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The Influence of Implementing Realistic Mathematics Learning Model on The Mathematics Learning Outcomes

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Abstract

The low learning outcomes of students at Nurul Ilmi Padangsidimpuan Private Junior High School in learning mathematics can be solved by implementing the Realistic Mathematics Learning (RML) model. This study aims to determine whether there is an increase in the mathematics learning outcomes of class VII students at Private Junior High School Nurul Ilmi Padangsidimpuan in material of linear equations through the RML model and to determine the effectiveness of the RML model on mathematics learning outcomes. The method used in this study is a quasi-experimental method using a pretest-posttest control group research design. The research subjects were class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan Semester I of the 2022/2023 Academic Year with a total of 30 students. The test instrument are 20 validated multiple choice questions. Data analysis techniques are quantitative descriptive analysis and inferential analysis. Based on the results of the study, the increase in the mathematics learning outcomes of the experimental group was 43.84% and the control group was only 37.5%. So that the results of learning mathematics in the experimental group is better than the control group. The RML model has an effectiveness percentage of 6.67% for improving mathematics learning outcomes for class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan. Thus, the application of the RML model can be used as reference material and choices for mathematics teachers in developing mathematics learning in their respective schools.

Keywords:
learning outcomes; mathematics; enhancement; percentage effectiveness; RML

INTRODUCTION

Mathematics is a scientific discipline that plays an important role in education and everyday life (Marlina, 2021). Mathematics is an exact science that cannot be separated from numbers and formulas. So, a way is needed to improve the quality of mathematics education and build students' learning interest in mathematics so that mathematics is no longer considered a difficult subject but is easy and fun (Hayati, 2019). Mathematics learning in junior high school is still very theoretical and not related to everyday life, so students learn mechanistically without understanding the application of the theory they learn naturally. As a result, students find it difficult to understand teaching material and only tend to memorize the concepts/principles they have to learn (Purnama, Agus, & Halistin, 2023).

During the mathematics learning process, several problems hinder the implementation of learning activities (Marliani & Nurhayati, 2020). In fact, we hear many students complain that mathematics makes students confused and is even considered scary for some students. The role and responsibilities of mathematics teachers are so heavy that students worry about their learning achievement (Ratna, 2023). Given the importance of mathematics lessons, learning must be centered on students so that the learning process is more meaningful so that it can realize an increase in the quality of education. To make this happen, the role of the teacher is needed so that learning mathematics is easy for students to understand (Khotimah & As'ad, 2020). The low learning outcomes of students at Nurul Ilmi Padangsidimpuan Private Junior High School in learning mathematics are not solely due to the difficult material, but can also be caused by the learning process being carried out.

Meanwhile the learning process is practiced conventionally. The classroom learning process does not provide opportunities for students to build their own understanding so that students become passive learners and do not participate in the learning process. Students cannot understand the importance of learning Linear Equations and only memorize formulas without understanding the mechanics even though they know that they must understand the concept and its usage first before memorizing it. Students are instructed to memorize lots of facts and must be able to regurgitate them during exams (Mbagho & Tupen, 2021). This tends to make students feel bored, uninterested, less creative, their abilities are less developed and the learning achievements achieved are not satisfactory (Marliani & Nurhayati, 2020). For this reason, the Realistic Mathematics Learning (RML) model was chosen as a solution to overcome the problem of low student learning outcomes. The RML model is a new approach in the field of mathematics education, especially mathematics learning which was first developed in the Netherlands 30 years ago.

The realistic mathematics learning model is a learning model that emphasizes the meaningfulness of mathematical concepts. A knowledge becomes meaningful for students if the learning process is carried out in a context or learning uses realistic problems. A problem is called realistic if the problem can be imagined or real in the minds of students. The RML model encourages students to practice a lot by solving math problems in the form of word problems related to daily life activities. Through a lot of practice, students are used to being able to understand the content of mathematics subject matter through a realistic approach. Learning through a realistic approach is expected to be able to bring significant changes to student learning activities and outcomes. An interesting learning process that gives direct impressions and experiences, according to the lives and actual needs of students is the learning process that is currently expected (Armiyanti, 2019).

The success of the RML model in improving mathematics learning outcomes for junior high school students can be seen in the results of previous studies. The results of Rahmi, Iltavia, & Zarista's research (2021) stated that the RML model was able to improve the learning outcomes of class VIII students of MTsM by 56,81%. The research results of Desyana & Sari (2022) also stated that the RML model was able to improve the mathematical communication skills of class VII students of SMP Negeri 1 Deli Tua by 50%. The results of Mbagho & Tupen's research (2021) stated that the RML model was able to improve the mathematics learning outcomes of class VII students of SMP PGRI 3 Paga on fractional operations material by 19.45%. Thus, the results of this study became the basis for researchers' thoughts to conduct further research on the Realistic Mathematics Learning (RML) model.

The research to be carried out is entitled "The Influence Of Implementing Realistic Mathematics Learning Model On The Mathematics Learning Outcomes Of Class VII Students At Nurul Ilmi Padangsidimpuan Private Junior High School". This study aims to determine whether there is an increase in the mathematics learning outcomes of class VII students at Private Junior High School Nurul Ilmi Padangsidimpuan in the material of linear equations through the Realistic Mathematics Learning (RML) model and to determine the effectiveness of the Realistic Mathematics Learning (RML) model on the mathematics learning outcomes of class VII students at Nurul Private Junior High School Padangsidimpuan science on the subject of linear equations. The results of this study are expected to be used as reference material and choices for mathematics teachers in developing mathematics learning in their respective schools.

METHODS

Location and Time of Research

This research was conducted in the classes of Private Junior High School Nurul Ilmi Padangsidimpuan for the 2022/2023 academic year. The condition of Nurul Ilmi Padangsidimpuan Private Junior High School was chosen as the research location because it was very suitable for learning. The classrooms are comfortable, the situation is clean, there is enough light and air circulation is smooth. The research was carried out for three months, August to November 2022.

Subject of Research

The subjects of this study were class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan Semester I of the 2022/2023 Academic Year, a total of 30 students consisting of 20 male students and 10 female students (Armiyanti, 2019). Where the research subjects were divided into two groups (experimental group and control group), each of which consisted of 15 students. Sampling was carried out by purposive sampling, so that class VII-1 was selected as the experimental group and class VII-2 as the control group. The mathematics material taught in this research is linear equations (Khotimah & As'ad, 2020).

Research Design

The method used in this study is a quasi-experimental method (apparent research). The quasi-experimental method is an experimental method that does not allow the researcher to fully control all relevant variables. The control is only carried out for one variable, namely the most dominant variable (Rahayu, Nuryani, & Hermawan, 2019). The research design used was a pretest-posttest control group research design. In this research design, subjects were randomly selected and divided into two groups, then each group was given a pre-test but only the experimental group was given the Realistic Mathematics Learning

(RML) model. At the end of the study, both groups were given a post-test to measure the degree of change in each group. The pre-test was carried out at the beginning of the study and the post-test was carried out after the research was completed (Rahmi, Iltavia, & Zarista, 2021).

Research Instruments

The research instruments are 20 validated multiple choice questions and learning activity observation sheets.

Frame Work Flow

Each group was taught by the same teacher/researcher. The stages are:

a) Prepare a Learning Implementation Plan (LIP) for odd semester class VII mathematics learning material with the subject of Linear Equations for each experimental and control group.

b) Carrying out a pre-test with test material from Linear Equation teaching materials.

c) Divide the sample into a control group and an experimental group.

d) Carry out a 6x45 minute learning process for each group according to the LIP that has been created, so that significant learning differences are obtained based on the observation sheet of learning activities.

e) Carry out a post-test.

f) Tabulate and describe research data.

g) Testing hypotheses, and

h) Prepare research reports and publications.

The control group is a group of students who learn through conventional learning models. The conventional learning model is carried out with lectures, the teacher delivers the lesson material and students only listen to the teacher's explanation. The experimental group is a group of students who learn through the RML learning model. Each group consists of the same number of students (15 students) and is attempted to be homogeneous based on the pre-test results. The success of students learning chemistry through each group is stated based on the differences in the post-test and pre-test results obtained by the students (Rahmi, Iltavia, & Zarista, 2021).

Data Collection and Analysis

Data collection techniques in this study with tests. The test technique was carried out to obtain data on the results of learning mathematics on linear equation material before and after teaching using the RML model for the experimental group and conventional models for the control group. The test instrument used was multiple choice questions consisting of 20 validated questions. Test assessment indicators include the accuracy of the answers to do the test. Before the test instrument is used, validity, reliability, level of difficulty and differentiation are first tested until an instrument that is suitable for use is found (Purnama, Agus, & Halistin, 2023). Indicators of success in research using the RML model are shown by the average grade VII student learning outcomes of Nurul Ilmi Padangsidimpuan Private Junior High School equal to or above the MCC mathematics, namely 70 ($\geq$ 70) (Armiyanti, 2019).

Data on mathematics learning outcomes were analyzed with quantitative descriptive analysis and inferential analysis. In the quantitative descriptive analysis, the average mathematics learning outcomes of the experimental group and the control group were calculated. While the inferential analysis used is the t-test. The t-test was conducted to determine differences in the learning outcomes of the experimental group and the control group. Before the t-test is carried out, a prerequisite analysis test is first carried out, namely the normality test and homogeneity test (Khotimah & As'ad, 2020). Then the

increase in mathematics learning outcomes for each group was calculated using N-gain analysis and the percent effectiveness of the Realistic Mathematics Learning (RML) model was calculated by comparing it to conventional learning models (Purnama, Agus, & Halistin, 2023).

RESULT AND DISCUSSION

Mathematics Learning Outcomes of Grade VII Private Junior High School Nurul Ilmi Padangsidimpuan Prior to the Application of the Realistic Mathematics Learning Model (RML)

The results of learning mathematics for class VII students at Private Junior High School Nurul Ilmi Padangsidimpuan prior to the application of the RML model showed the initial ability of students to understand the material being taught. Based on data on mathematics learning outcomes in general, the pre-test average scores in the experimental group and the control group are different. The experimental group has an average pre-test value of 75.67 and the control group has an average pre-test value of 68.33. Mathematically, the difference in the mean pre-test scores of the two groups is 7.34. After carrying out the pre-test, it was found that 11 students (73.33%) from the experimental group and 7 students (46.67%) from the control group were successful in learning mathematics. Meanwhile, 4 students (26.67%) from the experimental group and 8 students (53.33%) from the control group were not successful in learning mathematics.

Based on the results of the normality and homogeneity tests on the pre-test data, it shows that the data from the mathematical pre-test results of the experimental group and the control group are normally distributed and have a homogeneous variance. In summary, the results of the normality test and homogeneity test of the pre-test data are presented in Tables 1 and 2 below.

Table 1
Normality Test On Pre-Test Data

Group	X^2_{table}	X^2_{count}	α	Conclusion
Experimental	3.841	1.1876	0.05	Normal
Control	3.841	2.2204	0.05	Normal

Table 2
Homogeneity Test On Pre-Test Data

Activity	F_{count}	$F_{left\ table}$	$F_{right\ table}$	α	Conclusion
Pre-test	0.8374	0.3343	2.991	0.05	Homogeneous

Mathematics Learning Outcomes of Grade VII Private Junior High School Nurul Ilmi Padangsidimpuan After Applying the Realistic Mathematical Learning Model (RML)

In the pre-test data analysis stage, it was found that the results of learning mathematics in the experimental group and the control group were different. The post-test was conducted to see the level of understanding of students' mathematical concepts after learning took place (Purnama, Agus, & Halistin, 2023). In addition, the post-test also aims to see an increase in mathematics learning outcomes for class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan. Based on data on mathematics learning outcomes in general, it can be said that the average post-test scores in mathematics in the

experimental and control groups are much different. The experimental group had an average score of 86.33 and the control group had 78.33. Mathematically, the average difference in the post-test math scores of the two groups was 8. After carrying out the post-test, it was found that all students (100%) from the experimental group and 13 students (86.67%) from the control group succeeded. in learning mathematics. Meanwhile, 2 students (13.33%) from the control group were still not successful in learning mathematics.

Based on the results of the normality and homogeneity tests on the post-test data, it shows that the data from the mathematics post-test results of the experimental group and the control group are normally distributed and have a homogeneous variance. In summary, the results of the normality test and the homogeneity test of the post-test data are presented in Tables 3 and 4 below.

Table 3
Normality Test On Post-Test Data

Group	χ^2_{table}	χ^2_{count}	α	Conclusion
Experimental	3.841	0.2721	0.05	Normal
Control	3.841	0.2721	0.05	Normal

Table 4
Homogeneity Test On Post-Test Data

Activity	F_{count}	$F_{left\ table}$	$F_{right\ table}$	α	Conclusion
Post-test	0.9514	0.3343	2.991	0.05	Homogeneous

N-Gain Analysis on Mathematics Learning Outcomes of Class VII Students of Private Junior High School Nurul Ilmi Padangsidimpuan

Analysis of the increase in mathematics learning outcomes in the experimental group and the control group was carried out by analyzing the N-gain data. Based on the calculations, the experimental group's average N-gain was 0.4384 and the control group's average N-gain was 0.375. So, according to the N-gain criterion, the quality of the mathematics learning outcomes of students in the experimental group and the control group are at a moderate level. Mathematically, the N-gain of the two groups differed significantly, the difference being 0.0634. The results of the N-gain analysis are presented in Table 5 below:

Table 5
N-gain Analysis

Group	$\overline{X_1}$	$\overline{X_0}$	$\overline{X_m}$	G
Experimental	86.33	75.67	100	0.4384
Control	78.33	68.33	95	0.375

Analysis of the Effect of Realistic Mathematics Learning Model (RML) on Mathematics Learning Outcomes of Class VII Students of Private Junior High School Nurul Ilmi Padangsidimpuan

Because the results of the pre-test and post-test results of mathematics learning in the experimental group and the control group were normally distributed and had the same variance, the influence test that was carried out was a parametric statistical test using the t-test. The hypothesis test used is the t-test at a significance level of 5% (α = 0.05) and uses a minimum standard value (μ0) = 70.00, which is the standard value for stating that students have mastered 70% of the learning objectives in accordance with right-sided test rule, as stated by Rahmi, Iltavia, & Zarista (2021). The formulation of the hypothesis as follows:

Ho : μ = 70.00 (Realistic Mathematics Learning Model (RML) has no significant effect on the mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan).
Ha : μ > 70.00 (Realistic Mathematics Learning Model (RML) has a significant effect on the mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan). In summary, the results of the t-test are presented in Table 6 below.

Table 6
The Results of t-test

Statistic test	t_{count}	t_{table}	α	Conclusion
t-test	7.9789	2.145	0.05	H_o is rejected H_a is accepted

From the results of the t-test conducted, the value of t_{count} = 7.9789 and t_{table} = 2.145, then $t_{count} \geq t_{table}$ which means H_0 is rejected and H_a is accepted. So the results of the study concluded that the Realistic Mathematics Learning (RML) model had a significant effect on the mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan. By comparing the average difference between the pre-test and post-test values of the experimental group and the control group, it is found that the percent effectiveness of the Realistic Mathematics Learning (RML) model on mathematics learning outcomes is 6.67%. In summary, the percent effectiveness results are presented in Table 7 below.

Table 7
The Percent Effectiveness

Group	$\overline{X_d}$	% E
Experimental	10.67	6.66
Control	10	

Discussion

The steps in the Realistic Mathematics Learning (RML) model are:
(1) understanding contextual problems, namely the teacher provides contextual problems in everyday life and asks students to understand these problems;
(2) explaining contextual problems, that is, if students experience difficulties in understanding the problem, the teacher explains the situation and conditions of the problem by providing instructions or in the form of suggestions as necessary, limited to certain parts of the problem that are not yet understood;
(3) solving contextual problems, namely students individually solve contextual problems in their own way;
(4) comparing and discussing answers, namely the teacher provides time and opportunities for students to compare and discuss answers to problems in groups (Marlina, 2021).

Based on the results of observations during learning, it shows that the understanding of class VII students at Nurul Ilmi Padangsidimpuan Private Junior High School regarding Linear Equations material has increased compared to before the implementation of Realistic Mathematics Learning (RML) model (Prihatinia & Zainil, 2020). The increase in understanding of class VII students at Nurul Ilmi Padangsidimpuan Private Junior High School can be seen from the increase in their learning outcomes after implementing the realistic mathematics learning model and is described in this discussion.

Based on the data processing of the pre-test and post-test results described previously, it shows that there is an increase in mathematics learning outcomes for students who are taught with the Realistic Mathematics Learning (RML) model of 43.84%. The increase in mathematics learning outcomes with the Realistic Mathematics Learning (RML) model is higher than conventional learning which increases mathematics learning outcomes by 37.5%. Thus, the Realistic Mathematics Learning (RML) model has a positive influence on improving the mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan. The increase in student learning outcomes obtained above is supported by Ndolidoli's research (2023) which states that the Realistic Mathematics Learning (RML) model is able to improve the mathematics learning outcomes of fourth grade students at SD Negeri 8 Barangka, Barangka District, Muna Barat Regency by 45%.

Based on the research results obtained, it appears that the mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan who were taught using the Realistic Mathematics Learning (RML) model were better when compared to the mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan who were taught by using conventional learning models. This is possible because with the application of Realistic Mathematics Learning (RML), it encourages students to have a lot of practice by solving math problems in the form of word problems related to daily life activities. Through a lot of practice, students are used to being able to understand the content of mathematics subject matter through a realistic approach. Learning through a realistic approach is expected to be able to bring significant changes to student learning activities and outcomes (Armiyanti, 2019).

Based on the data obtained from the mathematics learning outcomes of class VII students at Private Junior High School Nurul Ilmi Padangsidimpuan, the group of students who were taught using conventional learning models obtained an average of 68.33 with a standard deviation of 11.29 during the pre-test. After the post-test was held, the group of students who were taught using conventional learning models obtained an average of 78.33 with a standard deviation of 9.39. Meanwhile, the group of students who were taught using the Realistic Mathematics Learning (RML) model obtained an average of 75.67 with a standard deviation of 10.33 during the pre-test. After the post-test was held, the group of students who were taught using the Realistic Mathematics Learning (RML) model obtained an average of 86.33 with a standard deviation of 9.15. From this average score it can be seen that students who are taught with the Realistic Mathematics Learning (RML) model have a higher average score compared to students who are only taught with conventional learning models.

The results of the analysis of the research data indicate that the results of learning mathematics for class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan who were taught using the Realistic Mathematics Learning (RML) model were significantly different and better than the mathematics of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan who were taught by conventional learning models. . The difference in mathematics learning outcomes is shown by the average mathematics learning outcomes between groups of students who are taught by the Realistic Mathematics Learning (RML) model and students who are taught by conventional learning models. The result of t_{count} is 7.9789 > t_{table} is 2.145, then H_o is rejected. So that the application of the Realistic Mathematics Learning (RML) model has a positive effect on the success of learning mathematics for class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan. This means that the Realistic Mathematics Learning (RML) model has a significant effect on improving the

mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan.

The t-test results obtained in this study are supported by Uskono, Djong, & Leton's research (2019) which states that there is an influence of the Realistic Mathematics Learning (RML) model on student mathematics learning outcomes. The Realistic Mathematics Learning Model (RML) also provides better mathematics learning outcomes when compared to conventional learning models. Differences in mathematics learning outcomes between students in the control group and the experimental group are indicated by the average difference in mathematics learning outcomes in the group of students who were taught using the Realistic Mathematics Learning (RML) model and the group of students who were taught with the conventional learning model. The difference is 7.34 in the pre-test and 8 in the post-test, respectively. Where the difference in mathematics learning outcomes obtained from the two groups of students is very much different and significant.

Based on the N-gain calculations of the control group and the experimental group, each obtained an average N-gain of 0.375 and 0.4384. This means that the quality of students' mathematics learning outcomes in the control group and the experimental group are at a moderate level. From the results of the data analysis it can be concluded that the Realistic Mathematics Learning (RML) model is more effectively used in learning mathematics than conventional learning models. Because the Realistic Mathematics Learning (RML) model has advantages when compared to conventional learning models, including: introducing the latest mathematical concepts to students (Hayati, 2019), using real-world contexts, using models, using production and construction, using interactive and using linkages (Khotimah & As'ad, 2020).

This study shows that the Realistic Mathematics Learning (RML) model has a percent effectiveness of 6.67% to improve mathematics learning outcomes for class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan. With the application of the Realistic Mathematics Learning (RML) model, students feel that learning mathematics is more meaningful in their lives. The application of the Realistic Mathematics Learning (RML) model is very suitable and effective for learning mathematics at the junior high school level, this is due to the assumption that the optimization of students' mathematics learning outcomes is influenced by the learning conditions created by the teacher in the class. Therefore, classes do not always focus on the teacher as the main source of knowledge, then lectures become the main choice of learning strategies that are usually carried out in conventional classes.

The results of this research are in line with research by Apriyanti, Asrin, & Fauzi (2023) showing that the Realistic Mathematics Learning (RML) model is very effective in improving elementary school students' mathematics learning outcomes by 6.26%. In this research, it was felt that it was still not working perfectly because researchers did not examine the factors that influence Realistic Mathematics Learning (RML), such as: interest, critical thinking skills and students' mathematical communication. So it is hoped that in future research it is necessary to examine the relationship between these factors and success in implementing Realistic Mathematics Learning (RML) model and the efforts taken to improve these factors to support student learning success.

CONCLUSION AND IMPLICATION

Conclusion

Based on the research results obtained, it can be concluded that the results of the t-test hypothesis test using a significance level of 0.05 indicate that $t_{count} \geq t_{table}$ or $7.978 \geq 2.145$. This means that H_o is rejected or H_a is accepted. So that the Realistic Mathematics Learning (RML) model has an effect on the mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan. The effect that occurs through the application of the Realistic Mathematics Learning (RML) model is an increase in the mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan by 43.84%. While the learning outcomes of the control group only increased by 37.5%. So that the results of learning mathematics in the experimental group is better than the control group. The Realistic Mathematics Learning Model (RML) has an effectiveness percentage of 6.67% to improve the mathematics learning outcomes of class VII students of Private Junior High School Nurul Ilmi Padangsidimpuan. Thus, the application of the Realistic Mathematics Learning (RML) model is very suitable and effective for learning mathematics at the junior high school level.

Implication

Although this research has proven that the Realistic Mathematics Learning (RML) learning model is better used in learning when compared to conventional learning models, it needs to be studied more deeply. So, for further researchers it is suggested to examine the factors that influence the application of the Realistic Mathematics Learning (RML) learning model with the help of electronic media and student interests in improving student learning outcomes.

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REFERENCES

Apriyanti, E., Asrin, & Fauzi, A. (2023). Model Pembelajaran Realistic Mathematics Education Dalam Meningkatkan Pemahaman Konsep Matematika Siswa Sekolah Dasar. *Jurnal Educatio, 9*(4), 1978-1986. doi: https://doi.org/10.31949/educatio.v9i4.5940

Armiyanti. (2019). Penerapan Pembelajaran Matematika Realistik Untuk Meningkatkan Aktivitas dan Hasil Belajar Siswa SD. Anargya: *Jurnal Ilmiah Pendidikan Matematika*, 2 (2), 110-115. doi: https://doi.org/10.24176/.v2i2

Desyana, & Sari, D. N. (2022). Pengembangan Model Pembelajaran Matematika Realistik Untuk Meningkatkan Kemampuan Komunikasi Matematika Siswa SMP. *Jurnal MathEducation Nusantara*, 5 (2), 97-107. doi: https://doi.org/10.54314/jmn.v5i2.253

Hayati, R. (2019). Pendekatan Pemecahan Masalah Untuk Meningkatkan Hasil Belajar Siswa Pada Materi Trigonometri. *Al-Khawarizmi: Jurnal Pendidikan dan Pembelajaran Matematika*, 3 (1), 44-64. doi: http://dx.doi.org/10.22373/jppm.v3i1.5142

Khotimah, S. H., & As'ad, M. (2020). Pendekatan Pendidikan Matematika Realistik Terhadap Hasil Belajar Matematika Siswa Sekolah Dasar. *Jurnal Ilmiah Pendidikan dan Pembelajaran*, 4 (3), 491-498. doi: https://doi.org/10.23887/jipp.v4i3.28568

Marliani, N., & Nurhayati. (2020). Komunikasi Matematika Dilihat Dari Model Pembelajaran Reflektif Berbasis Matematika Realistik. *Sinasis: Prosiding Seminar Nasional Sains*. 1, pp. 403-411. Semarang: Universitas Indraprasta PGRI. https://proceeding.unindra.ac.id/index.php/sinasis/article/view/4057/666

Marlina, Y. (2021). Implementasi Pembelajaran Matematika Realistik (PMR) Pada Penjumlahan Pecahan Untuk Meningkatkan Hasil Belajar Siswa Kelas V SDN 40 Kota Ternate. *Jurnal Ilmiah Matematika*, 2(2), 80-99. doi: https://doi.org/10.5281/zenodo.5739288

Mbagho, H. M., & Tupen, S. N. (2021). Pembelajaran Matematika Realistik Dalam Meningkatkan Hasil Belajar Matematika Materi Operasi Bilangan Pecahan. *Jurnal Basicedu* , 5 (1), 121-132. doi : https://doi.org/10.31004/basicedu.v5i1.632

Ndolidoli, L. (2023). Penerapan Pembelajaran Matematika Realistik Untuk Meningkatkan Hasil Belajar Matematika. *Gema Pendidikan* , 30 (1), 45-57. doi: http://dx.doi.org/10.36709/gapend.v30i1.34498

Prihatinia, S., & Zainil, M. (2020). Penerapan Pendekatan Matematika Realistik Untuk Meningkatkan Hasil Belajar Matematika di Sekolah Dasar (Studi Literatur). *Jurnal Pendidikan Tambusai*, 4(2), 1511-1525. doi: https://doi.org/10.31004/jptam.v4i2.617

Purnama, A. N., Agus, I., & Halistin. (2023). Efektivitas Pendekatan Pembelajaran Realistic Mathematic Education (RME) Dalam Meningkatkan Hasil Belajar Mtematika Siswa. *JP2MS: Jurnal Penelitian Pembelajaran Matematika Sekolah*, 7(1), 1-9. doi: https://doi.org/10.33369/jp2sm.7.3.1-9

Rahayu, I., Nuryani, P., & Hermawan, R. (2019). Penerapan Model PBL Untuk Meningkatkan Keterampilan Berpikir Kritis Pada Pelajaran IPS SD. *Jurnal Pendidikan Guru Sekolah Dasar*, 4 (2), 93-101. doi: https://doi.org/10.17509/jpgsd.v4i2.20488

Rahmi, F., Iltavia, & Zarista, R. H. (2021). Efektivitas Pembelajaran Berorientasi Matematika Realistik Untuk Membangun Pemahaman Relasional Pada Mteri Peluang. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 5(3), 2869-2877. doi: https://doi.org/10.31004/cendekia.v5i3.673

Ratna, M. (2023). Pendekatan Pembelajaran Matematika Realistik (Realistic Mathematics Education) Untuk Meningkatkan Semangat Belajar Peserta Didik Kelas VI MIN 19 Bireuen. Serambi Akademica: *Jurnal Pendidikan, Sains dan Humaniora,* 11(9), 1228-1232. https://ojs.serambimekkah.ac.id/index.php/serambiakademika/article/view/7243/5178

Uskono, I. V., Djong, K. D., & Leton, S. I. (2019). Penerapan Model Pembelajaran Matematika Realistik Pada Pokok Bahasan Bilangan Bulat. *Range: Jurnal Pendidikan Matematika*, 1(2), 138-144. doi: https://doi.org/10.32938/jpm.v1i2.379