



The Influence of the TGT (Team Game Tournament) Type Cooperative Learning Model Assisted by Interactive Wordwall Media on the Interest and Science Learning Outcomes of Junior High School Students

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Abstract: To improve students' interest and learning outcomes in science, it is necessary to apply an innovative learning model assisted by interactive media so that the learning process in the classroom becomes more interesting, so that it can increase students' interest in learning which will later affect student learning outcomes. One innovation that can be applied to improve students' interest and learning outcomes is to use an innovative learning model, namely the TGT (Team Game Tournament) cooperative learning model assisted by interactive wordwall media. This study aims to describe the differences in students' interest in learning science, students' learning outcomes, interests and learning outcomes of science simultaneously in students who are taught using the TGT type cooperative learning model assisted by interactive wordwall media with students who are taught using the TGT type cooperative learning model. This type of research is a quasi-experimental research. This study uses a quantitative approach. The design of this study uses the Nonequivalent Pretest Posttest Control Group Design. The results of this study indicate that: a significance value of less than 0.05 was obtained, a significance value of less than 0.05 was obtained, a value of less than 0.05 was obtained, so it can be concluded that there are differences in interest and learning outcomes simultaneously in groups of students who are taught using the TGT type cooperative learning model assisted by interactive wordwall media with students who are taught using the TGT type cooperative learning model.

Keywords: Cooperative learning; Learning interest; Learning outcomes; TGT type; Wordwall media

Introduction

Natural Sciences (IPA) is a branch of science that studies nature and everything related to the scientific process (Sasingan & Wote, 2022). Natural Sciences (IPA) has an important role in improving the quality of education, especially in producing humans who have the power of reason and initiative in community life

(Artawan, 2023). Natural Sciences (IPA) in schools has an important role in forming quality human resources. Science lessons in schools are a program to instill and develop knowledge, attitude skills, and scientific values in students (Anisa et al., 2021). However, in reality, there are still many problems in the learning process, especially in science subjects, which trigger low student learning outcomes and lack of student

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interest in participating in the science learning process in class. The learning model applied by the teacher has not been able to activate students optimally, causing students to not focus when the teacher delivers learning materials (Chaudhuri et al., 2022). The low science learning outcomes are also caused by the breadth of science learning materials and the tendency of students to have difficulty memorizing the material, resulting in students being lazy to study and not doing assignments well (Muassomah et al., 2022).

Students' learning styles that are still lacking in discipline during the learning process and the use of learning media that is not optimal by teachers can also result in science learning outcomes being below the KKM score (Astiti et al., 2021). Amaliyah et al. (2021) stated that low learning outcomes are also due to students considering science subjects as difficult subjects so that students feel confused about learning them. In addition, when science learning takes place, many students do not pay attention when the teacher explains. This shows that many of these students have lost interest in learning (Lodge et al., 2018), feel bored with the monotonous learning process and lose interest in learning science which causes learning outcomes to be even lower (Steidtmann et al., 2023). Learning interest is a sense of interest and curiosity about the ongoing learning process (Andriyanto, 2024). Learning interest is one of the most important factors in supporting the achievement of the effectiveness of the teaching and learning process, which will ultimately affect student learning outcomes.

The success of learning is largely determined by the learning model and media used by the teacher during the teaching process. Based on these problems, to increase interest and learning outcomes in science in students, it is necessary to apply an innovative learning model with the help of interactive media so that the learning process in the classroom becomes more interesting, so that it can increase student interest in learning which will later affect student learning outcomes. One innovation that can be applied to increase student interest and learning outcomes is to use an innovative learning model, namely the TGT (Team Game Tournament) type cooperative learning model assisted by interactive wordwall media. The use of learning tools such as learning models and media in science is effective for both elementary and tertiary education levels (Parwata & Sudiatmika, 2020).

Cooperative learning is a learning model that provides opportunities for students to interact and actively participate during learning (Lutfiyani, 2019). Cooperative learning is designed in an effort to increase student participation, facilitate students to learn together with students from different backgrounds. With this model, students are trained to develop logical,

analytical, systematic, creative, and critical thinking skills, as well as the ability to work together. The variety of learning models used for teaching has a significant effect on student learning outcomes. The better the variety of models used for teaching, the better student learning outcomes (Karma et al., 2023). Choosing the right learning model can facilitate teaching and learning activities. Game and quiz-based learning is recommended as a solution that can be used as an innovative learning model (Sanjayanti et al., 2022). Learning media is anything that can be used as an intermediary for delivering messages that can stimulate the thoughts, feelings, attention, and interests of students in participating in learning (Cents-Boonstra et al., 2021; Ni, 2025; Amerstorfer & Münster-Kistner, 2021).

Media plays a very important role in the development and success of the learning process. The use of media in learning is expected to optimize learning activities (Wibawa et al., 2024). Learning media can facilitate the teaching process if used properly, it can simplify something complex and something abstract into reality (Daryanes et al., 2023; Darling-Hammond et al., 2020). Interactive media has various types and interesting features that can support the learning process, especially in science lessons. One of the interactive media that can be used is wordwall media.

Method

This type of research is a quasi-experimental research. This research uses a quantitative approach. The design of this research uses the Nonequivalent Pretest Posttest Control Group Design. This design consists of two groups, namely the experimental group and the control group. This study uses several data collection instruments, namely: The instrument used to measure science learning outcomes is in the form of an objective test consisting of pretest and posttest questions; The instrument used to determine students' learning interests is in the form of a questionnaire. The research was conducted at SMP Negeri 3 Selemadeg Timur in class VII B as the experimental class and class VII D as the control class. The interest questionnaire and learning outcome test were filled out and tested on students in the control and experimental classes, each totaling 32 people in one class. The learning interest questionnaire consists of 20 statement items about students' learning interests in science learning. While the learning outcome test consists of 30 multiple-choice questions regarding the material of Ecology and Indonesian Biodiversity.

Result and Discussion

The results of the study are divided into three parts according to the formulation of the problem in this study, namely the difference in learning interest in groups of students who are taught using the TGT type cooperative learning model assisted by interactive wordwall media with students who are taught using the TGT type cooperative learning model, the difference in learning outcomes in groups of students who are taught using the TGT type cooperative learning model assisted by interactive wordwall media with students who are taught using the TGT type cooperative learning model, and the difference in interest and learning outcomes simultaneously in groups of students who are taught using the TGT type cooperative learning model assisted by interactive wordwall media with students who are taught using the TGT type cooperative learning model. Student learning interest data were obtained from the results of a learning interest questionnaire that had been filled out by 32 students in one class consisting of 20 statements about student learning interest in science learning. Table 1 shows a descriptive analysis of pretest and posttest data on learning interest in the experimental group and the control group. The descriptive results of student learning interest data can be seen in Table 1 below.

Table 1. Results of descriptive analysis of pretest and posttest data on learning interest

Statistics Mean	Group			
	Experiment		Control	
	Pretest	Posttest	Pretest	Posttest
Standard deviation	65.66	78.20	63.55	79.65
Variance	4.74	7.04	4.77	5.51
Highest value	22.48	49.59	22.79	30.37
Lowest value	73.75	90.00	76.25	90.00
Statistics	55.00	57.00	55.00	67.50

Based on Table 1, it can be seen the comparison of students' learning interest between students in the experimental group and the control group. Based on the results of the questionnaire in the pretest, the value of students' interest in learning science in the experimental group ranged from 55.00 to 73.75 with an average of 65.66 and a standard deviation of 4.74. Meanwhile, for students in the control group, the value of students' interest in learning science ranged from 55.00 to 76.25 with an average of 63.55 and a standard deviation of 4.77. Meanwhile, the results of the posttest of students' interest in learning science in the experimental group ranged from 57.00 to 90.00 with an average of 78.20 and a standard deviation of 7.04. Meanwhile, for students in the control group, the value of students' interest in learning science ranged from 67.50 to 90.00 with an

average of 79.65 and a standard deviation of 5.51. Student learning outcome data were obtained from a learning outcome test consisting of 30 multiple-choice questions on the material of Ecology and Biodiversity of Indonesia. Table 2 displays a summary of the descriptive analysis of student learning outcome data in the experimental group and the control group. The descriptive results of student learning outcome data can be seen in Table 2 below.

Table 2. Results of descriptive analysis of pretest and posttest learning outcomes data

Statistics Mean	Group			
	Experiment		Control	
	Pretest	Posttest	Pretest	Posttest
Standard deviation	54.69	85.10	54.69	78.96
Variance	6.77	6.72	5.73	7.06
Highest value	45.78	45.16	32.88	49.78
Lowest value	70.00	96.67	70.00	90.00
Statistics	43.33	70.00	43.33	63.33

Based on the pretest results, the student learning outcomes in the experimental group ranged from 43.33 to 70.00 with an average of 54.69 and a standard deviation of 6.77. While in the control group, the pretest scores of student learning outcomes ranged from 43.33 to 70.00 with an average of 54.69 and a standard deviation of 5.73. Meanwhile, seen from the posttest results, the student learning outcomes in the experimental group ranged from 70.00 to 96.67 with an average of 85.10 and a standard deviation of 6.72. While in the control group, the posttest scores of student learning outcomes ranged from 63.33 to 90.00 with an average of 78.96 and a standard deviation of 7.06. To get answers to the formulation of the problems that have been proposed, a hypothesis test was carried out. The first hypothesis test was analyzed using Ancova analysis. The basis for decision making can be done through a probability approach, the significance used is $\alpha = 0.05$. The basis for decision making is to look at the probability figures, with the provision that if it has a significance value of more than 0.05 then H0 is accepted and Ha is rejected, but if it has a significance value of less than 0.05 then H0 is rejected and Ha is accepted. A summary of the results of the first hypothesis Ancova test can be seen in Table 3.

Table 3. Summary of results of the first hypothesis Ancova test

Tests of Between-Subjects Effects					
Dependent Variable: Interest Posttest					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	34.053 ^a	2	17.026	.419	.659
Intercept	2011.687	1	2011.687	49.520	.000

Tests of Between-Subjects Effects					
Dependent Variable: Interest Posttest					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Pretest_Interest	.630	1	.630	.016	.020
Group	33.807	1	33.807	.832	.037
Error	2478.032	61	40.623		
Total	401185.938	64			
Corrected Total	2512.085	63			

a. R Squared = .014 (Adjusted R Squared = -.019)

Based on Table 3 above, it can be seen that the yellow mark obtained a significance value of less than 0.05. Thus, the decision that can be taken is that H0 is rejected and Ha is accepted. So, it can be concluded that there is a difference in learning interest in the group of students who are taught using the TGT type cooperative learning model assisted by interactive wordwall media with students who are taught using the TGT type cooperative learning model. The second hypothesis test was also analyzed using Ancova analysis. The basis for decision making can be done through a probability approach, the significance used is $\alpha = 0.05$. The basis for decision making is by looking at the probability figures, with the provision that if it has a significance value of more than 0.05 then H0 is accepted and Ha is rejected, but if it has a significance value of less than 0.05 then H0 is rejected and Ha is accepted. A summary of the results of the second hypothesis Ancova test can be seen in Table 4.

Based on Table 4 above, it can be seen that the yellow mark obtained a significance value of less than 0.05. Thus, the decision that can be taken is that H0 is

rejected and Ha is accepted. So, it can be concluded that there is a difference in learning outcomes in the group of students who are taught using the TGT type cooperative learning model assisted by interactive wordwall media with students who are taught using the TGT type cooperative learning model. The third hypothesis test was analyzed using Mancova analysis which compares more than one dependent variable simultaneously. The basis for decision making can be done through a probability approach, the significance used is $\alpha = 0.05$. The basis for decision making is by looking at the probability figures, with the provision that if it has a significance value of more than 0.05 then H0 is accepted and Ha is rejected, but if it has a significance value of less than 0.05 then H0 is rejected and Ha is accepted. A summary of the results of the third hypothesis Mancova test can be seen in Table 5.

Table 4. Summary of results of the second hypothesis Ancova test

Tests of Between-Subjects Effects					
Dependent Variable: Interest Posttest					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	667.095 ^a	2	333.547	7.064	.002
Intercept	4322.250	1	4322.250	91.534	.000
Pretest_Interest	62.611	1	62.611	1.326	.025
Group	604.464	1	604.464	12.801	.001
Error	2880.425	61	47.220		
Total	434213.223	64			
Corrected Total	3547.520	63			

a. R Squared = .188 (Adjusted R Squared = .161)

Table 5. Summary of results of the third hypothesis Mancova test

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Posttest_Results	683.681 ^a	3	227.894	4.775	.005
	Posttest_Interest	112.029 ^b	3	37.343	.934	.430
Intercept	Posttest_Results	1529.325	1	1529.325	32.041	.000
	Posttest_Interest	1809.280	1	1809.280	45.231	.000
Pretest_Results	Posttest_Results	62.629	1	62.629	1.312	.026
	Posttest_Interest	77.976	1	77.976	1.949	.017
Pretest_Interest	Posttest_Results	16.586	1	16.586	.347	.046
	Posttest_Interest	.634	1	.634	.016	.009
Group	Posttest_Results	619.008	1	619.008	12.969	.001
	Posttest_Interest	33.808	1	33.808	.845	.032
Error	Posttest_Results	2863.839	60	47.731		
	Posttest_Interest	2400.056	60	40.001		
Total	Posttest_Results	434213.223	64			
	Posttest_Interest	401185.938	64			
Corrected Total	Posttest_Results	3547.520	63			
	Posttest_Interest	2512.085	63			

a. R Squared = .193 (Adjusted R Squared = .152)

b. R Squared = .245 (Adjusted R Squared = .183)

Based on Table 5 above, the significance value obtained is less than 0.05. From these data, there is a significant influence of the use of the TGT type cooperative learning model assisted by interactive wordwall media with students who are taught using the TGT type cooperative learning model on learning outcomes after being controlled with learning interest. Thus, the decision that can be taken is that H_0 is rejected and H_a is accepted. So, it can be concluded that there are differences in interest and learning outcomes simultaneously in the group of students who are taught using the TGT type cooperative learning model assisted by interactive wordwall media with students who are taught using the TGT type cooperative learning model. In science learning, there are various materials and formulas that are interesting to learn. The variety of materials and formulas that must be memorized sometimes makes students feel difficult and bored in learning which has an impact on the low interest of students in learning science. The low interest in learning makes it difficult to achieve learning objectives and the lack of interest in learning causes low learning outcomes. Student learning interest can be interpreted as a state of students who can arouse their enthusiasm and foster a sense of liking in doing an activity that can be measured through liking, interest, having attention and involvement in following the learning process.

The application of the TGT type cooperative learning model has been proven to increase students' interest in learning through collaboration between groups that are collaborated with fun games so that the learning atmosphere in the classroom becomes very comfortable and enjoyable. TGT places students in study groups consisting of 5 to 6 students who have different abilities, gender, ethnicity, or race (Mahardi et al., 2019). TGT makes students learn more comfortably, in addition to fostering responsibility, cooperation, healthy competition, and learning involvement. The application of TGT type cooperative learning can help eliminate students' assumptions about science lessons being difficult and boring so that students become enthusiastic about learning which is obtained from game collaboration in the learning process. From the research results that have been obtained regarding the differences in learning interests in the experimental group and the control group, in addition to the use of innovative learning models, the use of interactive media is very influential in the science learning process. Media can convey material in more detail and can be packaged in a form that can make students more interested in learning it. Learning media is an intermediary for delivering messages that can stimulate students' thoughts, feelings, and attention which can increase interest in learning. Interactive wordwall media which is a network-based digital gamification application in which various game

and quiz features are available that can be used by educators in the learning process for delivering material evaluations.

Wordwall media is very suitable to be combined with the TGT type cooperative learning model because the TGT model which is based on games is greatly assisted by the various game and quiz features contained in the wordwall media. The learning process in class using the TGT (Teams Games Tournament) type learning model makes students feel happy with the games and competitions between groups, especially since this learning model is applied in junior high school (SMP) class VII which is a transition period from elementary school (SD). This is in line with the research of Chen et al. (2020), which states that students will be happier and more interested if science lessons include games and quizzes between groups as a competition. Therefore, this learning model is very suitable for use to arouse students' enthusiasm to be more enthusiastic in learning. Learning models and media can help students improve their abilities so that the resulting learning outcomes also increase. Learning models can affect student learning outcomes, because learning models are strategies or ways for students to convey material to their students, the more interesting the material and the learning process that takes place, the more students will understand and be enthusiastic in learning. This is in line with Panadero & Lipnevich (2022), which stated that learning models are one of several elements that influence student learning outcomes to be better. Innovative learning models with a student-centered learning paradigm are very superior for improving learning outcomes (Agustini et al., 2021).

The Team Game Tournament (TGT) method is one of the learning methods that is quite easy to implement, namely by involving activities from all students without any differences, making students peer tutors, and using elements of games and reinforcement (Hong et al., 2024; Hellín et al., 2023; Kabilan et al., 2023). The game method in TGT can provide opportunities for students to be directly involved in learning and students will feel happy with the material presented in the learning process (Nanda et al., 2025; Lo et al., 2022; Deslauriers et al., 2019). When learning using the game method, it will create a sense of joy so that students will tend to be able to improve their learning outcomes (Fauzi & Masrupah, 2024). Fun learning that is absorbed in students' daily lives is an important part of student development (Suartama et al., 2024; Silva et al., 2021). This is also in line with research by Firdaus et al. (2020), which states that the TGT learning model can improve students' collaboration skills and learning outcomes. Cooperative learning has a positive impact on learning, students are given the freedom to be actively involved in their groups (Veldman et al., 2020). In addition to innovative and

interesting learning models, this study has obtained data that the value of science learning outcomes in the experimental class using interactive wordwall media is superior to the control class. Learning media is one of the most important factors in the world of education. Learning using the right media will provide optimal results for students' understanding of the material being studied. Media is a tool used by a teacher to help the learning process more optimally (Putri & Rofiq, 2023).

In addition, according to Widodo et al. (2025), Learning media is important to accelerate the delivery of material in a learning process. Wordwall media is one of the media that is currently popular in the world of education because the program in its application is able to create interactions that are beneficial for students. Wordwall media can make the classroom atmosphere more lively which will later increase students' enthusiasm for learning and can create a pleasant learning atmosphere so that students find it easier to remember the material that has been delivered. Wordwall is a learning media in the form of a quiz game, where later several questions are presented with an attractive and varied appearance that is displayed on the class monitor, and students answer them together so that lively learning occurs. Thus, the wordwall game quiz not only increases understanding in students but also forms a scientific attitude in students. From the results of research conducted by Lestari & Rohmani (2024), there is an influence of the use of interactive wordwall media on students' interests and learning outcomes.

The success of wordwall learning media to increase interest and learning outcomes, in addition to being based on calculation data, there are factors that underlie this research, such as wordwall media providing students with the opportunity to play while learning in accordance with the learning model used (Arimbawa, 2021). In addition, the varied appearance makes students not bored in learning. Then the awarding of awards to students in the form of praise and the opportunity for each group to get the top ranking in finding answers to questions (Pang(彭新强), 2022). The research that has been carried out proves that students' interests and science learning outcomes show significant results, by implementing an innovative learning model, namely the TGT type cooperative learning model combined with interactive wordwall media, it can increase interest in learning science, especially in junior high school students in grade VII so that learning outcomes become better.

Conclusion

From the results of the research that have been presented, it can be concluded that first there is a

difference in learning interest in the group of students who are taught using the cooperative learning model type TGT assisted by interactive wordwall media with students who are taught using the cooperative learning model type TGT. The second conclusion is that there is a difference in learning outcomes in the group of students who are taught using the cooperative learning model type TGT assisted by interactive wordwall media with students who are taught using the cooperative learning model type TGT. And the third conclusion is that there is a difference in interest and learning outcomes simultaneously in the group of students who are taught using the cooperative learning model type TGT assisted by interactive wordwall media with students who are taught using the cooperative learning model type TGT.

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Author Contributions

Creating learning media and tools, conducting research, L.P.Y.A. and I.N.T.; analyzing data; and drafting the article, P.A. All authors reviewed the results and approved the final version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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