e-ISSN: 2986-8076
DOI: 10.57254/tess.v1i3.19

International Journal of Geometry and Applied Mathematics
TESSERACT
Vol. 1, No. 3, Nopember 2023 hal. 111-124
Journal Page is available at http://ekalaya.nindikayla.com/index.php/home

IMPROVING MATHEMATICAL PROBLEM-SOLVING ABILITY AND LEARNING INTEREST OF JUNIOR HIGH SCHOOL STUDENTS THROUGH REALISTIC MATHEMATICS LEARNING WITH THE HELP OF TEACHING AIDS

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Abstract

Problem solving is one of the essential abilities every individual must have. Problem solving is a life skill that involves analyzing, interpreting, reasoning, predicting, evaluating and reflecting. This study aims: 1) To determine whether there are differences in the initial ability of the experimental and control classes. 2) To find out whether improving students' mathematical problem solving skills after using realistic mathematical learning models with the help of teaching aids is better than classes given conventional learning. 3) To determine whether the increase in student interest in learning after using a realistic mathematical learning model with the help of teaching aids is better than the class given conventional learning. This type of research is quantitative exponent research, which aims to determine the improvement of mathematical problem solving abilities and learning interests of junior high school students through realistic mathematics learning with the help of teaching aids. The population of this study is all grade VII students of PGRI Walantaka Junior High School in the odd semester of the 2023/2024 academic year. The sample of this study was 28 students VII A as an experimental class and 24 students in class VII B as a control class, so the sample in this study was 52 students. From the calculation results, the N-Gain Value Test Pretest and Posttest results in the experimental class had an average of 58.83 while the control class had an average of 10.38. Test Hypothesis The statistical value of the Z test is calculated to be –6.060 and the probability is 0.000. Thus H0 is rejected. So it is concluded that: (1) There is no difference in the initial ability of experimental class students and control class. (2) The ability to solve mathematical problems on fractional material using Realistic Mathematical Learning Models with the help of Teaching Aids is better than the Mathematical Problem Solving Ability using conventional Learning Models. (3) Student learning interest in fractional material using Realistic Mathematics Learning Model with the help of Teaching Aids is better than student learning interest using conventional Learning Model.

Keywords: Mathematical Problem Solving, Realistic Mathematics Learning, Learning Interest

INTRODUCTION

Education became one of the initial objectives of forming the Indonesian state as stated in the Preamble to the 1945 Constitution (UUD 1945), namely to educate the nation's life. Education certainly has its purpose, the function of national education in general based on Law Number 20 of 2003 is to develop the ability and shape the character and civilization of a dignified nation to educate the nation's life. One of the efforts in realizing this is an improvement in the learning process, because learning is the core and central activity in education, especially in schools which will determine the quality of human resources. This learning activity is the leading learning resource for students in developing their abilities and talents. Learning activities in various fields

of science need to be improved to facilitate all students with different backgrounds and characters, including in the field of Mathematics.

Mathematics is the basis of all sciences, therefore mathematics has been introduced from an early age, starting from kindergarten education to the college level. The lack of optimal mathematics learning in Indonesia and each student having a different character will undoubtedly be one of the obstacles in efforts to improve the quality of education and the country's progress. So far, mathematics learning, especially in the classroom, still does not involve students optimally. There are still many teachers who consider students only as recipients of knowledge. So that the learning process is still teacher-centered. There are still many teachers who carry out mathematics learning by explaining, giving examples of problems, exercises, and how to solve to these students, what can be done is to do Mathematics is also an ability that students must have so that they can face mathematical problems in particular, and problems of daily life in general. This is by one of the objectives of learning mathematics in schools, namely understanding mathematical concepts, explaining the relationship between concepts, and applying concepts or algorithms flexibly, accurately, efficiently, and appropriately in problem solving (Ministry of Education, 2008; Rochim, Hidayati, &; Masruroh, 2023).

Based on the results of observations and interviews with mathematics teachers of SMP PGRI Walantaka, it is known that learning in schools still uses conventional learning, namely teachers only transfer their knowledge directly to students, in other words, teachers are active while students are passive in learning. The subject matter felt by students is still abstract, students are only given material, examples, and questions without having students develop their knowledge as a result of which students are less able to solve problem-solving problems and less active in asking or answering questions, when the teacher asks students to solve non-routine problems students are less able to solve them, so that students' abilities and interests weaken. Students have not been able to use optimally their abilities because students are only fixated with the examples given and still have difficulty interested in learning.

In the teaching and learning process, teachers still use conventional learning, often taught by teachers in front of the class. The learning media still uses whiteboards and markers. The result results in monotonous learning without any variation and causes less attractive mathematics learning. To overcome this, appropriate learning alternatives are needed in learning activities so that students' problem-solving skills and interest in learning increase, one of which can use the help of teaching aids.

For this reason, in the learning process teachers must be able to choose a reasonable and appropriate learning model so that the mathematics learning process can be effective, active and not make students bored. In addressing the problem of change in learning. One of them uses the help of adjustable teaching aids that make students not feel bored during learning and can think creatively in mathematics lessons.

Learning is a interaction process between students and educators and learning resources in the learning environment (Lestari &; Afriansyah, 2022). Learning is an assistance provided by educators so that there can be a process of acquiring knowledge and knowledge, mastering skills and habits, and forming attitudes and beliefs in students (Gradini, Yustinaningrum, &; Safitri, 2022). In other words, learning is a process to help students learn well. One of the definitions of learning proposed by Gagne (1985) is that learning is a set of external events designed to support some internal learning processes.

The ability to solve mathematical problems must be possessed by every student (Salma &; Sumartini, 2022), because (a) mathematical problem solving is the general goal of teaching mathematics, (b) mathematical problem solving is an essential ability in mathematics learning, and (c) mathematical problem solving which includes methods, procedures and strategies is the primary process in the mathematics curriculum (Rigusti &; Pujiastuti, 2020; Saputra, Sofyan, &; Mardiani, 2023).

In addition, Ruseffendi (1991) also said that mathematical problem-solving skills are essential in mathematics, not only for those who will someday explore or study mathematics, but for those who will apply it in other fields and everyday life. In this regard, the National Council of Teachers of Mathematics (2000) states that in implementing mathematics learning in schools, teachers must pay attention to five mathematical abilities: reasoning, conections, communications, representations and problem solving. Thus, the role of teachers is vital in improving students' mathematical problem solving abilities, ranging from models, methods, media to supporting evaluation materials (Kusnadi &; Mardiani, 2022).

Interest is needed in the learning process, interest cannot be separated from the human psyche so that the person will try as hard as possible to get what he wants, the efforts made by the person can occur because of the encouragement through the interest he has. Interest is one of the factors that affect learning outcomes. On the contrary, without interest a person is impossible to do something. In teaching and learning situations at school, students interested in a particular subject tend to focus continuously during teaching and learning. Interest is not carried from birth, but acquired later. Efforts to increase student interest are carried out by using learning strategies using various learning elements or elements, such as varying the format of writing, colors, learning models and so on so that it can attract interest and maintain student attention during learning so that learning becomes fun with innovations.

In the era of technological advances like now, students' interest in learning has decreased, students focus more on gadget technology than learning. Therefore, teachers must be able to increase students' interest in learning by using technology. Technology is also beneficial in doing math problems to make it easier for students to solve them. One of them is to use the help of props. However, in this case, what needs to be considered is whether after using the help of these teaching aids, students' interest in learning and ability to solve mathematical problems can increase or not. Therefore, to answer these problems, researchers are motivated to raise a discussion titled "Increasing the ability to solve mathematical problems and learning interest of junior high school students through realistic mathematics learning with the help of teaching aids".

METHOD

This research is a quantitative research, conducted by quasi-experimental method. This research was carried out in the first semester of the 2023/2024 academic year. This experiment's research site was conducted at SMP PGRI Walantaka Jln. Ciruas-Petir Km.4 Walantaka, Walantaka Village / Kel, Walantaka District, Serang Banten City 42183. The research will be held in August 2023.

The population of this study is all grade VII students of PGRI Walantaka Junior High School in the odd semester of the 2023/2024 academic year. The sample of this study was 28 students VII A as an experimental class and 24 students in class VII B as a control class, so the sample in this study was 52 students. This study is divided into two variables, namely independent and bound variables. The independent variable in this study is realistic mathematics learning. While the dependent variables

in this study are problem solving ability and student learning interest. This research data is quantitative data obtained are test questions in the form of *Pretest* and *Posttest* students as a benchmark for mathematical problem solving abilities.

Research data collection techniques are mathematical problem-solving ability tests and questionnaires. In this study, the mathematical literacy ability test made based on the variable indicator of students' mathematical connection ability consisted of 5 description questions. The tests used in this study are *Pretest* and *Posttest*. The *Pretest* and *Posttest* will later be used to see the improvement of mathematical problem solving skills and learning interests of junior high school students through realistic mathematics learning with the help of teaching aids. This test has been tested for validity, reliability, difficulty, and differentiating power. As for this questionnaire, it is used for data collection by providing a list of questions to respondents in the hope of responding to find out the interest in learning students at SMPN PGRI Walantaka. The research questionnaire used a Likert scale in the form of a checklist (√) consisting of two types of statements, namely positive statements and negative statements with 4 categories of responses selected, namely Strongly Agree (SS), Agree (S), Disagree (TS), and Strongly Disagree (STS). Option N (Neutral) is omitted to avoid doubts or security to be impartial to a given statement and validity and reliability tests have been carried out.

There are 2 research instruments: learning instruments (RPP and LKPD) and assessment instruments (test and non-test instruments). The data obtained from the study will be analyzed. The analysis carried out is test data analysis and questionnaire data analysis. Test data analysis is data derived from the results of test instruments with data analysis in the form of calculation of *Pretest* and *Posttest* values, normality tests, homogeneity, *N-Gain* tests, *t-test* results from *Pretest* and *Posttest results,* while Questionnaire data analysis is data derived from the results of non-test instruments in the form of *N-Gain* normality tests questionnaires, homogeneity, tests *T-Test.*

RESULTS AND DISCUSSION

1. Descriptive Statistical Analysis

a. Descriptive Analysis of Mathematical Problem-Solving Abilities

This Descriptive Statistical Analysis discusses how to collect, summarize, and present data so that it becomes information that is easier to understand. The following table illustrates the initial test score, final test and *N-Gain* data from the experimental and control classes.

Table 1. Results of Descriptive Analysis of Problem Solving Ability

		Experiment	**Control**
Pretest	**Sd**	13,218	12,810
	x̄	36,96	38,54
	xmax	70	65
	XMIN	15	10
Postest	**Sd**	7,583	10,099
	x̄	74,11	47,08
	xmax	95	65

e-ISSN: 2986-8076
DOI: 10.57254/tess.v1i3.19

	XMIN	60	25
N-Gain	**Sd**	10,065	24,044
	x̄	58,83	10,38
	xmax	85	50
	XMIN	43	-36

Table 1 shows that the average Pretest score for the experimental class was 36.96 with the highest score of 70 and the lowest score of 15. While in the control class, the average *Pretest* score was 38.54 with the highest score of 65 and the lowest score of 10. This shows that students' initial mathematical problem-solving skills are almost the same. For the average result, *the Posttest* score in the experimental class was 74.11 with the highest score of 95 and the lowest of 60. While the control class had a *Posttest* average of 47.08 with the highest score of 65 and the lowest of 25. After being given different treatment between experimental and control classes, the results show that experimental classes that are given treatment using realistic mathematics learning on fractional number material obtain an average score of students' mathematical problem-solving ability tests higher than control classes that use conventional learning in general.

b. Descriptive Analysis of Learning Interest Questionnaire

Questionnaire data analysis aims to determine students' learning interests during the learning process using realistic mathematics learning and conventional learning. Questionnaire analysis test calculation using SPSS version 23. With the following acquisition data:

Table 2. Descriptive Results of Student Learning Interest

		Experiment	**Control**
Pretest	**Sd**	7,214	3,978
	x̄	47,46	46,54
	xmax	58	55
	XMIN	34	37
Postest	**Sd**	5,282	4,835
	x̄	64,86	51,63
	xmax	73	60
	XMIN	53	42
N-Gain	**Sd**	0,146	0,140
	x̄	0,613	0,169
	xmax	0,90	0,38
	XMIN	0,39	-0,03

Based on table 2 shows that the average *Pretest questionnaire* for the experimental class was 47.46 with the highest score of 58 and the lowest score of 34. While in the control class, the average Pretest questionnaire score was 46.54 with the highest score of 55 and the lowest score of 37. This shows that students' interest in learning is almost the same. The average result of the *Posttest* questionnaire score in the experimental class was 64.86 with the highest score of 73 and the lowest of 53. While the control class had an average *Posttest* questionnaire score of 51.63 with the highest score of 60 and the lowest of 42. Overall, after being given different treatment between experimental and control classes, the results can be seen that experimental classes that are given treatment using realistic mathematics learning on fractional number material with the help of teaching aids obtain an average score of student interest questionnaires higher than control classes that use conventional learning in general. Moreover, this study will analyze *N-Gain data* in showing differences in the improvement of the two classes.

2. Pretest *Data Analysis*

Initial data is obtained from the *Pretest* scores on mathematical problem solving abilities given to students. Then the data will be tested for normality, homogeneity and average similarity for sampling which will be carried out *by cluster random sampling.*

a. Normality Test

The hypotheses used in the normality test are:

H_0 : Normal distributed data

H_1 : Data is not normally distributed

Test criteria: if the sig ≥ 0.05, then it is accepted. H_0Moreover, if the sig ≤ 0.05, then it is rejected. At the level of significance it is 5% (α=0.05)H_0. Based on calculations, normality test results can be obtained using SPSS 23 software initial data as follows:

Table 3. Pretest Normality Test Calculation Results

Class	Kolmogorov-Smirnov Sig.
Experiment	.110
Control	.110

Based on the table above, it can be concluded that the significant values for the *experimental* class Pretest and the control class are 0.110 and 0.110 respectively where Sig > 0.05. This shows that the research data is typically distributed.

b. Homogeneity Test

After the normality test is carried out, the homogeneity test will be carried out. This homogeneity test is performed to look for data on whether the sample has the same variance or homogeneous.

H_0: = $\sigma_1^2\sigma_2^2$, both sample groups that have the same variance.

H_1: ,$\sigma_1^2 \neq \sigma_2^2$both sample groups have different variances.

The results of homogeneity testing on the *Pretest* can be seen in the following table:

Table 4. Test Calculation of Homogeneity of *Pretest Results Data*

Class	Sig.
Pretest Experiments and Controls	.767

By comparing the two values, it was obtained significantly for the *experimental* class Pretest and the control class of 0.767 >0.05. This means that the *Pretest* value data from both sample groups are homogeneous.

c. Test Average Difference

After conducting the normality and homogeneity test, the next step is to test the average difference. Then the data used to test this hypothesis is *Pretest value data* The test is carried out using a t-test because the data is usually distributed and homogeneous.

$H_0 : \mu_1 = \mu_2$, There is no difference in the average initial ability of experimental students with control classes.

$H_1 : \mu_1 \neq \mu_2$, There is a difference in the average initial ability of experimental students with control classes.

Information:

μ_1 : Average experimental class scores

μ_2 : The average score of the control class

Based on the calculation and analysis of the data, the results are as follows:

Table 5. Results of the Difference in Average *Pretest Scores*

Class	Sig. (2-tailed)
Experiments and Controls	.665

Based on the test calculations, the difference between the two averages in the experimental and control classes can be obtained Sig. (2-tailed) of 0.655 > 0.05 so that it is accepted and rejected. Because it was accepted and rejected. So it can be concluded that there is no difference between the average initial ability of experimental class students and the control class.$H_0 H_1$ H_0 H_1

3. Data Analysis *N-Gain* Mathematical Problem Solving Capabilities

Data After the learning process is carried out in both classes, a *Posttest is* held. Pretest and *Posttest score data* can be searched to what extent the increase in students' mathematical problem-solving ability with the N-Gain formula. The data *of N-Gain* mathematical problem-solving capabilities can be presented in the following table:

Table 6. Data *N-Gain* Mathematical Problem Solving Capabilities

Group	Xmax	Xmin	Central Tendency Size		Group Variance Size	
			$\bar{x}$	Me	R	Sd
Experiment	85	43	58,83	57,7	41,76	10,06
Control	50	-36	10,38	12,5	86,36	24,04

Based on the table above, it can be seen that the *N-Gain value* of the experimental class is better than that of the control class. which will then be analyzed in the prerequisite test from *the N-Gain* data above.

a. N-Gain *Normality Test* Troubleshooting

The normality test is used to determine whether the *N-Gain* mathematical problem-solving abilities of experimental and control class students are usually distributed. The hypotheses used in the normality test are:

The hypotheses used in the normality test are:

H_0 : Normal distributed data

H_1 : Data is not normally distributed

Test criteria: if then accepted. Moreover, if then it is rejected. At the level of significance it is 5% . Based on calculations, normality test results can be obtained using $\text{sig} \geq 0{,}05, H_0 \text{sig} \leq 0{,}05, H_0 (\alpha = 0{,}05)$ SPSS 23 software initial data as follows:

Table 7. Calculation Results of *N-Gain* Normality Test Mathematical Problem Solving Ability

		Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistics	Df	Sig.	Statistics	Df	Sig.
N_Gain	Experiment	.187	28	.014	.872	28	.003
	Control	.145	24	.200	.954	24	.334

a. Lilliefors Significance Correction

Looking at the results above, the probability value of the experimental class is 0.014 where the sig < 0.05, so it is abnormally distributed. While the probability value of the control class is 0.200 where the sig > 0.05, it is usually distributed. Because in the data sample there are abnormally distributed data, to test the hypothesis, a non-parametric statistical test is carried out using the *Mann Whitney test.*

b. Hypothesis Test of Problem-Solving Ability

The data used to analyze the hypothesis can be tested after the data is collected. The hypothesis test involves using a similarity test of two averages, the statistical formula used is the non-parametric mann whitney test formula at *N-Gain*. The steps to test the *N-Gain* hypothesis of mathematical problem-solving ability are as follows:

- H0: μ1 < μ2 (improvement in mathematical problem solving ability with realistic mathematics learning with the help of teaching aids is no better than students' mathematical problem solving ability using conventional learning models).
- H1: μ1 ≥ μ2 (improvement of mathematical problem solving ability with realistic mathematics learning with the help of teaching aids is better than solving students' mathematical problems using conventional learning models).

Table 8. Test the *N-Gain Hypothesis* of Mathematical Problem Solving Ability

Test Statisticsa	
	N_Gain
Mann-Whitney U	6.500
Wilcoxon W	306.500
Z	-6.060

Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: class

Looking at the statistical value of the Z test, the calculation is –6.060 and the probability is 0.000 because it uses 2 groups, the sig table is divided by 2 with a result of 0.000. thus H0 is rejected. This means that increasing the ability to solve mathematical problems with realistic mathematics learning with the help of teaching aids is better than solving students' mathematical problems using conventional learning.

4. N-Gain *Data Analysis* Learning Interest Questionnaire

N-Gain *Data Analysis* Questionnaire aims to determine whether there is an increase in student interest in learning during the learning process using realistic mathematics learning with the help of teaching aids and conventional learning. The *N-Gain* data of the learning interest questionnaire can be presented in the following table:

Table 9. *N-Gain* Learning Interest Questionnaire

Group	Xmax	Xmin	Central Tendency Size		SizeGroup Variance	
			$\bar{x}$	Me	R	Sd
Experiment	90	38,89	0,58	15,09	51,1	14,6
Control	38,46	-3,03	0,10	57,32	41,4	14,0

Based on the table above, it can be seen that the *N-Gain* value of the experimental class students' learning interest questionnaire has increased significantly compared to the control class. Furthermore, the data above will be carried out prerequisite tests.

a. N-Gain *Normality Test* Learning Interest Questionnaire

The normality test is used to determine whether *the N-Gain* of learning interest of experimental and control class students is usually distributed. The results of the N-Gain normality test of student learning interest in the following subjects:

Table 10. N-Gain Normality Test Results *Learning* Interest Questionnaire

Tests of Normality

	Class	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistics	Df	Sig.	Statistics	Df	Sig.
N_GAIN	Experiment	.139	28	.016	.930	28	.061
	Control	.149	24	.183	.909	24	.000

Looking at the results above, the probability value of the experimental class is 0.016 where the sig < 0.05, then abnormally distributed. Moreover, the probability value of the control class is 0.183 where sig > 0.05 , then it is typically distributed. Because the sample has abnormally distributed data, to test the hypothesis, a non-parametric statistical test is carried out using the test *Mann Whitney.*

b. Test the *N-Gain Hypothesis* of the Learning Interest Questionnaire

The data used to analyze the hypothesis can be tested after the data is collected. The hypothesis test involves using a similarity test of two averages, the statistical formula used is the *non-parametric* mann whitney test formula at *N-Gain*. The steps to test the *N-Gain* hypothesis of student learning interest are as follows:

- H0: μ1 < μ2 (improvement in mathematical problem solving ability with realistic mathematics learning with the help of teaching aids is no better than students' mathematical problem solving ability using conventional learning models).
- H1: μ1 ≥ μ2 (improvement of mathematical problem solving ability with realistic mathematics learning with the help of teaching aids is better than solving students' mathematical problems using conventional learning models).

Table 11. Test the *N-Gain Hypothesis* of the Learning Interest Questionnaire

Test Statisticsa

	N_GAIN
Mann-Whitney U	.000
Wilcoxon W	300.000
Z	-6.169
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: class

Looking at the statistical value of the Z test, calculate it is –6.169 and the probability is 0.000 because using 2 groups, the sig table is divided by 2 with a result of 0.000. Thus H0 is rejected. This means that increasing student interest in learning realistic mathematics with the help of teaching aids is better than student learning interest using conventional learning.

The first result, research on students' mathematical problem solving abilities, is that improving classes given realistic mathematics learning with the help of teaching aids is better than those given conventional learning. Viewed based on the average results, experimental class students are higher than the control class Researchers in the learning process use realistic mathematics learning steps, namely:

1. Understand contextual issues
2. Resolve contextual issues
3. Compare and discuss answers
4. Conclude

The step of relating the material to everyday life with this step makes it easier for students to understand the material so that when solving problems students will not find it difficult, this does not exist in the control class. This can be seen in the following picture:

e-ISSN: 2986-8076
DOI: 10.57254/tess.v1i3.19

Figure 1 Working on LKPD

The picture shows students working on LKPD in groups in LKPD there is a story problem. When working on the question, students were very enthusiastic and discussed with each other. Syahputra's opinion (2013) suggests that the Realistic Mathematics Education Approach starts from real things for students, emphasizes thinking process skills and work in mathematics, discussing with friends and collaborating so that they can find themselves and ultimately use mathematics to solve problems individually and in groups.

The result of the second study was that the increase in learning interest of experimental class students was better than that of the control class. This is caused by several factors, one of which is applying a realistic mathematics learning approach with the help of teaching aids applied by researchers in the learning research process in the classroom. Researchers use realistic mathematics learning steps with the help of teaching aids that are applied in the learning process during the classroom. The teaching aids used in classroom learning are fractional tapes.

They are learning for fractional material in mathematics made of bands measuring 5 cm wide with relative band lengths. On this fractional ribbon, vertical lines describe the value of a fraction and students are asked to answer which fraction value is greater or smaller based on the fractional tape contained in LKPD and Props that the researcher has made. With the research process where at the beginning of learning after opening in the classroom, researchers distribute groups first. Then give LKPD and teaching aids to each group by completing the activities on the LKPD sheet. Researchers use benchmarks for mathematical problem solving variables and student learning interests as variables used, and use test and non-test instruments (questionnaires) as research benchmarks to find out.

1) Is there a difference in the initial ability of the experimental class and the control class
2) Whether the improvement of students' mathematical problem solving skills after using realistic mathematical learning models with the help of teaching aids is better than classes given conventional learning
3) Whether the increase in student interest in learning after using a realistic mathematical learning model with the help of teaching aids is better than classes given conventional learning.

The explanation above shows that realistic mathematics learning with the help of teaching aids can be used as an alternative to mathematics learning in addition to conventional learning. There are advantages of learning realistic mathematics itself, namely:

1) Students are more active in finding concepts and theories in learning, so that students can connect with everyday life;
2) Can cause students' feelings of excitement or interest in learning mathematics. This feeling of pleasure raises interest in learning, which will try hard to get good grades by continuing to study without coercion from the teacher.

Likewise with teaching aids where learning through the help of teaching aids is very helpful for students in understanding and increasing interest in learning mathematics. This is supported by the opinions of several experts, one of which is based on the results of Patra Sei Lepan's research by Nur Izhma Adzkia Zahra (2023). This study aims to describe the improvement of students' mathematical problem solving skills by applying realistic mathematics learning assisted by digital media in grade VIII of Dharma Patra Sei Lepan Junior High School for the 2022/2023 school year. This research resulted that the application of realistic mathematics learning assisted by digital media to improve students' mathematical problem solving skills was in the medium category.

CONCLUSION

Based on the results of research and discussions that have been carried out, several conclusions can be obtained as follows:

1. There was no difference in the initial ability of the experimental and control class students.
2. Improving mathematical problem solving skills using Realistic Mathematics Learning with the help of Teaching Aids is better than Mathematical Problem Solving Abilities using conventional Learning.
3. Increasing student learning interest by using Realistic Mathematics Learning with the help of Teaching Aids is better than student learning interest using conventional learning.

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e-ISSN: 2986-8076
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