# THE EFFECT OF MONOPOLY GAME SIMULATION IN THE STAD TYPE COOPERATIVE LEARNING MODEL ON THE LEARNING OUTCOMES OF MIDDLE SCHOOL STUDENTS

Diana Ayu Lestari[1*)], Zetriuslita[2]

*[1,2]Universitas Islam Riau*

[1*)] dianaayulestari@student.uir.ac.id

[2)] zetriuslita@edu.uir.ac.id

**Abstract.** This study aims to determine the effect of the simulation game monopoly in the STAD type cooperative learning model on the learning outcomes of junior high school students. The population in this study were all class VIII SMPN 4 Bathin Solapan for the 2018/2019 academic year. The samples in this study were students of class VIII-4 as the experimental class and VIII-5 as the control class. This type of research is a quasi-experimental study with a Noneequivalent control group design. The sampling technique used was a random sample technique. The data collection instruments used in this study were pretest and posttest sheets. The data analysis technique used is inferential statistical analysis. From the N-gain data for both classes, it is obtained that $t_{count} > t_{table}$ ($t_{count} = 2,5$; $t_{table} = 1,67$). This means $H_0$ rejected means that there is a significant difference between the learning outcomes of the experimental class and the control class. This shows that there is an effect of the monopoly game simulation in the STAD type cooperative learning model in this study on the learning outcomes of junior high school students.

*Keywords: Learning Outcomes, Conventional Learning, Influence, Monopoly Game Simulation in the STAD. Cooperative Learning Model*

## 1. INTRODUCTION

Learning mathematics is often associated with difficult and uninteresting things. This is because mathematics learning is often focused on formulas, understanding concepts and procedures that must be remembered. In general, learning begins by explaining the concept or procedure. Then students work on the LKPD given by the teacher and work in groups or individually. Then the answers from student representatives are displayed in front and matched with other students' responses. This makes students very bored and ultimately makes children prefer not to pay attention to the teacher's presence and prefer to talk to their classmates or sleep.

One way of learning that allows students to learn is by learning while playing. While playing, students are also learning; therefore, learning must provide an atmosphere of play without neglecting the learning objectives [1]. Several games can be used in the learning process, one of which is a monopoly. The results of previous studies have even used monopoly media in the learning process. For example, using the Student Teams Achievement Division Learning Model and Teams Games Tournament Assisted by Monopoly Media on Learning Outcomes Introduction to Business Economics Viewed from the Confidence Attitude, it is stated that self-confidence is one of the factors that

influence student learning outcomes and by using the type of cooperative learning model. TGT and STAD can provide good learning outcomes for students [2].

Furthermore, using R&D research with a procedural model on inter-unit material, it is stated that the monopoly game is proven to improve students' mathematics learning outcomes and is better than those who do not use the monopoly game [3]. The existence of research using monopoly media has inspired me to conduct research using experimental research with the STAD type cooperative learning model so that learning objectives are not neglected. Game-based learning refers to modifying the principles of the game in the implementation of the game.

Monopoly game is a board game in which there are tiles and every player can, including property in building and land assets. Buy land on the plot according to the price listed [4]. For this game to achieve the learning objectives, the STAD type cooperative learning model is used as a directive guide in the learning process to run in a structured manner. STAD is a cooperative learning strategy in which several small groups of students with different levels of academic ability work together to complete learning objectives [5]. The STAD type cooperative learning model in the monopoly game is expected not only to be a directive but also to be used by teachers as an introduction that many learning models can be used in learning to change students' minds about scary mathematics.

## 2. RESEARCH METHOD

This research was conducted at SMPN 4 Bathin Solapan in 2018/2019. The type of research used in this study is a quasi-experimental design with a Nonequivalent Control Group. The research was conducted by dividing two classes, namely the experimental class, which was given the treatment of the monopoly game simulation in the STAD type cooperative learning model, and the control class using conventional learning.

**Table 1.**                                                                 Research Design

|       | Group      | Treatment | Postest |
|-------|------------|-----------|---------|
| ( R ) | Experiment | X         | $O_1$   |
| ( R ) | Control    | Y         | $O_2$   |

Description:

R : Random group selection

X : Implementation for the experimental class

Y : Implementation for the control class

$O_1$ : Experiment class posttest

$O_2$ : Control class posttest

Data collection techniques using tests and in the form of documentation of research results. The population of this study was all eighth-grade students of SMPN 4 Bathin Solapan because, based on [6], the population is the entire research subject. Sampling is done by random sample. Based on [6] states that "The sample is part or representative of

the population studied." Based on the random sample that was passed, it was obtained that class VIII.4 was the experimental class and VIII.5 was the control class. The research instrument consists of the syllabus, lesson plans, LKPD, and monopoly board in the picture below:



**Figure 1.** Monopoly Board Game

## 3. RESULTS AND DISCUSSION

**Research Results**

The data processing of student learning outcomes begins with processing the pretest and posttest data given. Research provides different treatments in each class. The experimental class was given treatment in a monopoly game simulation in the STAD type cooperative learning model and for the control class using conventional learning. However, the meetings and materials provided are the same for each class, namely six meetings each of 5 meetings for each week where one hour lesson lasts 40 minutes on cube and block material.

The results of this study are in the form of scores of mathematics learning outcomes from students' mathematics learning outcomes as long as they are given treatment in the form of the posttest. The score of students' mathematics learning outcomes from 5 questions was given with a minimum score of 0 and a maximum score of 100. Descriptive statistics, the acquisition of scores, or students' mathematics learning outcomes can be seen from the table below:

**Table 2. Processed Learning Outcomes Data**

| Description | Pretest | | Postest | |
|:---:|:---:|:---:|:---:|:---:|
| | Experiment | Control | Experiment | Control |
| **n** | 29 | 26 | 29 | 26 |
| $\overline{x}$ | 34,5 | 32,92 | 59,55 | 58,84 |

Based on Table 2, it can be seen that there are differences in the mathematics learning outcomes of experimental class and control class students before being given treatment and after being given treatment. The experimental class is 59.55, and the control class is 58.84. However, this still requires further testing to see whether there is an increase

in students' mathematics learning outcomes or not. Further tests needed are normality tests, homogeneity tests, and hypothesis testing.

Normality testing is used to see whether the existing data is normally distributed or not. The normality test is used with $x_h^2 \leq x_t^2$ for normal distribution and vice versa. Based on the results of the posttest data normality test, it can be seen that $x_h^2 > x_t^2$; so it can be concluded that the data is not normally distributed. In inferential statistics, if the data is not normally distributed, it continues with the Mann-Whitney U-Test test. From the calculation obtained $|Z_{count}| > |Z_{table}|$ ($Z_{count} = 6{,}36$; $Z_{table} = 1{,}96$) . It can be concluded that there are differences in the average mathematics learning outcomes of the experimental class and the control class. After the Mann Whitney U-test was carried out, the N-Gain data analysis was carried out to see if the treatment was given to the experimental class and the control class. Based on the calculation results, the N-Gain data analysis can be seen in the table below:

**Table 3.** N-Gain Data for Experimental Class and Control Class

| Class | N | $\sum x$ | $\bar{x}$ | Interpretation |
|---|---|---|---|---|
| Experiment | 29 | 16,98 | 0,59 | Medium |
| Control | 26 | 14,09 | 0,54 | Medium |

Based on Table 3 above, the results of the calculation of the N-Gain data obtained that the experimental class average is higher than the control class average, it can be concluded that the experimental class learning outcomes are better than the control class. the normality of the N-Gain data contained in the table below:

**Table 4.** Normality Test of N-Gain Data for Experimental Class and Control Class

| Class | $x^2{}_{count}$ | $x^2{}_{table}$ | Conclusion |
|---|---|---|---|
| Eksperimen | 2,5 | 11,07 | Normal distribution |
| Kontrol | 9,65 | 11,07 | Normal distribution |

From Table 4 above, it can be concluded that the N-Gain data is normally distributed because it follows the criteria for testing the normality of the data that $x_h^2 \leq x_t^2$. After the data is declared normal, it is continued with the homogeneity test and t-test of the N-Gain data, based on the results of the calculation of the homogeneity test and t-test can be seen from the table below:

**Table 5.** Homogeneity test and t-test Data N-Gain Experimental Class and Control Class

| Class | $\bar{x}$ | Varians | $F_{-count}$ | $F_{-table}$ | $t$ | $t_{-count}$ |
|---|---|---|---|---|---|---|
| Experiment | 0,59 | 0,0401 | | | | |
| Control | 0,54 | 0,0742 | 1,86 | 1,93 | 2,5 | 1,67 |

From the table above, $F_{count} < F_{table}$, it was concluded that the experimental class and the control class had the same variance. This shows that the variance of the two classes is homogeneous. After the data is declared homogeneous, it can also be seen that the obtained $t_{count} > t_{table}$, this means that there is a significant difference between the learning outcomes of the experimental class and the control class.

**Discussion**

From the results of the research conducted, it can be seen that from the students who were initially still not active and confused when carrying out the monopoly game, but at subsequent meetings they had begun to dare to give opinions and be active in learning because each student participated directly in learning. Students will learn better and more meaningfully if students experience what they learn and not just know it [7]. With the STAD type cooperative learning model, children are more focused on learning and easier in group learning following STAD type cooperative learning which is the simplest cooperative approach [8]. This also means making mathematics less boring for students because of the game element during the learning process.

Based on the calculations after the research was carried out, it was found that there were differences in the average mathematics learning outcomes of experimental class and control class students, as seen from the pretest and posttest data. This study found that game-based learning carried out with cooperative learning can affect student learning outcomes through the number of questions in the game. Besides that, this activity can train children to be skilled in solving problems, and with the STAD type cooperative model creates good cooperation and responsibility in students. Then, the game element in learning creates a good relationship between students and teachers. So based on the inferential analysis of the N-Gain data, it is obtained that the N-Gain data is normally distributed and has the same variance. This shows an effect of monopoly game simulation in the STAD type learning model on students' mathematics learning outcomes.

## 4. CONCLUSION

Based on the research data analysis results, it can be concluded that there is an effect of the monopoly game simulation in the STAD type cooperative learning model on the mathematics learning outcomes of junior high school students. From this research, it is recommended that teachers use more learning models that can increase students' enthusiasm in learning, not just provide material and assignments that will make students bored and learning becomes boring. For further research, it is hoped that they can be more creative in using learning models that use games, especially monopoly so that students enjoy learning mathematics at school, and many teachers are liked by students because teaching is fun. If there is a good cooperative relationship between teachers and students, it will be able to increase students' self-confidence so that it can encourage increased learning outcomes in schools.

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