

Table 7. Student Response Questionnaire Results

No	Name	Score Obtained	Maximum Score
1	DZA	20	20
2	DE	20	20
3	INT	20	20
4	AVA	20	20
5	KYS	18	20
6	RAA	18	20
7	BIL	20	20
8	DEV	20	20
9	NAJ	20	20
10	RAN	20	20
11	VI	20	20
12	ROB	20	20
13	EZ	16	20
14	BIL	20	20
15	ZUL	20	20
16	ANG	20	20
17	EVN	16	20
18	ABY	16	20
19	SYF	20	20
20	MRT	18	20
21	HA	20	20
22	AIS	20	20

23	RZL	16	20
24	NAD	20	20
25	ADL	20	20
Total Score		478	
Maximum Score			500

The results of the student response questionnaire showed a total score of 478 out of a maximum of 500, resulting in a percentage of 95%. This score falls into the “very positive” category, indicating strong approval from the students. The majority of students responded very positively to the use of Blooket Games, stating that the media was interesting, easy to understand, and capable of increasing their enthusiasm and motivation to learn. Specific aspects such as the clarity of the material, variety of questions, media display, and supporting music received particularly high positive responses, highlighting the effectiveness of interactive digital media in engaging elementary school learners (Adiningsih et al., 2024; Agustin et al., 2024).

These findings confirm that the Teams Games Tournament (TGT) learning model assisted by Blooket Games is effective in improving IPAS learning outcomes, student engagement, and learning motivation at the elementary school level. Compared with previous studies, this research extends existing findings by applying the combined TGT and Blooket approach specifically to fourth-grade IPAS learning (Armidi, 2022; Adiningsih et al., 2024). Although this study was limited by the absence of a control group, the consistency of the results with prior research and the high level of learning improvement suggest that this model is a promising alternative to conventional instruction in elementary education. The study demonstrates that integrating structured cooperative learning with digital game-based media can create a more motivating and interactive classroom environment, providing both quantitative and qualitative evidence of its effectiveness (Wahab et al., 2021).

4. Conclusion

The implementation of the Teams Games Tournament (TGT) learning model assisted by Blooket Games at SD Iskandar Said Surabaya was carried out in accordance with the planned instructional stages and created an active and interactive learning environment. Classroom observations indicated that the learning process was implemented effectively, with students actively participating throughout the activities. The findings reveal a clear improvement in students' learning outcomes after the application of the TGT model supported by Blooket Games. In addition, students demonstrated highly positive responses toward the learning process, indicating increased motivation, engagement, and enthusiasm during IPAS lessons.

Overall, this study confirms that the integration of cooperative learning strategies with digital game-based media contributes to improved academic achievement and enhanced student participation at the elementary level. Although this research

employed a pre-experimental design without a control group, the results provide valuable preliminary evidence regarding the effectiveness of this instructional approach. Future studies are recommended to apply more rigorous research designs and involve broader samples to further validate the effectiveness of this model across different subjects and educational settings.

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