

Effect of Using Educaplay Media in the Team Games Tournament (TGT) Model on Students' Learning Outcomes

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Abstract: Science learning requires innovative strategies that actively engage students in the learning process. However, classroom learning is often still teacher-centered, resulting in low student participation and unsatisfactory learning outcomes. This study aimed to analyze the effect of using Educaplay media integrated with the Team Games Tournament (TGT) learning model on students' learning outcomes in the topic of classification of living things. The research employed a quasi-experimental design with a nonequivalent control group. The sample comprised 62 seventh-grade students selected through purposive sampling, divided into an experimental and a control class. The experimental class received instruction using the TGT model assisted by Educaplay, while the control class used the TGT model without Educaplay. Data were collected using validated cognitive achievement tests and analysed using descriptive statistics, normality and homogeneity tests, and independent-samples t-tests. The results showed that the experimental class achieved a higher mean posttest score (74.35) than the control class (56.77). Hypothesis testing revealed a significance value (Sig. 2-tailed) of $< 0.001 < 0.05$, indicating that the use of Educaplay-assisted TGT significantly affected students' learning outcomes. Therefore, integrating Educaplay with the TGT learning model can improve students' engagement and science learning outcomes. These findings suggest that integrating Educaplay into cooperative learning can serve as an effective digital learning strategy to enhance student achievement and support more engaging science instruction in junior high schools.

Keywords: Classification of Living Things; Educaplay; Learning Outcomes; Team Games Tournament (TGT).

Introduction

Education plays an important role in improving the quality of human resources and preparing future generations to face global challenges. In science education, learning is not only about mastering concepts but also about developing scientific attitudes, problem-solving skills, and active participation in the learning process. Therefore, science learning should encourage students to actively construct knowledge through observation, experimentation, discussion, and collaboration [1].

However, the achievement of science learning outcomes among Indonesian students is still relatively low. Based on the results of the Programme for International Student Assessment (PISA) 2022, the average science score for Indonesian students was 383, ranking 67th out of 81 participating countries [2]. This condition indicates that many students still struggle to understand scientific concepts. One factor that contributes to this problem is the dominance of teacher-centered learning practices, where students tend to be passive recipients of information rather than active participants in the learning process [3].

A similar condition was also found at SMP Negeri 23 Medan. Based on classroom observations and interviews with science teachers, the learning process was still dominated by teacher explanations, with limited use of interactive learning media. Teachers generally used instructional videos and field activities, whereas interactive

digital media had not yet been integrated into classroom learning. In addition, approximately 64% of seventh-grade students had not met the Minimum Learning Competency Criteria in science, indicating that students' learning outcomes remained relatively low.

One science topic considered difficult by students is the classification of living things because it involves understanding scientific names, taxonomic hierarchy, organism grouping, and determination keys. Students often struggle to distinguish scientific terms such as class, order, family, genus, and species [4], [5]. Therefore, learning strategies that improve students' conceptual understanding and engagement are needed.

One strategy to address this problem is the use of cooperative learning models combined with interactive learning media. Cooperative learning encourages students to collaborate, exchange ideas, and actively participate in the learning process. One cooperative learning model that can be applied is the Team Games Tournament (TGT) model. The TGT model integrates group learning activities with educational games and tournaments, thereby increasing student engagement and motivation during the learning process. One strategy is to integrate cooperative learning models with interactive digital media. Cooperative learning encourages students to collaborate, exchange ideas, and actively participate during learning activities. One cooperative learning model that can support these activities is Team Games Tournament (TGT). The TGT model

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integrates group discussions, games, and tournaments to create a more engaging and enjoyable learning environment. Previous studies reported that the TGT learning model positively affects students' motivation, participation, and learning outcomes. [6].

The effectiveness of the TGT model can be enhanced by integrating interactive digital learning media, such as Educaplay. Educaplay is a web-based learning platform that offers a variety of educational activities, including quizzes, crossword puzzles, matching games, and interactive exercises. Using Educaplay can create a more interactive learning environment, increase students' attention, and provide immediate feedback during learning activities. Previous studies also reported that Educaplay contributes positively to students' engagement and conceptual understanding [7]. Previous research has shown that integrating Educaplay into the TGT learning model can improve students' learning outcomes. The use of interactive digital media combined with cooperative learning activities can create a more engaging learning environment and support students' conceptual understanding [8].

Several previous studies have separately examined the effectiveness of TGT and Educaplay in improving learning outcomes. However, studies integrating Educaplay media into the TGT cooperative learning model are still limited, particularly in science learning on the classification of living things at the junior high school level. Most previous studies focused only on motivation or general achievement without specifically examining conceptual understanding in classification materials, which are often considered difficult by students. Therefore, this study offers novelty by integrating Educaplay media into the TGT learning model in junior high school science and examining its effect on students' learning outcomes in the classification of living things.

Based on these considerations, this study aimed to analyze the effect of using Educaplay media integrated with the Team Games Tournament (TGT) learning model on students' learning outcomes in the topic of classification of living things.

Research Methods

This study employed a quasi-experimental research method using a nonequivalent control group design to analyze the effect of using Educaplay media integrated with the Team Games Tournament (TGT) learning model on students' learning outcomes. The research was conducted at SMP Negeri 23 Medan during the 2025/2026 academic year.

The study population consisted of all seventh-grade students at SMP Negeri 23 Medan. The sample was selected using purposive sampling based on similarities in students' academic abilities and the use of the same science teacher in both classes. The sample comprised two classes of 62 students: 31 in the experimental class and 31 in the control class.

The independent variable in this study was the use of Educaplay media integrated with the Team Games Tournament (TGT) learning model, while the dependent variable was students' learning outcomes in the classification of living things. The experimental class received instruction using the TGT learning model assisted by Educaplay media, while the control class received instruction using the TGT

learning model without Educaplay. The learning process consisted of four meetings covering materials on the classification of living things, including taxonomic hierarchy, scientific naming systems, organism grouping, and determination keys.

The research instrument consisted of cognitive achievement tests in the form of multiple-choice questions covering cognitive levels C1–C6. Before being administered, the instrument was tested for validity, reliability, difficulty level, and discrimination index. The validity test results indicated that the instrument items met the validity criteria, while the reliability test showed that the instrument had high reliability and was appropriate for measuring students' learning outcomes.

Data collection techniques were conducted through pretest and posttest administration. The pretest was administered before the treatment to determine students' initial abilities, while the posttest was administered after the treatment to measure students' learning outcomes. Data analysis techniques included descriptive and inferential statistical analyses. Descriptive statistics were used to determine the mean scores of students' learning outcomes in both classes. Inferential analysis consisted of prerequisite tests and hypothesis testing. The prerequisite tests included normality testing using the Shapiro–Wilk test and homogeneity testing. Hypothesis testing was conducted using an independent-samples t-test at the 0.05 significance level to determine whether there was a significant difference between the experimental and control groups.

Results and Discussion

Students' Learning Outcomes

Students' learning outcomes were obtained through pretest and posttest scores in both the experimental and control classes. The experimental class received instruction using the Team Games Tournament (TGT) learning model assisted by Educaplay media, while the control class received instruction using the TGT learning model without Educaplay.

Table 1. Students' Learning Outcomes in the Experimental and Control Classes

Class	Pretest Mean	Posttest Mean	N
Experimental	49.52	74.35	31
Control	42.74	56.77	31

Based on Table 1, the posttest mean score of the experimental class was higher than that of the control class. Although both classes experienced improvements after the learning process, the increase in the experimental class was considerably greater. These findings indicate that integrating Educaplay media into the TGT learning model positively affected students' learning outcomes in the classification of living things. The comparison of pretest and posttest scores between the experimental and control classes is also illustrated in Figure 1.

Figure 1 shows that both the experimental and control classes improved their learning outcomes after the learning process. However, the increase in the experimental class was higher than that of the control class. The experimental class achieved a posttest mean score of 74.35, while the control

class achieved a posttest mean score of 56.77. These findings indicate that integrating Educaplay media into the Team Games Tournament (TGT) learning model positively improved students' learning outcomes.

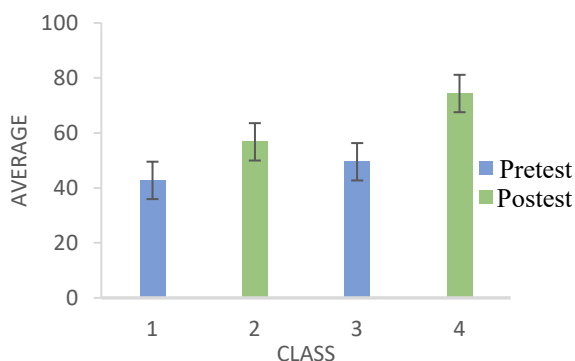


Figure 1. Comparison of Pretest and Posttest Scores in Experimental and Control Classes

Normality Test

Before conducting hypothesis testing, prerequisite tests were conducted, including a normality test. The normality test used the Shapiro–Wilk test to determine whether the data were normally distributed.

Table 2. Results of Normality Test

Class	Evaluation	(Sig.)	Conclusion
Experimental	Pretest	0.86	Normal
	Posttest	0.17	Normal
Control	Pretest	0.46	Normal
	Posttest	0.83	Normal

The results of the normality test showed that the significance value (Sig.) for both classes was greater than 0.05. Therefore, the data were normally distributed and met the requirements for further statistical analysis.

Homogeneity Test

The homogeneity test was conducted to determine whether the variance of the two groups was homogeneous.

Table 3. Results of Homogeneity Test

Test Type	Sig Based on Mean	Sig. Value	Criteria
Pretest of the control class and the experimental class	0.67	0.05	Homogen
Posttest of the control class and the experimental class	0.41	0.05	Homogen

The results indicated that the p-value was greater than 0.05, indicating that the variances of the experimental and control classes were homogeneous.

Hypothesis Testing

After the prerequisite tests were completed, the independent-samples t-test was used to determine whether

there was a significant difference between the experimental and control classes.

Table 4. Results of Hypothesis Test (Independent Sample T-Test)

Class	N	Mean	Std. Dev.	Sig. (2-tailed)	Conclusion
Control	31	56.77	16.15	< 0.001	H_a accepted
Experimental	31	74.35	13.40		

The results of the independent sample t-test showed that the significance value (Sig. 2-tailed) was less than 0.05. This indicates that the use of Educaplay media integrated with the Team Games Tournament (TGT) learning model significantly improved students' learning outcomes in the classification of living things.

The findings of this study revealed that integrating Educaplay media into the Team Games Tournament (TGT) learning model significantly improved students' learning outcomes in the classification of living things. This result was indicated by the higher posttest mean score in the experimental class than in the control class. Statistical analysis using the independent sample t-test also showed that the significance value (Sig. 2-tailed) was less than 0.05, indicating that the use of Educaplay-assisted TGT significantly affected students' learning outcomes.

One important factor influencing improvements in students' learning outcomes was the uniqueness of Educaplay as an interactive digital learning medium. Educaplay offers various game-based educational activities, such as quizzes, crossword puzzles, matching games, and animated learning activities, that can increase students' attention and participation during the learning process [10], [14]. Unlike conventional learning media, Educaplay allows students to interact directly with learning materials through visual and game-based activities. This interactive learning environment helps students become more focused and actively involved during classroom learning activities. Mayer [18] explained that multimedia learning environments can improve students' understanding by helping them process information more effectively through visual and interactive elements.

The use of Educaplay media also helped students understand abstract concepts in the topic of classification of living things. This material contains many scientific terms, taxonomic hierarchies, and classification systems that are often difficult for students to understand through conventional learning methods alone. Interactive features provided by Educaplay enabled students to repeatedly review concepts in a more enjoyable way through quizzes and educational games. Educaplay can improve students' understanding and learning achievement by making them more actively engaged in the learning process [11]. Similar findings explained that Educaplay, as an interactive digital medium, can improve students' higher-order thinking skills and conceptual understanding in learning materials on living things [19].

The effectiveness of Educaplay in this game-based learning activity can increase students' motivation and participation during classroom learning [20]. This finding indicates that interactive digital media not only function as learning tools but also create more enjoyable and meaningful learning experiences for students. In this study, students

became more enthusiastic because learning activities were combined with games and tournaments, reducing boredom during the learning process.

In addition to Educaplay Media's role, the Team Games Tournament learning model also significantly improved students' learning outcomes. The TGT model emphasizes collaboration, peer interaction, discussion, games, and academic tournaments during learning activities [15]. Through group discussions, students exchanged ideas, solved problems collaboratively, and assisted peers who experienced learning difficulties. This collaborative learning process encouraged students to become more active and responsible for their own learning and for their group's performance.

The collaborative activities implemented in the TGT model reflect cooperative learning theory, which emphasizes interaction and teamwork among students during learning activities. Cooperative learning can improve students' achievement by fostering learning through discussion, peer tutoring, and collaborative problem-solving [21-22]. Similarly, cooperative learning environments create positive interdependence among group members, enabling students to support one another in achieving learning goals [23].

The collaborative process in TGT also reflects the concept of scaffolding, in which students with a better understanding provide temporary assistance to peers who experience learning difficulties [12]. Through interaction and discussion, students were able to construct conceptual understanding more effectively [13]. This condition made learning more meaningful because students learned not only from teacher explanations but also from interaction and collaboration with peers.

Another important factor influencing students' learning outcomes was the tournament stage integrated with Educaplay activities. During tournaments, students represented their groups to answer questions presented as interactive games. This activity fostered a healthy competitive atmosphere, increasing students' motivation and enthusiasm during classroom learning. Students became more encouraged to understand the material because they wanted to contribute positively to their teams. Consequently, students became more focused, active, and engaged throughout the learning process.

The findings of this study are consistent: integrating Educaplay media into the Team Games Tournament learning model positively affected students' learning outcomes [9, 16]. Educaplay offers advantages such as ease of use, interactive features, and flexibility in designing educational activities, enabling teachers to create more engaging and varied learning experiences [17]. Similarly, Nurhayati et al. [24] stated that the use of Educaplay in classroom learning can improve students' engagement and participation by making learning activities more interactive and enjoyable.

Compared to the control class, students in the experimental class experienced a more interactive and enjoyable learning process, as classroom activities were supported by visual displays, game-based evaluations, and immediate feedback through Educaplay. Meanwhile, the control class learned using the TGT model without interactive digital media, resulting in learning activities that were relatively conventional. This difference influenced students' participation and enthusiasm during classroom activities, ultimately affecting their learning outcomes.

Amaliah [25] also explained that game-based learning activities using Educaplay can create a more enjoyable learning environment and enhance students' engagement.

Although this study's findings were positive, several limitations remain. First, this study used a quasi-experimental design without random assignment, which may allow the influence of uncontrolled external variables during the learning process. Second, the study involved only two classes at one school, resulting in a relatively small sample. Third, this study focused only on cognitive learning outcomes and did not examine students' affective or psychomotor aspects. In addition, differences in students' motivation, learning readiness, and digital literacy may also influence learning outcomes during the implementation of Educaplay-assisted learning activities.

Therefore, future studies are recommended to involve larger samples, a broader range of educational levels, and additional variables, such as learning motivation, critical thinking skills, collaboration abilities, and digital literacy. Future researchers are also encouraged to examine the long-term effectiveness of Educaplay-assisted cooperative learning in different science topics and educational contexts.

The findings of this study imply that integrating interactive digital media into cooperative learning models can create more engaging, meaningful, and student-centered science learning environments. Therefore, teachers are encouraged to utilize interactive digital learning platforms such as Educaplay to support students' conceptual understanding and active participation during learning activities. In addition, schools are expected to support the implementation of technology-based learning by providing adequate facilities and teacher training programs to more effectively integrate digital learning media into classroom instruction.

Conclusion

Based on the findings of this study, it can be concluded that integrating Educaplay media into the Team Games Tournament (TGT) learning model significantly improved students' learning outcomes in the classification of living things at SMP Negeri 23 Medan. Students who learned using the Educaplay-assisted TGT achieved higher learning outcomes than those who learned using the TGT model without Educaplay. The integration of interactive digital media and cooperative learning activities created a more engaging, collaborative, and student-centered learning environment, enabling students to better understand abstract science concepts. The findings suggest that integrating interactive digital media within cooperative learning models can enhance the quality of science learning by promoting active participation, collaboration, and conceptual understanding among students. Therefore, the use of Educaplay-assisted TGT can serve as an alternative learning strategy for teachers to create more innovative and meaningful science learning experiences. This study also provides practical implications for teachers and schools in implementing technology-based learning. Teachers are encouraged to utilize interactive digital learning platforms to support active learning and improve classroom engagement, while schools are expected to provide adequate facilities and training programs to optimize the implementation of digital learning media in classroom instruction.

Author's Contribution

N.A. Nauvalia: contributed to the conceptualization and design of the research, data collection, data analysis, and writing of the manuscript. A. Nasution: supervised the research process, provided academic guidance and theoretical input, and reviewed the final version of the manuscript. All authors have read and approved the final manuscript.

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