



The Influence of Quizizz-assisted Teams Games Tournament on Mathematics Learning Outcomes for Grade V Elementary School

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Received: 4 July 2022; Revised: 24 July 2022; Accepted: 26 July 2022; Available online: 9 August 2022

Abstract: Mathematics is a tool to develop the necessary methods both to solve problems in everyday life and to support the progress of science and technology. Common problems in mathematics education include: low competitiveness in the international arena, low academic achievement when compared to other subjects, low interest in learning mathematics because children's assumptions about mathematics are difficult, especially with the lecture method. The background of this research is the low learning outcomes of fifth-grade mathematics in the Karangawen District. The purpose of this study was to analyze the effect of Quizizz-assisted Teams Games Tournament on mathematics learning outcomes for the fifth-grade elementary school data presentation material. This research is a quasi-experimental study with a nonequivalent control group design. By purposive sampling, the sample was determined, namely 30 students of class V Public Primary School No. 2 Rejosari as the experimental class and 28 students of class V Public Primary School No. 2 Rimbukidul, Karangawen sub-district as the control class. The research instrument is a test. Data analysis technique with data description, normality test and homogeneity test, t-test, and N-Gain. The N-Gain test results for the experimental class were 63% categorized as "Effective" while the control class was 30% categorized as "Less Effective". The results of the t-test with independent samples test obtained t count (5.665) > t table (2.004), and the significance value (2-tailed) was 0.000 < 0.05. From these results, it was concluded that there was an effect on the use of Quizizz-assisted TGT on the mathematics learning outcomes of the fifth-grade elementary school data presentation material in Karangawen District, Demak Regency. the application of the Cooperative Learning model of the Teams Games Tournament type can be used as an alternative solution to learning models that can be applied in limited conditions during the pandemic because students can continue to study in groups and the use of media or interactive quiz-based evaluation tools such as Quizizz can create a fun learning environment and can motivate students to follow the lesson well.

Keywords: Mathematics Learning Outcomes, Teams Games Tournament, Quizizz

1. Introduction

The Elementary School Education Unit Level Curriculum (Sawitri et al., 2021) explains that mathematics is a universal science that underlies the development of modern technology, has an important role in various disciplines, and advances the power of human thought. Harun et al. (2021) explains that mathematics is a tool to develop a way of thinking, therefore mathematics is needed both to solve problems in everyday life and to support the progress of science and technology.

Coronavirus Diseases 2019 which entered Indonesia in early March 2020 resulted in learning activities being carried out from home online or remotely. This sudden change in the learning process often makes teachers, students, and parents shocked. During the pandemic period, in general, the process of learning mathematics in elementary schools is through WhatsApp and google classroom (Chong & Sungap, 2021). The teacher provides an explanation, and material in the form of videos or notes that the teacher has made. Then the teacher asks questions about the material in the WhatsApp group or googles classroom. Next, the teacher gives an assignment with a specified collection time, then the assignment is sent in the form of a photo.

The results of the Final Assessment of Semester one during the pandemic yesterday, the average elementary mathematics learning outcomes in the regional coordinator Karangawen sub-district decreased dramatically compared

to before learning the online system. The percentage of completeness of the Mathematics PAS results is still below 75% with the minimum learning completeness standard that is set, which is 70 for the content of mathematics lessons (Mulyanto, Gunarhadi, & Indriayu, 2018). It is necessary to find the root cause of the low mathematics learning outcomes, as well as solutions to overcome these problems.

From the results of interviews with several teachers and fifth-grade students in Karangawen District, it was analyzed the causes of the low mathematics learning outcomes in semester 1 yesterday due to various factors. Teachers, students, and parents are still not ready to implement online learning (Ashong & Commander, 2012). The teacher has not prepared various materials properly so that students feel bored and bored and it seems that the teacher only gives assignments to students. Parents do not play an active role in motivating their children to learn. Lack of supervision at home makes students play more with their friends than study.

From the analysis of the problems above, it is necessary to find a solution so that in the mathematics learning process in this pandemic period students can play an active role so that there is interaction in learning between teachers and students as well as between students themselves. Teachers must prepare well the learning model and the media used. According to Juita & Widiyarto (2019) cooperative learning is a learning model that invites students to learn and work together in small collaborative groups whose members consist of 4 (four) to 6 (six) people, with a heterogeneous group structure. With all the limitations of learning during the pandemic, Teams Games Tournament type cooperative learning is one of the appropriate learning models to be applied according to this situation.

1.1 Conceptual Framework

The analysis of the causes of the low mathematics learning outcomes in semester 1 yesterday was due to various factors. Teachers, students, and parents are still not ready to implement online learning. The teacher has not prepared various materials properly so that students feel bored and bored and it is impressive that the teacher only gives assignments to students (Hidajat et al., 2020; Tam et al., 2020). The interest and motivation of students to learn mathematics is low, therefore teachers must arrange lessons that can increase students' interest in learning (Tambunan, Sinaga, & Widada, 2021). Parents do not play an active role in motivating their children to learn. Lack of supervision makes students play more with their friends than study.

Factors that influence learning outcomes are internal and external. Internal factors include physical (health and disability), physiological (intelligence, attention, interest, talent, motive, and discipline), and fatigue (physical and spiritual). While external factors include family, school, and community. Furthermore, Pérez-Pérez, Serrano-Bedia and García-Piqueres (2019) argues the factors that influence learning outcomes are factors from within the student and factors that come from outside the student or environmental factors. Factors that come from students, especially their abilities. The student's ability factor has a huge influence on the learning outcomes he has achieved. According to Razak (2016), the factors that influence learning outcomes are 1) internal factors including intelligence, physiological, attitudes, interests, talents, and motivation; 2) external factors include the family environment, school environment, and community environment. Therefore, the teacher must prepare the applied learning model that should be adapted to current conditions. Learning models that not only provide learning materials or videos and assignments but interesting learning and involve all students to help each other to understand and master the material being studied. To make learning more interesting for students, teachers can take advantage of currently developing applications as media. One of the learning models that suit this is cooperative learning.

Teams Games Tournament type cooperative learning is almost the same as STAD but there are group games and tournaments in the process. Team Games Tournament (TGT) according to Zainuddin et al. (2020) learning uses academic tournaments, quizzes, and individual progress score systems, where each student competes as a representative of their team with other team members whose previous academic ability is equivalent to them. All students have the same opportunity to represent their team in scoring. The team with the highest points earned will receive awards in the form of prizes and other awards. The statement above is reinforced by Rusman (2014) who defines the Team Games Tournament (TGT) as a type of cooperative learning that places students in study groups consisting of 5 to 6 students who have the ability, gender, and different ethnicity or race.

Media or learning tools can be used to help make Teams Games Tournament learning more fun. One of the media or learning tools that can be used is Quizizz. The use of Quizizz media in cooperative learning is emphasized to further increase students' motivation in learning so that their learning outcomes also increase. Quizizz is a web tool for creating interactive quiz games for use in learning.

This study uses a cooperative learning model of the Teams Games Tournament type assisted by Quizizz to be applied to mathematics lessons for fifth-grade elementary school data presentation materials to improve learning outcomes of mathematics learning. In this study, the experimental class is the independent variable, namely the TGT model with the help of Quizizz which influences the learning outcomes of mathematics.

1.2 Research Objectives

This study aims to analyze how the effect of the TGT-assisted Cooperative Learning Model on the mathematics learning outcomes of fifth-grade elementary school students in the Ahmad Yani cluster, Karangawen district, Demak.

The results of the data obtained will be used as a basis for consideration of teachers and schools in determining the right learning model to improve student learning outcomes, especially in mathematics.

2. Methodology

2.1 Research Design

This research is a quantitative study with a quasi-experimental research design in the form of a non-equivalent control group design. The experimental group received mathematics learning treatment with the Teams Games Tournament learning model assisted by Quizizz. While the control group received conventional learning treatment.

2.2 Research Respondents

The research population was 210 students of class V Elementary School in the Ahmad Yani Cluster, Karangawen Demak District, for the 2020/2021 academic year. The sampling technique used to determine the sample in this study was purposive sampling with certain considerations to obtain 98 students.

3. Findings and Discussion

The pre-test data is the initial data on student learning outcomes and the post-test results data are the learning outcomes after being given learning treatment. The following is a description of the pre-test and post-test value data for each class.

Table 1: Description of the Pretest and Posttest Results

	Descriptive Statistics						
	N	Min	Max	Sum	Mean	Std. Deviation	Variance
TGT Quizizz. Experiment Pretest	30	33	72	1606	53.53	9.630	92.740
TGT Quizizz Experiment Posttest	30	67	100	2458	81.93	8.654	74.892
Pre-test Control	28	39	72	1535	54.82	9.756	95.189
Post-test Control	28	50	83	1928	68.86	8.772	76.942
Valid N (listwise)	28						

Based on Table 1, it was found that in the control class with a sample of 28 students, the average pre-test score was 54.82, the highest score was 72 and the lowest score was 39. Meanwhile, the post-test average was 68.86, the highest score was 83 and the lowest was 50. The Quizizz-assisted TGT Experiment Class with a sample of 30 students obtained an average pretest score of 53.53, the highest score was 72 and the lowest score was 33. As for the post-test, the average score was 81.93, the highest value is 100 and the lowest value is 67.

Based on the description of the data above, a bar chart can be made to clarify the difference between the pretest and posttest scores of the research results.

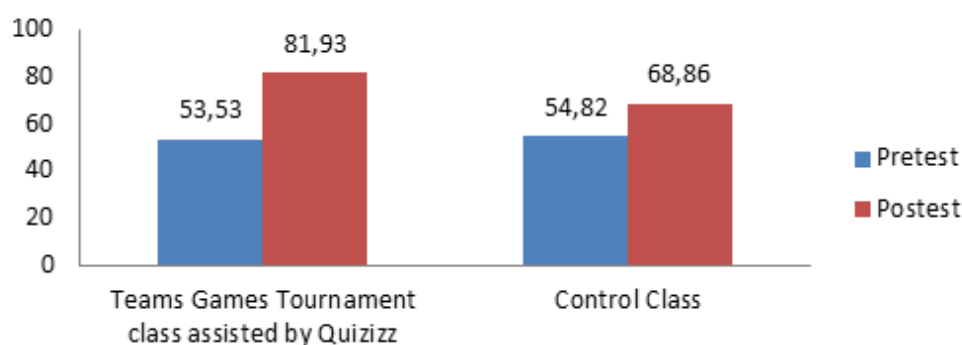


Fig. 1: Bar Chart of Data Description of Pretest and Posttest Results

Hypothesis testing in this study used the Independent Sample T-Test. The basis for decision making in the Independent Sample T-Test is if the t-count > t-table, then H_0 is rejected and H_a is accepted, and if the t value is < t table, then H_0 is accepted and H_a will reject. Or if the value of sig (2-tailed) > 0.05, then H_0 is accepted and H_a will reject, and if the value of sig (2-tailed) is < 0.05, then H_0 is rejected and H_a will accept.

Table 2: T-test Analysis Data of Research Results

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
mathematics learning outcomes	Equal variances assumed	.073	.789	5.665	55	.000	13.193	2.329	8.525	17.860
	Equal variances not assumed			5.656	53.985	.000	13.193	2.333	8.516	17.869

Based on Table 2, it can be seen that arithmetic = 5.665 while with $df = 55$ obtained $t\text{-table} = 2.004$, then $t\text{-arithmetic} (5.665) > t\text{-table} (2.004)$ so that the hypothesis (H_1) is accepted and (H_0) is rejected. This means that there is an influence of the Cooperative Learning model of the Teams Games Tournament type assisted by Quizizz on the mathematics learning outcomes for class V Elementary School, Karangawen District, Demak.

The results of this study are following research conducted by Fadly, Sulastry, & Side (2020), the research shows there was a significant effect of using the Quizizz application on the Teams Games Tournament learning model on the learning outcomes of students in class XI MIA Public Senior High School No. 1 Gowa.

This research is also relevant to what Faidah (2020) did with the title Using the Team Games Tournament (TGT) Method with the Assistance of Kahoot and Quizizz on Learning Outcomes and Creative Thinking Skills in High School Students. The results of the study show that the use of Kahoot and Quizizz online assessment applications in Teams Game Tournament learning has a better impact on improving than ordinary TGT learning in student learning outcomes, responses, and creative thinking skills.

The results of the same study were also carried out by Khairiah (2018) indicate that there is a significant effect of the application of the Team Games Tournament learning model on student learning outcomes in social studies subjects for class V.

Based on the results of research and the opinions of experts as well as relevant research, it shows that the Cooperative Learning model of the Teams Games Tournament assisted by Quizizz is more effectively used to improve mathematics learning outcomes for the fifth-grade elementary school data presentation material compared to conventional learning. This means that hypothesis 1 which states that there is a significant effect of the TGT-assisted Cooperative Learning model on the mathematics learning outcomes of the fifth-grade elementary school is proven.

4. Conclusions and Recommendations

Based on the results of research and discussions that have been carried out with the title The Effect of Cooperative Learning type Teams Games Tournament assisted by Quizizz on mathematics learning outcomes for class V Elementary School data presentation, it can be concluded that there is a significant influence on the use of Cooperative Learning model type Teams Games Tournament assisted by Quizizz on learning outcomes. mathematics data presentation material for class V Elementary School in the Ahmad Yani Cluster, Karangawen District, Demak Regency. Based on the t-test with $t\text{-arithmetic}$ of 5.665 while $t\text{-table}$ 2.004 then $5.665 > 2.004$, meaning H_0 is rejected and H_a is accepted so that hypothesis 1 is proven. N-Gain % is 63 which is interpreted that the Cooperative Learning model of the Teams Games Tournament type with the help of Quizizz is effective to be used to improve mathematics learning outcomes in data presentation material for class V Elementary School.

Based on the conclusion that the Effect of Cooperative Learning type Teams Games Tournament assisted by Quizizz on mathematics learning outcomes for class V elementary school data presentation material, what researchers can suggest is 1) teachers can apply the Cooperative Learning model of Teams Games Tournament type as an alternative solution to learning models that can be applied in limited conditions during the pandemic because students can continue to study in groups; 2) teachers should use interactive quiz-based media or evaluation tools, one of which is Quizizz or other more interesting platforms so that learning is more fun and motivates students to take part in learning well; 3) for other researchers who want to conduct the same research, it is better not only to focus on cognitive learning outcomes but also on affective or psychomotor domains.

Acknowledgment

The author would like to express his gratitude for the participation of Elementary Schools in the Ahmad Yani Cluster, Karangawen District which became the research sample. The author also expresses appreciation to the supervising lecturers and Muria Kudus University for their guidance in compiling and constructive analysis of the research results.

Conflict of Interest

The authors declare no conflicts of interest.

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