



## The Effect of Snakes and Ladders Learning Media on Mathematics Learning Outcomes of Grade II Students of SDN 1 Kolaka

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### ABSTRACT

This study aims to determine the effect of the Snakes and Ladders learning media on the mathematics learning outcomes of class II students at SDN 1 Kolaka. This research is a quantitative study with a pre-experimental design using a one-group pretest-posttest design. Data collection techniques were carried out through the administration of a pretest, treatment using the Snakes and Ladders media, and a posttest. The research instrument was a multiple-choice test that had been tested for validity and reliability using IBM SPSS Statistics version 27. The number of subjects in this study was 14 students. The results of descriptive statistical analysis showed that the average pretest score was 55, and the average posttest score was 85.36. The N-gain test results showed an increase in score of 0.7028, which falls into the high category, with a percentage of 70.28% categorized as fairly effective. The normality test showed that the data were normally distributed. Hypothesis testing using the Paired Sample T-test showed a significance value of  $0.000 < 0.05$ , which indicates that there is a significant effect of using the Snakes and Ladders learning media on students' mathematics learning outcomes. It can be concluded that the Snakes and Ladders learning media is effective and can affect the mathematics learning outcomes of class II students at SDN 1 Kolaka.

## 1. Introduction

Education is a very complex process and is needed to improve good Human Resources (HR) in order to face a development or progress in various aspects of life. In achieving an educational goal, of course, all cannot be separated from the learning process which is an important element of education. The various subjects studied at school require varied ways of delivering and teaching in the classroom. One of these subjects is mathematics, Aturrohman (2023).

Lack of student interest and attention in the learning process is still one of the problems that cannot be denied in the world of education. This is because the

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learning that takes place in the classroom is less interesting and less effective. This is because, when learning math is taking place, there are still many students who do not pay attention to the teacher when explaining. In addition, the learning model used by teachers every day is still limited to the lecture model without any interaction between teachers and students, and the learning media used only use image media and printed books as reading material which of course can make students quickly feel bored and learning becomes ineffective. Mathematics is a branch of science that is closely related to everyday life, which contains logical reasoning and problems related to numbers, Zulfa (2016).

Marti (in Sundayana, 2015) argues that, although mathematics is considered to have a high level of difficulty, everyone must learn it because it is a means of solving everyday problems. Aturrohmah (2023) states that mathematics learning includes abstract learning, students need a tool in the form of learning media and media that can clarify what the teacher will convey so that it is more quickly understood and understood by students. According to Sadiman (2009), the word media comes from Latin and is the plural form of the word medium which literally means intermediary or introducer. So the media is any physical tool that can present messages and stimulate students to learn, such as books, films, tapes, and frame films. Widowati (2014) states that snakes and ladders media includes visual media because it involves the sense of sight in using the media and is called graphic media because snakes and ladders media are presented in the form of images.

According to Purwanto (2011) learning outcomes come from two basic words, namely results and learning. Learning outcomes can be interpreted as changes that occur in students after they experience the learning process. From the teacher's side, the teaching action ends with the process of evaluating learning outcomes. From the student's side, learning outcomes are the end of the penggal and the peak of the learning process (Dimiyati, 2013). Another opinion explains that learning outcomes are the accumulation of a sequence of activities in the teaching and learning process that the students themselves have gone through (Mardiah, 2022). Mustakim (2020) states that learning outcomes are everything that students achieve with certain assessments that have been determined by the curriculum of the previous educational institution.

Afifah (2019) states that snakes and ladders game media is a media accompanied by play, so it matches the characteristics of students who like to play. Widowati (2014) states that snakes and ladders media includes visual media because it involves the sense of sight in using the media and is called graphic media because snakes and ladders media is presented in the form of images. The difference with the usual snakes and ladders game is that in this snakes and ladders media the students are given questions according to the box where the pawn stops. Based on the explanation above, it can be concluded that snakes and ladders media provide benefits for early childhood, namely providing a pleasant atmosphere, developing creativity and cognition, helping children simplify and remember what they experience. The difference with the usual snakes and ladders game is that in this snakes and ladders media the students are given questions according to the box where the pawn stops. For example, a student who stops in box number 10 then the

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student must answer question number 10 that has been prepared by the teacher on paper or another card.

The purpose of this study is to determine the extent to which students have been formed after following the learning process. The snakes and ladders game aims to make students happy to take part in learning, so that they can be motivated to learn. Through this snakes and ladders game media, it is hoped that students will more easily master the material and can improve student learning outcomes. From the above definition, it can be concluded that Snake and Ladder is a competitive game that encourages cooperation and sportsmanship, thereby shaping children's experiences and morals.

## 2. Methodology

This type of research is quantitative research. According to Kuncoro (2021) quantitative data is data that can be measured and calculated directly, regarding information or explanations in the form of numbers or statistics. The method used by researchers in this study is pre-experimental with the research design used in this study, namely One-Group Pretest-Posttest Design. According to (Sugiyono, 2019) the one-group pretest-posttest design consists of one predetermined group.

According to Sugiyono (2015), Paired sample t-test is one of the testing methods used to assess the effectiveness of treatment, characterized by differences in average after treatment. Normalized Gain or N-gain score is used to evaluate the effectiveness of using a particular method or treatment in research on improving student learning outcomes (Katili, 2022). The research pattern of one group pretest posttest design research is as follows in Table 1.

Table 1. Desain One Group Pretest Posttest

<i>Pretest</i>	<i>Treatment</i>	<i>Posttest</i>
O <sub>1</sub>	X	O <sub>2</sub>

Source: Sugiyono (2019:131)

Information:

O<sub>1</sub> = Initial test (pretest) before treatment is given

X = Treatment of the experimental group in the form of using snakes and ladders learning media

O<sub>2</sub> = Final test (posttest) after the treatment is given

Based on Table 1, the N-gain test is carried out by calculating the difference between the pretest value and the posttest value. According to Nazir (in Rahmah, 2017)) reveals that population is a collection of individuals with predetermined qualities and characteristics. The population in this study were all grade II students at SDN 1 Kolaka totaling 14 people, 6 girls and 8 boys. Arikunto (2017) says that if the research subject is less than 100 then the entire population becomes the research sample, but if the research subject is more than 100 then 10-15% or 15-25% of the population can be taken. The population in this study was not greater

than 100 people, so prospective researchers took 100% of the existing population, namely 14 people. Thus in this study using Saturation Sampling (Saturated Sample) (Amin, 2023).

The research instrument validity test is a test that serves to see whether the instrument is valid (valid) or invalid (Budiastuti, 2018). This study uses a type of content validity. Content validity is a measuring tool that determines how accurately a test can reflect the abilities to be tested on students in accordance with the learning objectives to be achieved (Farida, 2021). A measurement result can be trusted if in several times the implementation of measurements on the same group of subjects, relatively the same measurement results are obtained, as long as the aspects measured in the subject have not changed (Farida, 2021).

### 3. Results and Discussion

Based on the results of the validity test with the help of IBM SPSS Statistic version 27, the value ( $r_{table}$ ) with 18 students as respondents is 0.468. The validity test requirement if  $r_{count} >$  from  $r_{table}$  or Sig value  $< 0.05$  then the question is declared valid. All questions on the test were declared valid because the sig value  $< 0.05$  or  $r_{count} >$  0.468. Before the validity test was carried out, the student answer scores were entered into Microsoft Excel to calculate the total score to make it easier to fill in the data in SPSS. The following are the results of the research instrument validity test on Table 2.

Table 2. Test Instrument Validity Test Results

Question Number	Pearson Correlation $r$ Count	R table	Number of Sig. (2-tailed)	Information
S 1	0.697	0.468	0.001	Valid
S 2	0.707	0.468	0.001	Valid
S 3	0.617	0.468	0.006	Valid
S 4	0.561	0.468	0.015	Valid
S 5	0.561	0.468	0.015	Valid
S 6	0.540	0.468	0.021	Valid
S 7	0.561	0.468	0.015	Valid
S 8	0.478	0.468	0.045	Valid
S 9	0.509	0.468	0.031	Valid
S 10	0.518	0.468	0.028	Valid
S 11	0.536	0.468	0.022	Valid
S 12	0.518	0.468	0.028	Valid
S 13	0.479	0.468	0.044	Valid
S 14	0.617	0.468	0.006	Valid
S 15	0.540	0.468	0.021	Valid
S 16	0.673	0.468	0.002	Valid
S 17	0.585	0.468	0.011	Valid
S 18	0.536	0.468	0.022	Valid
S 19	0.586	0.468	0.011	Valid
S 20	0.478	0.468	0.045	Valid

The following are the results of the calculation on the SPSS program using the Cronbach Alpha formula, can be seen in Table 3:

Table 3. Reliability Test Results

<i>Reliability Statistics</i>	
<i>Cronbach's Alpha</i>	<i>N of Items</i>
0,887	20

Based on the results of the reliability test using IBM SPSS Statistic version 27, Cronbach alpha > 0.60 was obtained, which means that the questions on the test can be said to be reliable so that they can be used for data collection in seeing the effect of snakes and ladders learning media on the mathematics learning outcomes of grade II students of SDN 1 Kolaka. In this study, the number of students who took the entire pretest and posttest tests totaled 14 students. The following is a descriptive analysis of the pretest and posttest, namely in Table 4.

Table 4. Results of Pretest and Posttest Data Analysis

<b>Statistics</b>	<b>Pretest</b>	<b>Posttest</b>
Sample	14	14
Minimum Score	45	65
Maximum Score	80	100
Mean	55	85,36
Standard Deviation	11,266	10,463

Based on the data in the table 4 above, it can be seen that the average value (mean) of students on the pretest is 55 with a minimum value of 45 and a maximum value of 80. While the average value on the posttest is 85.36 with a minimum value of 65 and a maximum value of 100. Based on the pretest and posttest scores from the research that has been done, it can be calculated the increase in test results that have been obtained from the results before and after being given the snakes and ladders learning media treatment based on the N-gain score and N-gain percent calculated using IBM SPSS Statistic 27 can be seen in the following table 5.

Table 5. N-gain Calculation Results

<b>N-gain</b>	<b>Number of Mean</b>	<b>Level of Gain</b>	<b>Criteria</b>
<i>N-gain Score</i>	0.7028	$g > 0,7$	High
<i>N-gain Score Percent</i>	70.2796	56 - 75 %	Quite effective

From the results of the N-gain score in Table 5, the N-gain percentage is calculated using IBM SPSS Statistic 27. The results of the N-gain percentage get a mean value of 70.2796, where this value is included in 56-75% with fairly effective criteria. The following are the results of the normality test can be seen in Table 6.

Table 6. Pretest and Posttest Data Normality Test Results

<b>Learning Outcomes</b>	<b>statistic</b>	<b>Shapiro-Wilk</b>	
		<b>Df</b>	<b>sig.</b>
<i>Pretest</i>	0.891	14	0.083
<i>Posttest</i>	0.950	14	0.566

Based on the data in table 6, the results of the normality test using Shapiro-Wilk with the help of the IBM SPSS Statistic 27 program show that all research data have a Sig value  $> 0.05$ . The pretest Sig value is  $(0.083 > 0.05)$  and the posttest Sig value is  $(0.566 > 0.05)$ . Thus it can be concluded that all data are normally distributed, so data analysis can be continued. After the normality test is known that the data on math learning outcomes are normally distributed, then the hypothesis test can be seen in the following table 7.

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Pretest - Posttest	-30,357	7,459	1,993	-34,664	-26,051	-15,229	13	0,000

Table 7. Paired Sample T Test Results of Class II

Based on the table 7 above, it is known that the Significant value of the Paired Sample T Test is 0.000. Because the significant value of the T-test  $< 0.05$  ( $0.000 < 0.05$ ),  $H_a$  is accepted and  $H_0$  is rejected. So it is known that there is an effect of snakes and ladders learning media on the mathematics learning outcomes of grade II students of SDN 1 Kolaka, the math ladder snake can be seen in figure 1.



Figure 1. Math Ladder Snake

The difference with the usual snakes and ladders game in Picture 1 is that in this snakes and ladders media the students are given questions according to the box where the pawn stops. For example, a student who stops in box number 10 then the student must answer question number 10 that has been prepared by the teacher on paper or another card.

## Discussion

This research is a type of quantitative research with the research design used, namely pre-experimental type one group pretest posttest design. Data was collected through pretest and posttest to measure student learning outcomes. Through the calculation process obtained from the pretest and posttest results that have been carried out in class II SDN 1 Kolaka, it can be seen that learning by applying snakes and ladders media can be said to be effective in improving the mathematics learning outcomes of grade II students of SDN 1 Kolaka.

This can be seen in the descriptive analysis that has been carried out previously, namely the results of the analysis of the average pretest score is 55 and the average posttest score is 85.36. This shows an increase in student scores. Then based on the results of hypothesis testing using the Paired Sample T-test, the significant value of the Paired Sample T Test is 0.000. Because the significant value of the T-test  $<0.05$  ( $0.000 < 0.05$ ) then  $H_a$  is accepted and  $H_0$  is rejected. In other words, snakes and ladders learning media has an influence on student learning outcomes.

Based on the results of the research that has been conducted, it shows that learning using snakes and ladders media used in this study can improve student learning outcomes because students become active and enthusiastic in participating in learning. These results are in line with Baiquni's research (2016) which found that there was a significant effect of using snakes and ladders media on math learning outcomes, especially on simple fraction material in class III SDIT Thariq Bin Ziyad Bekasi. This can be seen from the learning outcomes before using snakes and ladders learning media in the poor category while after using snakes and ladders learning media in the good category.

## 4. Conclusion

Based on the results of research conducted at SDN 1 Kolaka, it can be concluded that there is an effect of the snake and ladder learning media on the mathematics learning outcomes of second-grade students at SDN 1 Kolaka. This can be seen from the learning outcomes before using the snake and ladder learning media, which were in the poor category, whereas after using the snake and ladder learning media, the learning outcomes were in the good category. This is proven by the results of hypothesis testing using the Paired Sample T-test, which yielded a significant value. Since the T-test value is significant,  $H_a$  is accepted and  $H_0$  is rejected, indicating that learning in the classroom using the snake and ladder learning media has a significant effect on the mathematics learning outcomes of second-grade students at SDN 1 Kolaka, improving student learning outcomes because students become active and enthusiastic in participating in learning. This can be seen from the learning outcomes before using the snake and ladder learning media in the poor category, whereas after using the snake and ladder learning media, the results were in the good category.

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