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REALISTIC MATHEMATICS EDUCATION (RME) TO IMPROVE LITERACY AND NUMERACY SKILLS OF ELEMENTARY SCHOOL STUDENTS BASED ON TEACHERS' EXPERIENCE

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ABSTRACT

Literacy and numeracy are the abilities of students to use basic mathematics in solving daily life problems, and students should have it. Various studies have shown that Indonesian students' literacy and numeracy skills still need to improve. One of the solutions to this problem is RME, and one of the components that influence this skill is teachers as a facilitator and their experiences. Thus, this research aims to refigure how students who receive Realistic Mathematics Education (RME) literacy and numeracy skills improve based on teacher's experiences. The research subjects are third, fourth, and fifth-grade students in elementary schools in Padang. Three schools were selected for each grade level and taught by three teachers with different experiences. The students were given literacy and numeracy problems before and after RME instruction. The answers were assessed and grouped to examine the student's literacy and numeracy achievement. The research results show that student's literacy and numeracy skills are better with RME learning. Student's literacy and numeracy skills are not influenced by teachers' experience.

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1. INTRODUCTION

Mathematics literacy and numeracy skills are the abilities to use basic mathematics in solving everyday problems. Several studies state that mathematics literacy is the ability of students to apply mathematics in real-life situations (Harisman et al., 2023). The concept of mathematics literacy and numeracy specifically involves understanding, working with,

and having an interest in mathematics. Meanwhile, PISA defines mathematics literacy as a person's ability to formulate, use, and interpret various contexts using mathematics concepts, procedures, and facts (Afgani & Paradesa, 2021; Wijaya et al., 2024).

Mathematics literacy and numeracy skills should be introduced in primary education. This has a significant impact on the attainment of literacy and numeracy abilities in later stages (Desoete et al., 2012; Missall et al., 2012). Difficulties in literacy and numeracy skills during primary education can hinder students' development of mathematics abilities (Aunola et al., 2004). Furthermore, early childhood education emphasizes the importance of literacy and numeracy skills, leveraging cognitive processes (Cameron et al., 2019). Young children can comprehend letter and number symbols and process visual information in tandem with their motor functions (Cameron et al., 2019). Therefore, developing mathematics literacy and numeracy skills becomes a crucial learning objective in schools (Suharta & Suarjana, 2018; Sumirattana et al., 2017). Suharta and Suarjana (2018) state that mathematics literacy is integral to education, encompassing mathematics content knowledge, mathematics reasoning, understanding the social impact and benefits of mathematics, grasping the nature and historical development of mathematics, as well as fostering a disposition towards mathematics.

The literacy and numeracy skills of students in Indonesia are still relatively low, as evident from various national and international assessment surveys. The Indonesia National Assessment Programme (INAP), which measures literacy, mathematics, and science abilities among students, reported that the students performed moderately well, with a mathematics score of 77.13% and a science score of 73.61% (Riswakhyuningsih, 2019). However, the literacy score remains below average at 46.83%. The Organization for Economic Cooperation and Development (OECD) revealed that student achievement in literacy, numeracy, science, and mathematics has not shown consistent improvement in recent years. This is supported by Indonesia's latest score of 366 in the Programme for International Student Assessment (PISA) 2022, with an OECD average of 472. Indonesia ranks 70th out of 81 participating countries (Wijaya et al., 2024). Previous research also corroborates the low levels of mathematics literacy and numeracy skills in Indonesia (Nizar et al., 2018; Oktiningrum et al., 2016).

Based on previous research conducted by Jablonka (2015) and Kholid et al. (2022), in solving mathematics literacy problems, students face difficulties in the process of mathematization. This is because teachers often fail to encourage students to engage in mathematization (Jablonka, 2015; Kholid et al., 2022). Another study by Huang et al. (2017) indicates that students' literacy and numeracy skills are influenced by parental involvement in learning. This aligns with other studies identifying parental involvement in students' mathematization skills (LeFevre et al., 2009; Starkey & Klein, 2000; Van Voorhis et al., 2013).

One of the best solutions to enhance mathematics literacy and numeracy is by implementing Realistic Mathematics Education (RME) in teaching and learning (Sumirattana et al., 2017; Umbara & Nuraeni, 2019). RME can stimulate students' learning enthusiasm, which consequently impacts their mathematics literacy and numeracy skills (Fauzana et al., 2020; Purwanti et al., 2019; Sumirattana et al., 2017; Umbara & Nuraeni, 2019). RME will motivates every student who learns mathematics in the capacity of the mathematics context used in solving mathematics problems, making the solution easier (Wardono et al., 2016). Furthermore, RME is closely related to several things, including mathematics concepts, problem solving and the ability to think to solve everyday problems which are the problems in literacy and numeracy (Agustina et al., 2022).

This study will try to refigure out how is RME towards students' mathematics literacy ability improvement especially in elementary schools. Furthermore, this research

will also view the improvement based on the teachers' experiences. Previous study was carried out by other researchers to look at teachers' teaching experiences (Ansah et al., 2020; Dial, 2008; Jega & Julius, 2018; Klecker, 2002; Yetkiner Özel & Özel, 2013). This is because teachers are the facilitator of the study and based on the theory, more experiences are better (Harisman et al., 2022). In Klecker (2002), researchers state that teachers with less than three years of experience are usually less effective in learning than senior teachers (Harisman et al., 2020, 2021). This has an impact on student learning outcomes. However, many studies have shown that there is no influence of teachers' experiences on student learning outcomes (Klecker, 2002). Thus, this research aims to refigure how is students who receive Realistic Mathematics Education (RME) literacy and numeracy skills improvement based on teacher's experiences.

2. METHOD

2.1. Research Methods

The research method used is factorial design because it looks at the interaction of other factors that influence the independent variables. This design is a modification of the pretest-posttest control group design (Fraenkel & Wallen, 2009). The research design diagram can be seen in Table 1.

Table 1. Research design

Teacher Experiences	**Grade**		
	Third (B_1)	**Fourth** (B_2)	**Fifth** (B_3)
< 1 *year* (A_1)	A_1B_1	A_1B_2	A_1B_3
$1-5$ year (A_2)	A_2B_1	A_2B_2	A_2B_3
> 5 *year* (A_3)	A_3B_1	A_3B_2	A_3B_3

2.2. The Subjects of Research

The population in this study consists of elementary school students in the city of Padang. The sampling technique used is purposive random sampling. Several factors are considered when estimating the appropriate sample size, including the research approach, analysis method, number of variables or model complexity, time and resources, completion rate, research advisor, sample size used in similar studies, and data. The selected sample includes students of third, fourth, and fifth-grade in elementary schools. The research was conducted at SDN 09 Korong Gadang, SDN 11 Lubuk Buaya, SDN 12 Sungai Lareh, SDN 06 Kampung Lapai, and SD Pembangunan Laboratorium UNP. Each school and each grade level select teachers who have different experiences.

2.3. Instruments and Data Analysis Techniques

The instruments used in the research were literacy and numeracy test questions. The test was given twice, namely pretest and posttest. Each grade level has different questions. Each third grade has 6 texts with a total of 16 questions. Meanwhile, for fourth grade, the pretest and posttest have 4 texts with a total of 14 questions. For fifth grade, there are 5 texts with a total of 13 questions. Problems are designed so that students can use their mathematics abilities to solve problems. The tests' questions used are valid and reliable. Students' answers are then corrected using the rubric for assessing literacy and numeracy skills as in Table 2.

Table 2. Rubric for assessing literacy and numeracy skills

Score	Using various numbers or symbols related to basic mathematics in solving everyday life problems	Interpreting analytical results to predict and make decisions	Analyzing information presented in various forms (graphs, tables, charts, etc.)
0	No answer or incorrect answer	No answer or incorrect answer	No answer or incorrect answer
1	>50% of answers are incorrect	>50% of answers are incorrect	>50% of answers are incorrect
2	<25% of answers are incorrect	<25% of answers are incorrect	<25% of answers are incorrect
3	Correct answer	Correct answer	Correct answer

Umbara and Nuraeni (2019) conducted a study using literacy and numeracy assessment tools to obtain data on the achievement and improvement of students' literacy and numeracy skills. Data analysis involved comparing the percentage of achievement in the pretest and posttest. The results were then compared to assess the improvement of literacy and numeracy skills after the implementation of RME in elementary school student learning. then a statistical test is carried out. Thus, the results of statistical tests are used to see the increase in literacy and numeracy after implementing RME in the learning of elementary school students. Apart from that, the teacher's experience in teaching is also looked at. The aim is to find out whether teacher experience influences the success of RME learning to improve literacy and numeracy skills.

3. RESULT AND DISCUSSION

This research began with the teachers conducting training on RME instructional design. Subsequently, the teachers designed RME instructional plans for third, fourth, and fifth-grade levels in elementary schools. The designed RME instructional plans were then implemented by the teachers. Reflection on the RME-based instruction was carried out thereafter. Before implementing the RME instructional design, students were given a pretest to assess their literacy and numeracy skills. Following the implementation of the RME design, students took a posttest to evaluate their literacy and numeracy skills. The results of the literacy and numeracy skills of students in third, fourth, and fifth grades in elementary school are presented as follows:

3.1. The Literacy and Numeracy Skills of Third-Grade Students

The literacy and numeracy skills of third-grade students were assessed through pretests and posttests. The students' answers were then assessed based on the scoring rubric as shown in Table 2. The results of the pretests and posttests for the literacy and numeracy skills of third-grade students can be seen in Table 3.

Table 3. Results of pretest and posttest for literacy and numeracy skills of third-grade

School	Number of Students	Indicator	Achievement	
			Pretest	Posttest
SDN 09 Korong Gadang	12	1	45%	58%
		2	45%	55%
		3	29%	34%

School	Number of Students	Indicator	Achievement	
			Pretest	Posttest
SDN 11 Lubuk Buaya	23	1	59%	19%
		2	39%	45%
		3	24%	35%
SD Pembangunan Laboratorium UNP	22	1	32%	69%
		2	19%	63%
		3	13%	24%

Based on Table 3, there are differences in the literacy and numeracy skills of students across each school in terms of pretest and posttest achievement for the three indicators. For example, in SD Pembangunan Laboratorium UNP, the pretest achievement for indicators one and two is the lowest, but their posttest achievement is the highest. On the other hand, for SDN 11 Lubuk Buaya, the posttest achievement is lower than the pretest achievement of the students. However, to assess the overall improvement in literacy and numeracy skills of third-grade students, further statistical testing is needed to validate the results. Before conducting statistical tests, the data used should follow a normal distribution to ensure the validity of the conclusions (Hidayat et al., 2023). The results of the normality tests for the pretest and posttest data on literacy and numeracy skills of third-grade students can be seen in Table 4.

Table 4. Normality test of pretest and posttest data on literacy and numeracy skills

	Shapiro-Wilk		
	Statistic	df	Sig.
Pretest SDN 09 Korong Gadang	0.790	11	0.007
Posttest SDN 09 Korong Gadang	0.830	11	0.024
Pretest SDN 11 Lubuk Buaya	0.899	11	0.180
Posttest SDN 11 Lubuk Buaya	0.977	11	0.950
Pretest SD Pembangunan Laboratorium UNP	0.909	11	0.236
Posttest SD Pembangunan Laboratorium UNP	0.935	11	0.468

In Table 4, the significance value is >0.05, so the assumption of normality of pretest data is met. Thus, the data is analyzed parametrically. The test used to see the difference in pretest and posttest averages is the paired-sample t-test. The results of paired tests of pretest and post-test data on the literacy and numeracy abilities of third-grade students can be seen in Table 5.

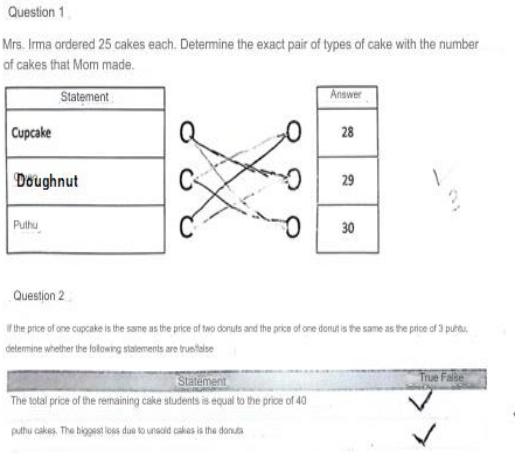
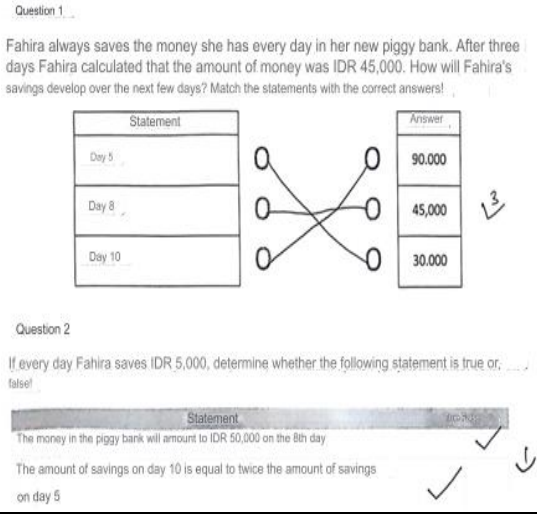
Table 5. Paired test on the literacy and numeracy abilities of students

Test	School	Sig. (2-tailed)
T-test	Pretest - Posttest SDN 09 Korong Gadang	0.000
T-test	Pretest - Posttest SDN 11 Lubuk Buaya	0.000
T-test	Pretest - Posttest SD Pembangunan Laboratorium UNP	0.000

Based on the t-test results in Table 5, the significance value is <0.05 so there is a significant difference between the pretest and posttest scores for the literacy and numeracy abilities of third-grade students. In this way, there is an increase in the literacy and numeracy

skills of students who learn using the RME design. Furthermore, Table 6 shows one of the questions and answers to the pretest and posttest on the literacy and numeracy skills of third-grade students.

Table 6. Pretest and postest answers of third-grade students

Problems Description	Questions and Answers
Pretest	
Text 2 Cake Orders Every day, Mother makes cakes to sell. The cakes she makes are cupcakes, doughnuts, and Puthu cake. Today, Mother received a cake order from Mrs. Irma. It turns out that the cakes she made exceed the quantity of the order placed by Mrs. Irma. Here are the remaining cakes and their quantities. 	
Posttest	
Text 2 Saving Fahira received a new piggy bank as a birthday gift from her older sibling. Fahira promised to save every money given to her in the piggy bank. Below are the results of Fahira's savings over several days. 	

Based on Table 6, before RME instruction, the students were able to analyze the information presented in the table. Both in the pretest and posttest, third-grade students were generally able to solve the questions in Statement 1. However, in Statement 2, students showed better problem-solving skills in the posttest.

Based on the teaching experience, the teachers at SDN 09 Korong Gadang have had teaching experience since 2016. Meanwhile, the teachers at SDN 11 Lubuk Buaya have been teaching since 1994. Lastly, the teachers at Pembangunan Laboratorium UNP Elementary School are classified as fresh graduates and will start teaching in 2022. Based Table 5, it turns out that with different teaching experiences, RME learning is still able to improve the literacy and numeracy skills of third-grade students.

3.2. Results of Literacy and Numeracy Skills for Fourth-Grade

Similar to third-grade students, fourth-grade students also underwent pretests and posttests to assess their literacy and numeracy skills. The students' answers were then corrected based on the scoring rubric shown in Table 2. The results of the pretests and posttests for literacy and numeracy skills of fourth-grade students can be seen in Table 7.

Table 7. Results of pretests and posttests for literacy and numeracy skills of fourth grade

School	Number of Students	Indicator	Achievements	
			Pretest	*Posttest*
SDN 09 Korong Gadang	20	1	50%	87%
		2	20%	44%
		3	28%	88%
SDN 12 Sungai Lareh	25	1	34%	93%
		2	17%	58%
		3	21%	82%
SD Pembangunan Laboratorium UNP	21	1	30%	19%
		2	22%	17%
		3	33%	19%

Based on Table 7, there are differences in the literacy and numeracy skills of students across each school in terms of achievement in the pretest and posttest for the three indicators. For example, in SDN 09 Korong Gadang and SDN 12 Sungai Lareh, there is a significant increase in post-test scores compared to the pretest scores. In contrast, for SD Pembangunan Laboratorium UNP, the posttest achievement is lower than the pretest achievement of the students. However, to assess the overall improvement in literacy and numeracy skills of fourth-grade students, further statistical testing is necessary to validate these findings. Before conducting statistical tests, the data need to follow a normal distribution to ensure the validity of the conclusions (Hidayat et al., 2023). The results of the normality tests for the pretest and posttest data on literacy and numeracy skills of fourth-grade students can be seen in Table 8.

Table 8. Normality test of pretest and posttest data on literacy and numeracy skills

	Shapiro-Wilk		
	Statistic	df	Sig.
Pretest SDN 09 Korong Gadang	0.937	20	0.209
Posttest SDN 09 Korong Gadang	0.940	20	0.244
Pretest SDN 12 Sungai Lareh	0.833	20	0.003
Posttest SDN 12 Sungai Lareh	0.886	20	0.023
Pretest SD Pembangunan Laboratorium UNP	0.935	20	0.190
Posttest SD Pembangunan Laboratorium UNP	0.950	20	0.362

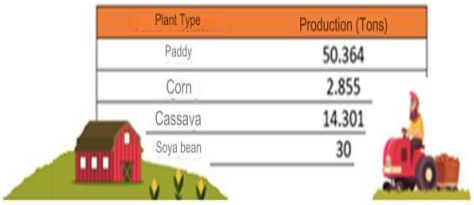
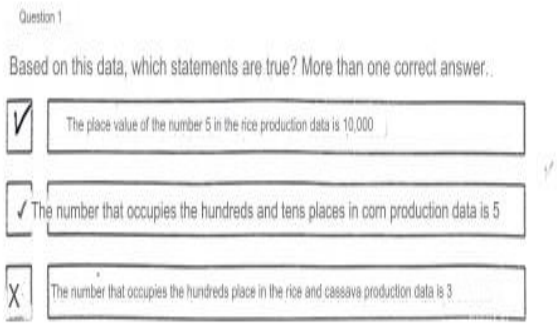
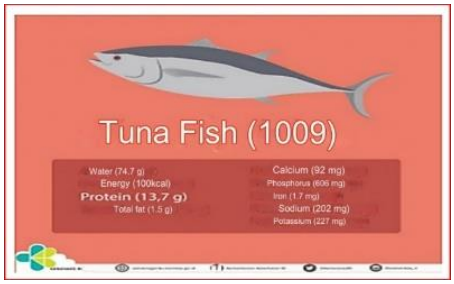
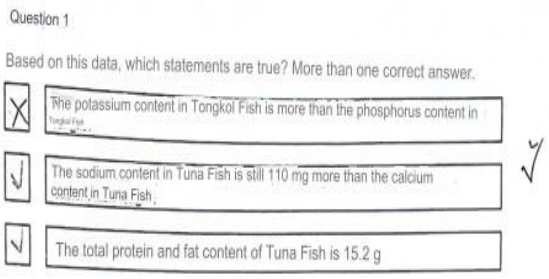
In Table 8, it is known that the significance value is <0.05 for the pretest and posttest data at SDN 12 Sungai Lareh, so the assumption of data normality is not met. Thus, the data were analyzed non-parametrically with the Wilcoxon Mathced-Pairs Test. Meanwhile, at SDN 09 Korong Gadang and SD Pembangunan Laboratorium UNP, the significance value was >0.05 so the data was normally distributed. Thus, the data were analyzed parametrically with a paired t-test (Paired-Samples T-Test). The results of the pretest and post-test data on the literacy and numeracy abilities of fourth-grade students can be seen in Table 9.

Table 9. Paired test on the literacy and numeracy abilities of fourth-grade students

Test	School	Sig. (2-tailed)
T-test	Pretest - Posttest SDN 09 Korong Gadang	0.000
Wilcoxon test	Pretest - Posttest SDN 12 Sungai Lareh	0.000
T-test	Pretest - Posttest SD Pembangunan Laboratorium UNP	0.000

Based on the paired test results in Table 9, the significance value is <0.05 so there is a significant difference between the pretest and posttest scores for the literacy and numeracy abilities of fourth-grade students. In this way, there is an increase in the literacy and numeracy skills of students who learn using the RME design. Furthermore, Table 10 shows one of the questions and answers to the pretest and posttest on the literacy and numeracy skills of class fourth-grade students.

Table 10. Pretest and posttest answers of fourth-grade students

Problems Description	Questions and Answers
Pretest **Text 4 Agricultural Products of Mr. Anton** Mr. Anton is a successful farmer who owns many agricultural lands. Mr. Anton's agricultural lands are planted with rice, corn, cassava, and soybeans. Below is a table of Mr. Anton's agricultural products.  	
Posttest **Text 4 Mackerel Fish** To prevent stunting cases, the health center collaborates with schools to promote the movement of consuming fish to prevent stunting. Fish has a high nutritional value and can fulfill human daily nutritional needs. One of the fish that has a high nutritional content is Mackerel Fish. Below is a table presenting the nutritional content of Mackerel Fish  	

Based on Table 10, there are still errors made by the students in analyzing the information presented in the pretest questions. The second statement should be incorrect and the third statement should be correct. However, in the post-test answers, students were able to answer all statements correctly.

Based on teaching experience, SDN 09 Korong Gadang teachers have teaching experience for two years. Meanwhile, the teachers at SDN 12 Sungai Lareh have been teaching since 2007. Lastly, the teachers at Pembangunan Laboratorium UNP Elementary School are classified as fresh graduates and have been teaching for one year. Based Table 9, it turns out that with different teaching experiences of teachers, RME learning is able to improve the literacy and numeracy skills of Fourth-Grade Students.

3.3. Results of Literacy and Numeracy Skills for Fifth-Grade

Fifth-grade students also took pretests and posttests to assess their literacy and numeracy skills. The students' answers were then corrected based on the scoring rubric shown in Table 2. The results of the pretests and posttests for literacy and numeracy skills of fifth-grade students can be seen in Table 11.

Table 11. Results of pretests and posttests for literacy and numeracy skills of fifth grade

School	Number of Students	Indicator	Achievement	
			Pretest	*Posttest*
SDN 06 Kampung Lapai	27	1	35%	12%
		2	14%	11%
		3	17%	5%
SDN 11 Lubuk Buaya	26	1	44%	54%
		2	33%	61%
		3	27%	74%
SD Pembangunan Laboratorium UNP	17	1	22%	47%
		2	13%	41%
		3	24%	56%

Based on Table 11, there are differences in the literacy and numeracy skills of students across each school in terms of achievement in the pretest and posttest for the three indicators. For example, in SDN 11 Lubuk Buaya and SD Pembangunan Laboratorium UNP, there is a significant increase in post-test scores compared to the pretest scores. In contrast, for SD 06 Kampung Lapai, the posttest achievement is lower than the pretest achievement of the students. However, to assess the overall improvement in literacy and numeracy skills of fifth-grade students, further statistical testing is necessary to validate these findings. Before conducting statistical tests, the data need to follow a normal distribution to ensure the validity of the conclusions (Hidayat et al., 2023). The results of the normality tests for the pretest and posttest data on literacy and numeracy skills of fifth-grade students can be seen in Table 12.

Table 12. Normality test of pretest and posttest data on literacy and numeracy skills

	Shapiro-Wilk		
	Statistic	df	Sig.
Pretest SDN 06 Kampung Lapai	0.780	18	0.001
Posttest SDN 06 Kampung Lapai	0.898	18	0.054
Pretest SDN 11 Lubuk Buaya	0.934	18	0.227
Posttest SDN 11 Lubuk Buaya	0.858	18	0.011
Pretest SD Pembangunan Laboratorium UNP	0.972	18	0.832
Posttest SD Pembangunan Laboratorium UNP	0.878	18	0.024

Based on Table 12, the significance value is found to be <0.05 for both the pretest and posttest data, indicating that the assumption of normality for both the pretest and posttest data is not met. Therefore, non-parametric analysis is conducted. The test used to assess the difference in means between the pretest and posttest is the Wilcoxon matched-pairs test. The results of the Wilcoxon matched-pairs test for the pretest and posttest data on the literacy and numeracy skills of fifth-grade students can be seen in Table 13.

Table 13. Paired test on literacy and numeracy skills of students

Test	School	Sig. (2-tailed)
Wilcoxon test	Pretest - Posttest SDN 06 Kampung Lapai	0.000
Wilcoxon test	Pretest - Posttest SDN 11 Lubuk Buaya	0.000
Wilcoxon test	Pretest - Posttest SD Pembangunan Laboratorium UNP	0.000

Based on the results of the pair test in Table 13, the significance value is <0.05, indicating a significant difference between the pretest and posttest scores of literacy and numeracy skills for fifth-grade students. Therefore, there is an improvement in the literacy and numeracy skills of students who were taught using the RME instructional design.

Furthermore, Table 14 shows one of the questions and answers to the pretest and posttest on the literacy and numeracy skills of fifth-grade students.

Tabel 14. Pretest and posttest answers of fifth-grade students

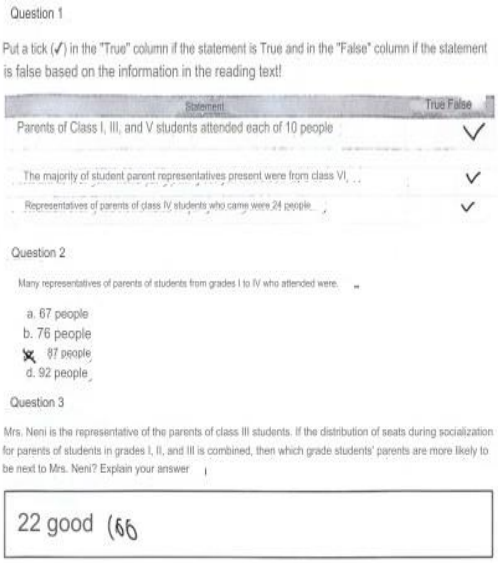
Problems Description	Questions and Answers

Pretest

Text 2 Socialization

Today, SD Negeri 1 Maju will hold a socialization session for the implementation of the National Assessment, which will be attended by several representatives of parents. Ten representatives of parents from each of the first, third, and fifth-grade classes are invited, while the number of representatives from the second, fourth, and sixth-grade classes is greater. The total number of invited parent representatives is 100. All parents are invited on the same day. Here is the attendance list for each class representative.

Grade	Number of Attending Parents
Grade I	𝍸 ||||
Grade II	𝍸 𝍸 𝍸 𝍸 ||
Grade III	𝍸 𝍸
Grade IV	**x**
Grade V	𝍸 𝍸
Grade VI	𝍸 𝍸 𝍸 𝍸 𝍸 |||


Question 1

Put a tick (✓) in the "True" column if the statement is True and in the "False" column if the statement is false based on the information in the reading text!

Statement	True	False
Parents of Class I, III, and V students attended each of 10 people		✓
The majority of student parent representatives present were from class VI	✓	
Representatives of parents of class IV students who came were 24 people	✓	

Question 2

Many representatives of parents of students from grades I to IV who attended were...

a. 67 people
b. 76 people
✗ 87 people
d. 92 people

Question 3

Mrs. Neni is the representative of the parents of class III students. If the distribution of seats during socialization for parents of students in grades I, II, and III is combined, then which grade students' parents are more likely to be next to Mrs. Neni? Explain your answer

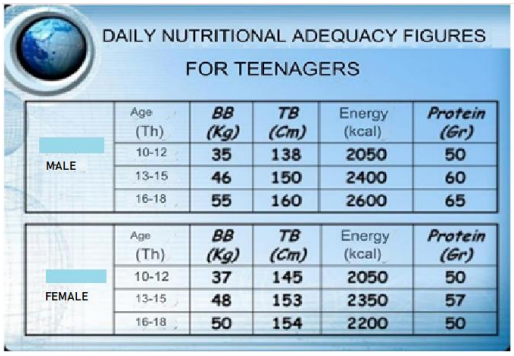
22 good (66

Problems Description	Questions and Answers

Posttest

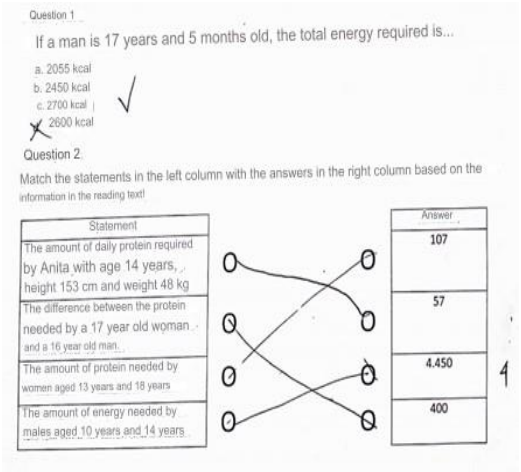
Text 3 Adolescent Nutrition

Nutrient Adequacy Level (AKG) is a value that indicates the average requirement of certain nutrients that must be met every day for almost all individuals with specific characteristics to maintain good health. Anita, Bella, and Candra are discussing an article about balanced nutrition for adolescents. The article includes a table of nutrient adequacy for adolescents aged 10 to 20 years as follows:



DAILY NUTRITIONAL ADEQUACY FIGURES FOR TEENAGERS

	Age (Th)	BB (Kg)	TB (Cm)	Energy (kcal)	Protein (Gr)
MALE	10-12	35	138	2050	50
	13-15	46	150	2400	60
	16-18	55	160	2600	65
FEMALE	10-12	37	145	2050	50
	13-15	48	153	2350	57
	16-18	50	154	2200	50



Question 1

If a man is 17 years and 5 months old, the total energy required is...

a. 2055 kcal
b. 2450 kcal
c. 2700 kcal
2600 kcal

Question 2

Match the statements in the left column with the answers in the right column based on the information in the reading text!

Statement	Answer
The amount of daily protein required by Anita with age 14 years, height 153 cm and weight 48 kg	107
The difference between the protein needed by a 17 year old woman and a 16 year old man.	57
The amount of protein needed by women aged 13 years and 18 years	4.450
The amount of energy needed by males aged 10 years and 14 years	400

In Table 14, there are still errors made by the students in analyzing the information presented in the pretest questions. The second statement in question 1 should be correct. Additionally, the answers to questions 2 and 3 are also incorrect. Moreover, although the students were asked to explain their answers in question 3, generally none of the students explained. On the other hand, in the post-test answers, the students were able to answer all statements correctly.

Based on teaching experience, SDN 06 Kampung Lapai teachers are classified as fresh graduates who have been teaching for less than one year. Meanwhile, teachers at SDN 11 Lubuk Buaya have been teaching since 2009. Most recently, teachers at Pembangunan Laboratorium UNP Elementary School have been teaching for one and a half years. Based Table 13, it turns out that with different teaching experiences of teachers, RME learning is able to improve the literacy and numeracy skills of fifth-grade students.

Based on the result, there are differences in the percentage of achievement of literacy and numeracy ability indicators for students in third, fourth, and fifth grades at each school after learning with the RME design. However, overall RME learning for students in third, fourth, and fifth grades can improve literacy and numeracy skills. Thus, the RME design can improve students' literacy and numeracy skills. RME is a promising learning design to meet Indonesia's need to improve mathematics learning (Lestari & Surya, 2017; Susanti, 2022).

To achieve literacy and numeracy, teachers must also pay attention to the learning process. Several researchers have used RME as a solution to the problems of students' literacy and numeracy abilities (Fauzana et al., 2020; Purwanti et al., 2019; Sari et al., 2023; Sumirattana et al., 2017; Umbara & Nuraeni, 2019). On research Sari et al. (2023), Researchers developed an RME-based e-liveworksheet for the literacy skills of junior high school level students. The results show that the e-learance live worksheet has a good impact on students' literacy and numeracy skills. In addition, research conducted by Purwanti et al.

(2019) shows that there are differences in the literacy and numeracy abilities of students who apply RME or not. The research was conducted on fifth-grade elementary school students.

Next in research Zubainur et al. (2020), teachers do not understand the meaning of reality. Even though reality is very closely related to RME learning reality is a problem that students think about. Based on Zubainur et al. (2020) The lack of educational understanding in designing realistic questions is caused by the lack of experience of teachers in designing learning related to using real problems in learning. The same thing was also found in research conducted by Fauzan et al. (2018); Fauzan and Diana (2020); Fauzi and Masrukan (2018), Mariana et al. (2021), Purwanti et al. (2019). However, in this research, it was found that teacher experience did not prevent students from improving students' literacy and numeracy skills by using RME learning. This is thought to be because teacher competence can be improved with training to increase professionalism or workshops. Following the findings of several studies, the professionalism of teachers can be improved by conducting training on professional aspects of teaching (Armiati et al., 2020; Harisman et al., 2022; Harisman et al., 2018, 2019a, 2019b, 2019c; Harisman et al., 2023; Subhan et al., 2020).

4. CONCLUSION

Based on the study, it can be concluded that Realistic Mathematics Education (RME) design can improve students' literacy and numeracy skills and not influenced by teacher experience. The limitation of this study is the subject is the other factor of the mathematics literacy and numeracy skills are not considered yet. Therefore, for further research, it is needed to investigate other factors that may influence the lack of improvement in literacy and numeracy skills in those particular schools.

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