MATH PICTURE STORY MEDIA: ITS IMPLEMENTATION ON LEARNING OUTCOMES AND MOTIVATION OF ELEMENTARY SCHOOL STUDENTS

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ABSTRACT

This study aims to find the effect of mathematics picture story media on elementary school students' learning outcomes and motivation. This research is a pseudo-experimental research with a post-test-only control group design. Samples were taken randomly from two elementary schools in Saparua District, namely 20 students of SDN 318 Central Maluku (experimental class) and 20 students of SD Kristen Tiouw (control class), with a total sample of 40 students. The research instruments used were the learning outcomes test and motivation questionnaire. The data were normally distributed and homogeneous based on the normality and homogeneity test results. The data obtained were analyzed using a t-test with a t-value of 3.429 > 2.864 t table and sign. 0.020 (α< 0,05). The analysis results showed a significant difference in the mathematics learning outcomes of students taught with and without picture story media. At the same time, there is no difference in the learning motivation of students taught with and without picture story media. So there is a significant influence of picture story media on mathematics learning outcomes and student motivation. Another factor that affects student motivation is creating fun learning.

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1. INTRODUCTION

Education plays an important role in preparing quality human resources. Education as one of the places to improve the quality of human resources is carried out through

learning. Learning is expected to provide maturity to each individual. According to Jamaris (2013), education is an effort that is made consciously in order to guide and direct the development of children towards adulthood. So that through education is able to prepare human resources of higher quality and develop each individual towards maturity towards maturity.

The development of education today has been affected by technological developments. To compensate for the impact of this technology, it is hoped that teachers will be able to provide learning that is interactive, inspiring, fun, challenging, motivates students to actively participate, and provides sufficient space for initiative, creativity and independence according to the talents, interests and physical development of students and psychological students. In order for students to be more motivated during the learning process, learning media can be provided that can provide an interesting learning. Currently, teachers are required to teach more creatively and not be boring. To create this, teachers must be good at innovating in the use of appropriate methods in learning. Unfortunately, currently the variety of methods in learning, especially in math learning, is still rarely done by teachers. In addition, teachers need learning media as part of teaching aids. Now is the time for teachers to make better changes and invite students to participate actively to be able to compete, both individually and in groups. The use of learning media is one way to increase interest in learning, the selection of media is adjusted to the conditions of students and close to students.

Various models, strategies, techniques and learning media can be used by teachers to improve student learning outcomes, both cognitive, affective and psychomotor domains. In the learning process, communication and interaction between teachers and students require a learning medium. Especially in learning mathematics which is abstract and requires reasoning. The use of learning media as a teaching aid can provide a more concrete understanding to students, by means of understanding in the form of combining the various senses possessed by students, students can absorb more material conveyed through the media(Nugraheni, 2017).

Based on the reality in the field, there are things that are not as expected based on the results of observations and interviews conducted by researchers with elementary school teachers in Saparua sub-district. In some of these schools the following results were obtained: the results of observations made by researchers obtained four things, namely first there are many students who are not active in teaching and learning activities and are only busy playing alone, talking to each other with their friends and disturbing their friends without paying attention to the explanation from the teacher and it is done during math learning. Second, the learning process still uses the lecture and question and answer method, this tends to place the teacher as the center (teacher-centered learning). Third, not utilizing appropriate and effective media in learning mathematics. Fourth, the learning outcomes of students are less than optimal in learning mathematics, this is stated by the average UTS semester 2 grade IV elementary school in Saparua Subdistrict for mathematics subjects is 53 not yet reaching the KKM 80.

Low student reading motivation and student motivation in learning mathematics are problems that occur today, especially for students in remote areas. If you do learning with great motivation, you will get maximum learning results too. Motivation is one of the factors that influence students in learning. Schunk, Pintrich and Meece (in Sudibyo et al., 2017) says that motivation has a relationship with learning ability. Motivation greatly affects students' learning. Jamaris (2013) says that motivation is a force or energy that makes individuals move and choose to do something and direct these activities towards the goals they will achieve. A person will achieve the goals he wants if that person has strong motivation in himself. So that in the learning process with the existence of learning

motivation can produce a desire to succeed, encouragement and needs in learning and enthusiasm in learning in students. This is why motivation is very influential during the learning process because through motivation students are able to achieve the goals they want to achieve. Every learner has different motivation in terms of learning, so the task of a teacher is to be able to arouse students' learning motivation to be enthusiastic in participating in the learning process.

One of the learning media that attracts attention and can help students in motivating students is picture storybook media. Children basically like new things. It can be seen in the daily process that joking is the main activity carried out by students, even by everyone, to relieve tension. The lack of reading materials is also one of the factors that influence this. With the existence of mathematics picture story media, it is hoped that it can be a solution to the problem. Given that the main purpose of making this illustrated story media product is to overcome the lack of use of mathematics reading materials in schools, this product is expected to be a solution in the selection of effective mathematics learning media, considering that this media can increase students' interest in reading, especially in math lessons(Kusumaningtyas & Listianingsih, 2017)(Ariningsih, 2010).

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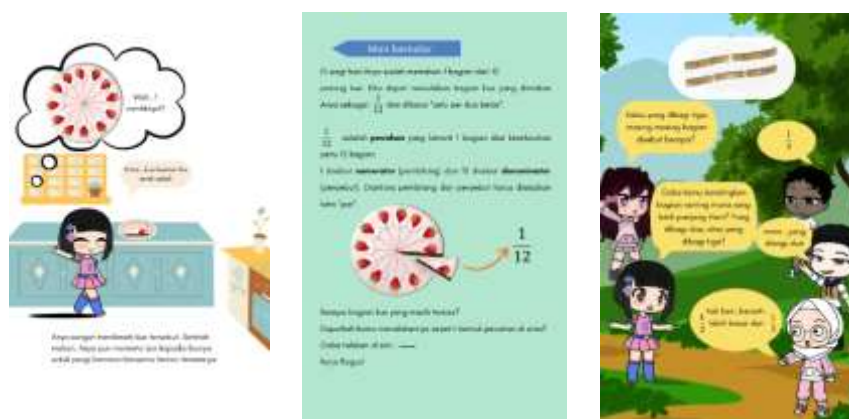
Picture 1. Media Book Picture Story Fraction Materia

Learning media is one of the main factors that can affect student learning outcomes, because it is through media that learning messages can be conveyed in accordance with these learning objectives. To realize effectiveness in learning, it must pay attention to how the learning message is designed so that students feel interested in participating in the learning process.

Learning that if only given without any innovations when providing material will cause students to get bored during the learning process. If it is still left unchecked, it will

have an impact on the low learning motivation and cognitive learning outcomes of students, resulting in the Minimum Completion Criteria for students not reaching the predetermined target.

Mathematics learning outcomes are the achievements made by students after experiencing the mathematics teaching and learning process expressed in test results. It is expected that a student's learning outcomes can be influenced by the presentation of material using maximum learning media such as picture story media. Students' mathematics learning outcomes are the results achieved by students as a description of students' mastery of knowledge or skills in learning mathematics expressed in the form of values after being tested by educators on students. In other words, mathematics learning outcomes are the results achieved by students after experiencing the mathematics teaching and learning process which is expressed in the test results.

From some of these descriptions, it can be concluded that learning outcomes are the results of students' learning efforts that have been achieved by students which include the cognitive domain or knowledge after doing something they learn in the learning process activities. Cognitive learning outcomes can be used as an indicator of success in the teaching and learning process obtained from the results of evaluations carried out during or after activities The problems previously described require solutions to improve the quality of mathematics learning. Based on these problems, the author is encouraged to conduct experiments on the effect of picture story media on learning outcomes and student motivation in learning mathematics of Saparua fourth grade students.

2. METHOD

This type of research is a quasi-experiment (pseudo-experiment) which is intended to see the effects of a treatment. This research is said to be a pseudo experiment because it does not control all external variables that affect the implementation of the experiment.

The research was conducted at SDN 318 Central Maluku and SD Kristen Tiouw in Class IV Odd Semester of the 2022/2023 academic year in September - October 2022. The population in this study were all elementary schools in Saparua sub-district. The samples taken were fourth grade students of SDN 318 Central Maluku and SD Kristen Tiouw. Sampling was determined by cluster random sampling technique. So that a sample of 40 students was obtained.

The independent variable in this study is mathematics picture story media. The picture story media used in this study used picture storybooks developed by the researchers themselves. The dependent variables in this study are learning outcomes and student motivation in learning mathematics. The instrument used to assess students' mathematics learning outcomes uses a test while in assessing student motivation is to use a questionnaire with a scale of 5.

2.1 Data Analysis Techniques

Data Description

The data description stage includes tabulating data for each variable, sorting the data by intervals and arranging them in the form of a frequency distribution table, finding the median, average (mean), and standard deviation.

The values that have been obtained from the known learning outcomes test are classified according to the five-scale value conversion table in the benchmark assessment approach as presented in the following table.

Table 1. Classification of Conversion of Learning Outcome Test Scores

Categori	Interval
Very High	$x \geq 90$
High	$75 \leq x < 90$
Medium	$60 \leq x < 75$
Low	$40 \leq x < 60$
Very Low	$x < 40$

(Ratumanan & Laurens, 2015)

Prerequisite Test Analysis

The analysis prerequisite test in this study uses the normality test with the Liliefors test which is calculated with the help of SPSS 26.0. Data is said to be normally distributed if the significant value is> 0.05, while it is said to be not normally distributed if the significant value is < 0.05. The homogeneity test was conducted with the Two Group Variance Test (F test). If F count < from F table, then the data is homogeneous, while if F calculate > F table then the data is said to be inhomogeneous / heterogeneous.

Variance Formula

$$S_x^2 = \sqrt{\frac{n.\sum X^2 - (\sum X)^2}{n(n-1)}}$$

Formula F Calculate

$$F = \frac{S_{max}}{S_{min}}$$

Hypothesis Test

In the Hypothesis test in this study using the Equality of Two Averages test or the T test was used to compare the Experimental Class and Control Class Mathematics Learning Outcomes data as well as the Experimental Class and Control Class Learning Motivation. The t test formula used to test the comparative hypothesis of two independent samples is *Separated Variance*

$$t' = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{s_1^2 + s_2^2}{n_1 + n_2}}}$$

Steps of t test

The testing steps are as follows (Sudjana, 2012)

a. Calculating the average value $\bar{x}$ and variance (s^2) every sample
b. Calculating the t value with the formula *separated varians*.
   Comparison of Mathematics Learning Outcomes and Student Motivation with and without using Picture Story Media.

c. Determine the t value on the t distribution table with a significant level of $\propto = 5\%$ with $d_k = (n_1 + n_2 - 2)$.

d. Determine the test criteria if $-t_{tabel} \leq t_{hitung} \leq t_{tabel}$ then H0 is accepted and Ha is rejected.

3. RESULTS AND DISCUSSION

3.1. Results

Analysis of Student Mathematics Learning Outcomes

Based on the results of descriptive statistical data analysis as shown in table 1, the highest posttest result achieved by students in the Experimental class group, namely SDN 318 Maluku Tengah is 73.50 with a standard deviation of 10.880. While the test results of mathematics learning outcomes achieved by students in the control class, namely SD Kristen Tiouw, were 63.60 with a standard deviation of 14.663. The average value of learning outcomes in the Experiment class and control class are both in the medium category.

Table 2. Descriptive Analysis of Learning Outcomes in Experimental and Control Classes

Description	Experiment Class	Control Class
Mean	73,50	63,60
Mediandi	76,00	59,50
Standard Deviation	10,880	14,663
Variants	118,368	214,989
Minimum Score	48	36
Maximum Score	89	88
Number of Learners	20	20

Table 3. Category of Math Learning Outcomes

Category	Value	Total number of students	
		Experiment Class	Control Class
Very High	$x \geq 90$	-	-
High	$75 \leq x < 90$	11	5
Medium	$60 \leq x < 75$	7	5
Low	$40 \leq x < 60$	2	9
Very Low	$x < 40$	-	1

Based on Table 3. It was found that there were no students in both classes who scored in the very high category. Then for the high category in the experimental class as many as 11 students and the control class as many as 5 students. The medium category in the experimental class was 7 students and the control class was 5 students. As for the very low category in the experimental class as many as 2 students and the control class as many as 9 students. As well as a very low category for no students in the experimental class and in the control class as many as 1 student.

Student Motivation Analysis

Based on the results of descriptive statistical data analysis as shown in table 4, the highest test results achieved by students in the control class, SD Kristen Tiouw were 85.85 with a standard deviation of 9.138 while the results of learning motivation achieved by students in the experimental class, namely SDN 318 Maluku Tengah, were 85.65 with a standard deviation of 7.058.

Table 4. Results of Descriptive Analysis of Learning Motivation in Experimental Classes and Control Classes

Description	Experiment Class	Control Class
Mean	85,65	85,85
Median	87,00	88,50
Standard Deviation	7,058	9,138
Variants	49,818	83,503
Minimum Score	67	62
Maximum Score	97	99
Number of Learners	20	20

Normality Test

The normality test in this study used the Liliefors test. Testing is carried out at a significance of 0.05 or 5% so that the criteria are declared normally distributed if the significance value > 0.05 in other words H_0 if the data is normally distributed, and vice versa the significance value < 0.05 Ha if the data is not normally distributed. (Ghozali, 2011).

Table 5. Normality Test Results

Variable	Liliefors Significance	
	Experiment Class	Control Class
Learning outcomes	0,200	0,200
Student Motivation	0,200	0,109

Based on the results of the normality test, it shows that the data on learning outcomes and student motivation have a significance value of 0.200 for the Experiment group learning outcomes and 0.200 for the control group, while 0.200 for the Experiment class learning motivation and 0.109 for the control class which is greater than the specified alpha value of 5% (0.05) which means H_0 is accepted and Ha is rejected. Based on the comparison of the significance value with the alpha value, it can be concluded that the data on learning outcomes and student motivation are normally distributed.

Homogeneity Test

The Homogeneity Test used in this study is the Two Group Variance Test (F Test). If F calculate < from F table, then the data is homogeneous, whereas if F calculate > F table then the data is said to be inhomogeneous/heterogeneous.

Table 6. Homogeneity Test Results with F Test

Dependent Variable	F calculate	F table	Sign.
Learning outcomes	1,816	2,168	0,099
Student Motivation	1,676	2,137	0,293

Table 6. shows that the value of F calculate < F Table means that the data of Mathematics Learning Outcomes of Experimental Classes and control classes are homogeneous with a significant value of 0.099 > 0.05. While the value of F calculate < F Table data Learning Motivation Experimental Class and control class including homogeneous with a significant value of 0.293 > 0.05. So it can be concluded that all variables have the same variant (homogeneous).

Results of Hypothesis Test

Prerequisite testing of the analysis shows that the distribution of the data obtained has been normally distributed and homogeneous, then proceed to hypothesis testing using:

Two Mean Equality Test (t test)

The analysis for hypothesis testing was carried out using the Comparison Test, namely the two-sample t test used to compare (distinguish) whether the two data (variables) were the same or different which was calculated with the help of SPSS 26.0. This test was conducted to determine whether there were differences in learning outcomes and motivation of students taught with picture story media and those without picture story media.

Based on the results of the calculation, for the Mathematics Learning Outcomes Test of Experimental and control class students, t calculate = 3.429 and t table = 2.425 at the significance level $\propto$ = 5% with a significant value of 0.020 and degrees of freedom df = 38. Meanwhile, for Student Motivation of Experimental and control classes, t calculate - 0.109 and t table -0.77 with a significant value of 0.939 and degrees of freedom df = 38 as found in the following table.

Table 7. Results of Calculation with *t test*

Test	T calculate	T table	df	Sign.
Learning outcomes	3,429	2,864	38	0,020
Student Motivation	- 0,109	- 0,77	38	0,939

Table 7. shows that the t value is 3,429 > 2,864 t table and t calculate 3,429 > -2,864 (– t table) then H_0 is rejected and Ha accepted with a significant value 0,020 < 0,05. So it can be concluded that there is a significant difference between the learning outcomes of students in the experimental class and the control class. While in the learning motivation of experimental and control class students, the value of t calculate -0,109 < -0,77 t table and t calculate - 0,109 < 0,77 (–t table) then H_0 accepted and Ha rejected with a significant value 0,939 > 0,05 means that there is no difference in the learning motivation of experimental and control class students so that it can be concluded that mathematics picture story media has a significant effect on mathematics learning outcomes and motivation of grade 4 elementary school students in Saparua.

3.2. Discussion

By using picture storybooks, there is a positive and significant effect on student learning outcomes and motivation which shows student activeness in the process of using

picture storybooks and student learning outcomes increase. In fact, learning media is one of the important factors to improve students to be motivated in participating in the learning process, this is supported by the opinion of (Azhar, 2011) stated that learning media is a tool in the learning process that is carried out outside and inside the classroom. or in the classroom. Learning media is a learning resource component that contains instructional material in the student environment that can stimulate students to learn(Susilowati, 2019).

The use of picture storybooks can provide a motivation for students to learn, motivation has a very big influence on learning, if the teacher is not able to increase motivation, then students will not learn as well as possible, because there is no special attraction for them(Ali & Asrial, 2022). Students are lazy to learn, students do not get satisfaction from the lesson. According to (Bachri & Dewi, 2022) Learning materials that attract students' motivation are easier to learn and store because motivation adds enthusiasm for learning activities. Learning motivation is one of the psychological aspects that helps and encourages a person to achieve his goals. So motivation must exist in a person, because motivation is the basic capital to achieve goals. Thus, motivation must be the starting point of all activities. This is emphasized by Emosda (2017) that every teaching and learning process motivation in learning is very necessary and the use of picture storybooks does need to be applied to students in increasing student learning motivation.

The overall results of the study prove that this mathematical picture story media has a positive and significant effect on learning outcomes and student motivation in learning mathematics in grade IV SD in Saparua. This is in line with research conducted by (Ramadhani, 2020) which says that there is an influence between the presentation of material in the form of comic media and the presentation of material without comic media on students' mathematics learning outcomes and the mathematics learning outcomes of students who have high learning motivation and are taught with comic media are higher than without comic media. The use of illustrated story media books during the learning process can motivate students so that it can also affect math learning outcomes..

Based on the results of this study, it is found that there is a difference between the mathematics learning outcomes of students taught with picture story media and without picture story media. While student learning motivation is obtained there is no difference in the motivation of students taught with picture story media and without picture story media. Factors that affect student motivation in learning so that there are significant similarities in students taught without picture story media are different teaching factors. If you look at the research process, teachers who teach in classes without picture story media provide motivation by singing so that student motivation in learning is also high.

4.   CONCLUSION

This study proves that there is a positive effect on learning mathematics using picture story media on student learning outcomes and motivation. Picture story media books provided by teachers in the mathematics learning process make students' math learning outcomes increase this is because students become more excited and passionate about learning because of the new innovations provided by teachers during the learning process.

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