



# Analysis of the Implementation of the Realistic Mathematics Education Approach to Overcoming Mathematics Learning Difficulties in Grade IV Students at Madrasah Ibtidaiyah

Rizki Isma Wulandari<sup>1</sup>, Siti Fatonah<sup>2</sup>

<sup>1,2</sup>Madrasah Ibtidaiyah Teacher Education, Faculty of Tarbiyah and Keguruan,  
Sunan Kalijaga State Islamic University, Indonesia  
[22204081013@student.uin-suka.ac.id](mailto:22204081013@student.uin-suka.ac.id)<sup>1</sup>, [siti.fatonah@uin-suka.ac.id](mailto:siti.fatonah@uin-suka.ac.id)<sup>2</sup>

---

## ABSTRACT

---

### Keywords:

Learning Difficulties;  
Realistic Mathematics  
Education (RME);  
Approach;  
Madrasah Ibtidaiyah.

The purpose of this study was to analyze the implementation of the realistic mathematics education (RME) approach to overcome mathematics learning difficulties in grade IV students at Madrasah Ibtidaiyah. Learning difficulties experienced by students of madrasah ibtidaiyah age on average are difficulties in understanding concepts, low arithmetic operation skills, and a lack of mathematical problem-solving skills in high grades. So teachers need to create contextual, relevant, and interesting learning through the RME approach. The method used in this research is a qualitative approach with a case study type. The informants in this study consisted of 7 informants, namely the principal, class teacher, and 5 students. Data collection techniques include observation of the real situation in the field, interviews by asking 25-38 questions of informants, and supporting documentation. Data analysis techniques in this study are data reduction, data presentation, and conclusions. The data validity technique uses source triangulation. The results of this study indicate that the implementation of the realistic mathematics education (RME) approach has gone well by utilizing objects in the students' daily environment, namely donuts, pebbles, pencils, and money. This has a positive impact on overcoming students' learning difficulties, as evidenced by the increase in students' daily test scores on number and measurement material from the class average of 72.85 to 80 and 81.90. Thus, it can be implied that the importance of teachers having the right approach and model in learning, especially using the Realistic Mathematics Education (RME) approach, lies in overcoming students' mathematics learning difficulties so that learning outcomes can be maximally realized. This approach is suitable for MI-aged children because, at the age of 7-11 years, students are not yet able to understand concrete material, so they need learning media or are associated with everyday life as an implementation of the RME approach.



### Article History:

Received: 17-03-2024  
Revised : 10-04-2024  
Accepted: 16-04-2024  
Online : 19-04-2024



This is an open access article under the **CC-BY-SA** license



<https://doi.org/10.31764/ijeca.vXix.YYYY>

---

## A. INTRODUCTION

Mathematics learning is one of the main subjects in the basic education curriculum and has a fundamental role in the intellectual development of students. In life, it will not be separated from mathematics, because without realizing it, mathematics becomes an important part and is needed anytime and anywhere (Fatonah & Naemah, 2022). The understanding of mathematical concepts not only provides a solid foundation for the development of students' knowledge at the educational level but also becomes a very important skill in everyday life (Putrawangsa, 2017).

These skills include critical thinking and problem-solving, communication and collaboration, creativity, and innovation (Ndiung, 2021). According to Susanto, mathematics is one of the disciplines that can improve students' thinking and argumentation skills, contribute to solving everyday problems and provide support in developing science and technology (Sholehah, 2018). So students must have mathematical abilities to help them solve problems, analyze data, make decisions, and integrate them into everyday life (Arrahim & Pangesti, 2023).

But in fact, many elementary school students still feel that learning math is the most frightening subject (A Nizar, 2020), boring, the material provided is difficult to understand, and burdened with many tasks (Prasetyawan, 2016). Students usually only memorize material to just do the questions, This happens because teachers lack mastery of approaches, models, methods, and fun teaching strategies, as well as the pressure of a theoretical curriculum (Monalisa, 2022). This causes students to have difficulty in understanding mathematical concepts in a contextualized manner (Dwi & Audina, 2021).

This is supported by the results of an international study on the Program for International Student Assessment (PISA) in 2018 showing that the average score of mathematical literacy of Indonesian students is ranked 74th out of 79 countries with a value of 379 points and an average of 487 points. In addition, according to the survey results of the Research and Development Agency of the Ministry of Education and Culture, (Balitbang Kemendikbud) 2020 shows that around 57.78% of primary school students in Indonesia still have very low math literacy skills (OECD, 2019). According to research by Riyatuljannah and Fatonah, Indonesian students' ability to solve problems that require the ability to analyze, reason, communicate effectively, and solve and interpret problems in a variety of situations is still low (Riyatuljannah & Fatonah, 2021).

According to the results of the Trends in Mathematic Science Study (TIMSS) survey, which is held every four years Mullis et al. (2019) shows that the quality of mathematics learning in Indonesia has not improved and even ranked 5 from the bottom at the international level in 2015; in 2019, Indonesia was not included in the TIMSS assessment; and in 2023, it has not been held (Hadi & Novaliyosi, 2019). Learning difficulty is the inability of a person to successfully achieve a predetermined level of learning outcomes stated in the instructional objectives within a certain time frame (Liberna, 2019). Not a few teachers find that students get learning outcomes below the Minimum Completeness Criteria (KKM) (Monalisa, 2022).

According to Kumalasari and Sugiman, it is a reality that math is considered a difficult subject (Mufidah & Setyawan, 2020). If math lessons are only explained by the lecture method without any learning media accompanied by practice problems and integrated into real life, then students will have difficulty learning math (Syarifah, 2017). This is stated in Article 1 of Permendikbud Number 24 of 2016 concerning the implementation of learning in primary schools with a thematic-integrative approach except for stand-alone math and physical education subjects in grades IV, V, and VI (Muliani, 2019).

Therefore, to overcome student learning difficulties in learning mathematics, a teacher who plays an important role is needed (Wulandari & Ruqoiyyah, 2021). One of the roles played by teachers is to take the right approach. The approach is that teachers need to improve their ability to overcome students' difficulties in learning mathematics (Ariyanto et al., 2015). The effort is with the teacher applying the realistic mathematics education (RME) approach. According to Freud, mathematics must be related to reality, and mathematics is a human activity. In line with that, according to Indriana and Julie, learning mathematics will be fun for students if mathematical ideas are connected to real-life situations (Yuliana, 2016).

The Realistic Mathematics Education (RME) approach has a basic concept that prioritizes learning mathematics through a real context (Uyen et al., 2021). This means that teachers teach mathematics learning materials using real approaches or media that are easily encountered by students and are in the environment around students so that they are easily understood and relevant to learning materials (Sari et al., 2023). In this research, realistic mathematics education (RME) will be used to teach fraction material to grade IV students at Madrasah Ibtidaiyah. The learning includes the use of real cases, physical objects, or everyday situations that can help students understand the concept of fractions better (Putri & Suparman, 2019). Realistic Mathematics Education (RME) has been applied in intervention designs that aim to help low-achieving students in remedial programs run during school hours (Barnes, 2004). By using the Realistic Mathematics Education (RME) approach, the learning process will become more meaningful for students because they will be more active and creative in solving a given problem, which has the potential to improve student learning outcomes (Putri & Ariani, 2020). In line with Wijaya's opinion, it emphasizes that knowledge will become more meaningful to students if the learning process is carried out in a context or learning using realistic problems (Wijaya, 2012).

According to the results of initial observations at the research location, the mathematics learning process has not met the maximum learning outcomes because some students still have learning difficulties and 5 students are students with disabilities. This makes students need a concrete learning approach such as the RME approach. Thus, this study aims to identify the impact of using the RME approach in overcoming mathematics learning difficulties of fourth-grade students of Madrasah Ibtidaiyah.

## **B. METHODS**

This research uses a qualitative approach with a type of case study. A case study is one type of qualitative research because researchers conduct an in-depth exploration of programs, events, and activity processes for one or more people (PD Sugiyono, 2015). The reason researchers use case study research is that they will analyze more deeply the case of learning difficulties in madrasah ibtidaiyah that are trying to be overcome by implementing the realistic mathematical education (RME) approach. By identifying student learning difficulties and analyzing the application of RME and its impact on student development.

This research was conducted at Madrasah Ibtidaiyah Nahdlatul Wathan Karang Bata, Mataram City, West Nusa Tenggara. The research data sources consisted of teachers, principals, and 5 fourth-grade students. The data collection technique in this research is observation (Prastowo, 2016). The purpose is to find out the real situation in the field; the second is interviews (Moleong, 2009). The respondents of this study consisted of 7 people, namely the principal, teachers, and 5 fourth grade students, and the third is using documentation (Gulo, 2004). The documentation contains a record of events that have occurred in the past, and the documentation supports and strengthens the results of the research.

The data collected through interviews were the activities of teachers and students in the process of learning mathematics in the classroom while applying the RME approach, and learning difficulties faced by students. Then the data explored through observation is the process of learning mathematics, the implementation of the RME approach, and the activities of teachers and students in the classroom. The data obtained through interviews are lesson schedules, teaching modules, LKPD, student learning outcomes, photos of KBM activities in the classroom, and student behavior in learning. The data analysis technique in this research is data reduction by grouping raw data related to learning difficulties and the application of the RME approach through

observation data, then presented in the form of tables and graphs and described for easy understanding, then the data is analyzed and interpreted to get a deep understanding and concluded (D. Sugiyono, 2013). The technique of ensuring the validity of research data using the source triangulation method (D. Sugiyono, 2013). The researcher compares the results of interviews from one informant to another and collaborates with some data related to the research; the aim is to obtain data validity, as shown in Table 1.

**Table 1.** Table of Research Informants

No	Initials	Status	Gender
1	SD	Head of Madrasah	L
2	ERR	Class IV Teacher	L
3	GMP	Students	L
4	NSN	Students	P
5	KAP	Students	P
6	MMI	Students	L
7	RDP	Students	L

## C. RESULT AND DISCUSSION

### 1. Implementation of Realistic Mathematics Education (RME) Approach to Overcome Math Learning Difficulties

Mathematics learning in class refers to the realistic mathematics education (RME) approach or realistic mathematics education based on the student center. The RME approach is an approach to learning mathematics that utilizes realistic/real objects that are around students as learning media. The implementation of the RME approach aims to involve active student participation, and the learning process is fun by including elements of play without ignoring the principles of RME. To ensure the realization of learning outcomes, students must receive education according to their stage of development. As expressed by the class teacher as follows *“saya sering menggunakan metode bermain agar siswa tidak bosan”* (ERR, 2024). This is supported by SD's statement that: *“Disini merupakan sekolah yang menerapkan program sekolah ramah anak dan anti radikalisme, sehingga mengutamakan kebutuhan siswa dalam belajar dan memberikan kebebasan kepada siswa untuk memilih cara belajar termasuk melalui permainan”* (SD, 2024).

Before learning, teachers prepare media and real objects by the material to be taught. According to the IVB class teacher, this is something that needs to be prepared to support the achievement of the learning objectives that have been set. The use of concrete objects in learning mathematics is considered by the teacher to be an effective and efficient means for students to facilitate the material presented, as stated by the teacher *“matematika itu sifatnya abstrak, jadi siswa tidak bisa paham kalau hanya dibayangkan makanya saya gunakan benda-benda yang ada disekitar mereka untuk menyampaikan materi”* (ERR, 2024). This is in line with students' statements about real media that are commonly used, namely *“kadang pak guru bawa donat saat materi pecahan dan uang ketika pengurangan”* (GMP, 2024). Then another student added that *“terus menghitung pakai uang kalau tidak pakai jari atau pensil”* (MMI, 2024) While the teacher mentioned that: *“...kadang kita belajar mengukur ubin, meja, buku, dengan penggaris, bagi siswa ABK kalau mereka sulit menghitung dengan jari saya gunakan pensil atau uang, kadang saya juga bawa kue bentuk persegi/persegi panjang untuk materi luas, kalau pas materi pecahan saya bawa donat untuk soal cerita”* (ERR, 2024). In addition, teachers also prepare teaching materials from various references. In the Merdeka Curriculum, teachers are given the freedom to deliver material, so the class teacher stated that *“guru kelas IVB MI memilih untuk mengambil sumber bahan ajar*

*dari buku paket, buku LKS, materi dari aplikasi PMM, dan youtube sembari berkomunikasi dengan guru paralel lainnya yaitu kelas IVB” (ERR, 2024).*

Based on the teaching module above, it can be concluded that the realistic mathematics approach, or Realistic Mathematics Education (RME), has been applied to mathematics learning in class IVB MI. In addition to reviewing the teaching module, the researcher also made observations to cross-check the application of the realistic mathematics education (RME) approach in class IVB MI with the teaching module that the teacher had made. The implementation of the Realistic Mathematics Education (RME) approach in class IVB MI has been carried out well and by the conceptual mathematics cycle by De Lange, namely First, realistic mathematics learning begins with student exploration activities in real-world conditions. This can be seen from the activities of teachers and students in terms of linking square and rectangular flat shapes with objects in the classroom environment. Students understand the material more easily if it is connected to concrete things rather than abstract. The learning theory of constructivism initiated by Piaget and Vygotsky is related to science and mathematics learning, where students' learning experiences will be created through real observations (Tamrin et al., 2011). Because students are directly involved in the process of finding their objects in the classroom environment that are square and rectangular.

This is by the characteristics of RME, namely the use of context. At the beginning of mathematics learning, students are asked to explore mathematical problems in a context that can be imagined or seen directly by them (Susilahudin Putrawangsa, 2017). As stated in the teaching module and the results of researcher observations on PBL syntax 1 determining the main question or problem, students are very enthusiastic and active in exploring their opinions, expressing themselves, and asking questions through the teacher's trigger questions. About math learning difficulties, this cycle stage can hone students' ability to think critically and practice problem-solving skills. In line with the principles of RME, namely the principle of presenting problems and the principle of linkage.

Second, the mathematization and reflection cycle means that after students are given contextual problems, they can develop their models or ways to solve problems (Hernawati, 2016). This is by the characteristics of RME, namely the use of models and the utilization of student work and concentration. This is done through organizing learning activities at the teaching module stage. The teacher uses other learning media that students often encounter in the schoolyard, schoolyard such as donuts, pebbles, or money. The teacher conveys the basic concept of square or rectangular area material using rectangular brownie cake media. Besides that, the teacher also invites students into the school yard using pebble media to convey the basic concepts of whole number material while playing and singing for reflection activities.

The description above is closely related to the characteristics of mathematics learning difficulties related to difficulties in understanding concepts or problems and the principle of activity in the RME approach. So that teacher and student activities can make it easier to understand the concepts and material explained by using realistic media and fun learning. Third, the abstraction and formalization cycle, where students can develop concepts that have been previously trained to be able to solve more complex problems (Hadi, 2005) This cycle emphasizes the ability of children to get used to and trained in solving mathematical problems by the principle of improvement in the RME approach. This means that in the process of learning mathematics, students go through various levels of mathematical understanding, both formally and informally, or by students' daily lives (Hernawati, 2016).

The activity was carried out by teachers and students of class IVB MI through discussion, question and answer, and presentation. Where they measure the area of the tiles or classroom floor as an example of a square flat shape and the area of the package book as an example of a rectangular shape. This activity can create interactive and cooperative learning so that students can learn from each other and teach their friends. Thus, students who have learning difficulties will more easily understand the material if it is explained to them by their peers. Fourth, is the cycle of applying math concepts to the real world. After students can understand concepts and solve problems in everyday life, they can apply them in the real world. In this case, students have not realized the application of basic mathematical concepts in the real world, but indirectly they have applied them in their daily lives, such as the use of counting operations using currency as well as various flat shapes of objects around them. This is by the characteristics of RME, namely, the linking of mathematics with various other knowledge. According to the teacher, students must also know the relationship between mathematics and other sciences. This is similar to Haji and Abdullah's opinion that a material will be more difficult to understand if it is separated from other materials (Haji & Abdullah, 2016). According to a mathematician the objectivity and reality of mathematical facts is not a philosophy of mathematics, but something for philosophical treatment (Bold, 2024).

## **2. Supportive Learning Model in Implementing Realistic Mathematics Education (RME) Approach to Overcoming Math Learning Difficulties**

Each teacher in the classroom has different approaches, strategies, and models because they look at the teacher's abilities and the characteristics of each student. The learning model used by class IVB teachers at MI is a personalized learning model with individual guidance. This model is carried out by teachers, especially for students who have learning difficulties or children with special needs (ABK). This is done because when teachers apply the Realistic Mathematics Education (RME) approach, learning can be fun and students easily understand the material, but this is not enough to make students active in the learning process and confident to express opinions, especially asking questions when experiencing learning difficulties.

In accordance with the teacher's opinion, *"siswa disini jika tidak paham cenderung diam, jika diminta mengerjakan dibidang belum bisa sehingga saya bimbing secara personal"* (ERR, 2024). According to this statement, students who have learning difficulties tend to be embarrassed to ask questions, so the teacher needs to approach one of the students in his class to ask about difficulties and guide them to be able to keep up with other friends because the characteristics of the students in the class are different. As expressed by the teacher: *"Kesulitan belajar siswa dikelas ini cenderung berbeda-beda antara lima siswa yang mengalami kesulitan belajar ini dengan 16 siswa lainnya, sehingga cara saya adalah dengan memberikan soal yang berbeda tingkat kesulitannya"* (ERR, 2024).

Meanwhile, the school provides facilities for students with learning difficulties with the existence of GPK, as explained by the school principal, which includes: *"Kita ada program untuk membantu guru mengatasi kesulitan belajar siswa karena mengingat setiap kelas memang ada yang berkebutuhan khusus maka mereka diberi waktu khusus, dan dipandu. Sehingga kita difasilitasi oleh pengawas satu guru pendamping khusus yang membantu siswa ABK untuk belajar yang disebut GPK (Guru Pendamping Khusus), jadi ada jadwal mereka belajar sesuai dengan fase, misal kelas I, II hari selasa, kelas III, IV hari kamis, kelas V, VI hari sabtu. Namun memang kegiatan ini memang belum berjalan optimal"* (SD, 2024).

This personalized learning model is based on humanistic theory and is oriented towards student development. The learning process in the classroom must also implement humanistic education. Humanistic education emphasizes how to establish communication and personal relationships between individuals and between individuals and groups within the school community (Arbayah, 2013) In this case, the application of the personalized learning model aims to make students able to form harmonious relationships and receive knowledge well without feeling embarrassed to ask questions, socialize, or experience learning difficulties. Professional application of each mathematical process standard used in the learning environment will help students to improve themselves in the way of achieving the desired goals (Dede et al., 2021).

As one of the humanistic figures, R. Rogers believes that the various inputs that exist in a person about his world according to his personal experience (Arbayah, 2013) Based on this opinion, it shows that students in class IVB Madrasah Ibtidaiyah who have learning difficulties have characteristics that tend to be quiet, shy, and introverted, so the teacher is present to take a personal approach and provide guidance to each student to provide motivation and direction. This is by one type of personal learning model pioneered by R. Rogers, namely non-direct teaching (without direction), meaning guiding without learning steps, because this model aims to emphasize the formation of students' abilities for self-understanding, independence, self-concept, and self-awareness of the importance of learning.

### **3. The Impact of Implementing the Realistic Mathematics Education (RME) Approach to Overcoming Students' Mathematics Learning Difficulties**

Implementing the Realistic Mathematics Education (RME) approach had a positive impact on the learning process and learning outcomes of students in class IVB Madrasah Ibtidaiyah at Mataram City. Judging by the process assessment based on the teacher's interview: *"dari lima siswa yang benar-benar mengalami kesulitan belajar, kini ada satu siswa yang memiliki perkembangan yang baik namanya baim, walaupun hasil belajarnya masih belum kelihatan tetapi prosesnya didalam kelas harus saya apresiasi karena dia sudah mulai mau dan berani bertanya walaupun harus saya dekati kemejanya dulu, kemudian sudah mulai mau mengerjakan PR misalnya dari lima soal dia kerjakan tiga tetapi kalau dibahas bersama dia sudah silang dahulu karena menganggap pasti jawaban saya salah, makanya mindset dan keberanian dia masih perlu dibimbing lagi"* (EER, 2024).

In addition, other students have begun to actively participate in mathematics learning; this is evidenced by the observation that students scramble to come forward to work on problems given by the teacher. Besides that, when discussing groups, all students are very active in solving the problems given by dividing the task of measuring tiles and books, writing answers, calculating, and explaining them to each other with their friends who cannot yet scramble to get points and rankings. The learning process is also more fun. This is because the teacher uses real objects in the classroom environment and invites students to learn while playing and singing to memorize the material. As expressed by students *"menyenangkan mbak, soalnya kadang sambil bermain dan bernyanyi"* (RDP, 2024). In overcoming these learning difficulties, the teacher implemented the realistic mathematics education (RME) approach as described above. The implementation of the RME approach in class IVB MI can be said to be well implemented because it has a positive impact on students, especially on learning outcomes, enthusiasm, and the ability to solve contextual problems.

Student learning outcomes after the teacher applied the Realistic Mathematics Education (RME) approach showed an increase from the previous daily test results. The issue of values in

mathematics education has received little attention from researchers and practitioners for a long time, at least until the early 2000s, even though researchers who are leading pioneers in this field, argue that values are an important characteristic of education in any field, including mathematics education (Fan, 2021). This can be seen from the number and measurement material, which consists of three daily tests. In the first daily test, the teacher explained the material using the lecture method and produced an average student score of 72.8 with 7 students who were still below the KKM with a KKM standard of 6.5. In the second daily test, the teacher explained the material by inviting students to learn in the schoolyard using gravel as a learning medium and showed that the average daily test score of students was 80, and all students had reached the KKM, still some students who had learning difficulties were less active in learning.

Furthermore, on the third daily test, the teacher continued learning by using realistic media in the form of pebbles and carried out a personalized learning model for students who had learning difficulties by approaching each student to provide individual guidance to students with special needs. So that they feel cared for and are not embarrassed to ask questions or say they don't know to the teacher if explained independently. This is by the humanistic theory that "a person's personality can develop optimally and relatively without any obstacles in an atmosphere full of love, a heart full of understanding, and effective personal relationships (Arbayah, 2013). This gave good results, which can be seen from the student's average score on the last subtheme daily test of 81.9

Based on this, it shows that teachers use context in realistic mathematics learning. This shows that the daily environment or knowledge that students already have can be used as part of their learning material. If students can interpret the problems given, starting from their knowledge that can be imagined, and if they can relate their knowledge to problems in everyday life, then it can be said that learning is meaningful. Thus, this realistic learning is parallel to Ausubel's meaningful learning theory with the presentation of contextual problems, namely Learning can be said to be meaningful if the process is linked to new information and relevant concepts, in which there is an individual cognitive structure (Majdi, 2019). Learning mathematics by applying the RME approach also has a positive impact on students' enthusiasm for participating in learning. This is shown by the growing enthusiasm of students to actively participate in learning. Female students have begun to scramble to come forward to do homework, although students who have learning difficulties are still passive.

Meanwhile, when the teacher conducts a personal learning model by guiding students who have learning difficulties one by one by approaching the students' benches to re-explain and guide counting, and the teacher invites students to tell stories to make students who have learning difficulties feel cared for and comfortable being close to the teacher. So that they began to understand the material even though the teacher gave special treatment by teaching basic concepts and practice problems whose difficulty level was easier than other students. This is by research according to Latipah that the personal model is carried out by teachers providing assistance and tutoring, which is individual assistance, not classical or in general, so that teachers can find out the abilities and characteristics of each student (Latipah et al., 2024).

The impact of the implementation of the RME approach is also on the contextual problem-solving ability and numeracy skills of students. Students can solve the problems given by the teacher if the teacher's instructions and directions are clear. The problems given can be imagined by students and are realistic or found in the environment around them. such as illustrations of teachers having problems calculating classroom floor tiles as a square shape and student packets



as a rectangular shape. So that students can determine the area of the square and rectangle themselves.

In addition, students find it easier to count when using real objects, especially those who have learning difficulties. This is done by the teacher with the students using pebbles, pencils, candy, or fingers. However, this can only be done with small numbers, while for numbers in the hundreds or thousands, students are required by the teacher to memorize the multiplication table. This is supported by research, according to Agusta, showing that the RME approach can contribute to improving five general mathematical abilities, which include mathematical understanding, problem-solving, mathematical connections, mathematical communication, and mathematical reasoning (Agusta, 2020).

#### **D. CONCLUSION AND SUGGESTIONS**

The application of the RME approach has succeeded in overcoming students' learning difficulties as indicated by an increase in student learning outcomes in the daily test of the measurement and number chapter. The realistic mathematics education (RME) approach is implemented by utilizing objects in the students' daily environment, namely donuts, pebbles, pencils, and money. Mathematics learning takes place actively, and students are very enthusiastic because the teacher innovates the RME approach with a learning-by-play method through ice-breaking and singing. In addition, to support students who have learning difficulties, they become more active and are not shy about asking questions. This had a positive impact in overcoming students' learning difficulties, as evidenced by the increase in students' daily test scores on number and measurement material from the class average of 72.85 to 80 and 81,90.

The learning model used by teachers to support the application of the RME approach is a personalized learning model that involves approaching and guiding students individually to find out their characteristics and find solutions to overcome them. The impact of implementing the RME approach is the increase in student learning outcomes, as indicated by the results of students' daily tests on number and measurement materials, students' enthusiasm for learning, and student's ability to solve mathematical problems and perform arithmetic operations more thoroughly because teachers use contextual problems and realistic learning media. The limitation of this study is that this study only analyzes the implementation of the RME approach in madrasah ibtidaiyah, but procedurally the RME approach promotes preparation, implementation, and evaluation. So that researchers recommend further research to be able to examine further related to the evaluation analysis of the application of the RME approach. Besides that it can analyze at the elementary school level students, not only at Madrasah ibtidaiyah.

#### **WLEDGEMENT**

Thank you to the principal of MI NW Karang Bata, who has allowed researchers to conduct this research, and to the mother of the master study program for madrasah ibtidaiyah teacher education, who has guided the preparation of articles and the course of this research.

#### **REFERENCES**

- Agusta, E. S. (2020). Peningkatan Kemampuan Matematis Siswa Melalui Pendekatan Pendidikan Matematika Realistik. *ALGORITMA: Journal of Mathematics Education*, 2(2), 145–165. <https://doi.org/10.15408/ajme.v2i2.17819>
- Arbayah. (2013). Model pembelajaran humanistik. *Dinamika Ilmu*, 13(2), 220. [https://journal.iain-samarinda.ac.id/index.php/dinamika\\_ilmu/article/view/26](https://journal.iain-samarinda.ac.id/index.php/dinamika_ilmu/article/view/26)

- Ariyanto, L., Prayito, M., & Sary, R. M. (2015). Implementasi animasi matematika dengan pendekatan. *Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran*, 9(2). <https://doi.org/https://doi.org/10.26877/mpp.v9i2%20DESEMBER.913>
- Arrahim, A., & Pangesti, Y. H. (2023). Dampak Penggunaan Pendekatan Realistic Mathematics Education (Rme) Terhadap Kemampuan Komunikasi Matematis Siswa Sekolah Dasar. *Pedagogik: Jurnal Pendidikan Guru Sekolah Dasar*, 11(1), 11–23. <https://doi.org/10.33558/pedagogik.v11i1.6939>
- Barnes, H. (2004). Pendidikan matematika realistik: Memunculkan konsepsi matematika alternatif peserta didik. *Jurnal Penelitian Afrika dalam Pendidikan Matematika, Sains dan Teknologi*, 8(1), 53–64. <https://doi.org/https://doi.org.online.uin-suka.ac.id/10.1080/10288457.2004.10740560>
- Bold, P. (2024). Later Wittgenstein on “Truth” and Realism in Mathematics. *Philosophy*, 99(1), 27–51. <https://doi.org/10.1017/S0031819123000281>
- Dede, Y., Akçakin, V., & Kaya, G. (2021). Mathematical, Mathematics Educational, and Educational Values in Mathematical Modeling Tasks. *ECNU Review of Education*, 4(2), 241–260. <https://doi.org/10.1177/2096531120928089>
- Dwi, D. F., & Audina, R. (2021). Analisis Faktor Penyebab Kesulitan Belajar Matematika Kelas IV Sekolah Dasar Negeri Dara Fitrah Dwi 1 , Rika Audina 2 Universitas Muslim Nusantara Al-Washliyah Medan. *Journal Educational Research and Social Studies*, 2(3), 94–106. <https://doi.org/https://doi.org/10.51178/cjerss.v2i3.256>
- Fan, L. (2021). Exploring Issues About Values in Mathematics Education. *ECNU Review of Education*, 4(2), 388–395. <https://doi.org/10.1177/20965311211016002>
- Fatonah, S., & Naemah, Z. (2022). Analisis Pengaruh Games Education (Permainan Angklek) Terhadap Motivasi Belajar Siswa dalam Pembelajaran Matematika Pokok Bahasan Keliling Bangun Datar. *Jurnal basicedu*, 6(4), 7217. <https://doi.org/https://doi.org/10.31004/basicedu.v6i4.3455>
- Gazali Yuliana, R. (2016). Pembelajaran Matematika yang Bermakna. *Math Didactic: Jurnal Pendidikan Matematika*, 2(3), 187. <https://doi.org/https://doi.org/10.33654/math.v2i3.47>
- Gulo, W. (2004). *Metodologi Penelitian*. Jakarta: Grasindo.
- Hadi, S. (2005). *Pendidikan Matematika Realistik dan Implementasinya*. Banjarmasin: Tulip.
- Hadi, S., & Novaliyosi. (2019). TIMSS Indonesia: Trends in International Mathematics and Science Study (TIMSS). *The Language of Science Education*, 108–108. [https://doi.org/10.1007/978-94-6209-497-0\\_97](https://doi.org/10.1007/978-94-6209-497-0_97)
- Haji, S., & Abdullah, M. I. (2016). Peningkatan Kemampuan Komunikasi Matematik Melalui Pembelajaran Matematika Realistik. *Infinity Journal*, 5(1), 42. <https://doi.org/10.22460/infinity.v5i1.190>
- Hernawati, F. (2016). Pengembangan perangkat pembelajaran matematika dengan pendekatan PMRI berorientasi pada kemampuan representasi matematis. *Jurnal Riset Pendidikan Matematika*, 3(1), 34–44. <https://doi.org/10.21831/jrpm.v3i1.9685>
- Latipah, B. S., Khoerunnisa, D., & Cahyani, I. (2024). Peningkatan keterampilan berbicara dengan model pembelajaran personal. *Prosiding Seminar Daring Internasional Riksa Bahasa XVII*, 38–42. <https://doi.org/http://proceedings2.upi.edu/index.php/riksabahasa/article/view/3364>
- Liberna, H. (2019). Effectiveness of the Realistic Mathematics Education Approach To the Ability To Solve Mathematical Problems. *JME (Journal of Mathematics Education)*, 4(1), 28–32. <https://doi.org/10.31327/jme.v4i1.886>
- Majdi, M. (2019). Analisis Teori Ausubel Pada Penerapan Model Realistic Mathematics Education Dalam Pembelajaran Matematika. *journal AL-MUDARRIS*, 2(1), 104. <https://doi.org/10.32478/al-mudarris.v2i1.213>
- Moleong, L. j. (2009). *Metodologi Penelitian Kualitatif*. Bandung: PT Remaja Rosdakarya.
- Monalisa, A., Methalia, E., Yanti, yulia A., Syahrial, & Noviyanti, S. (2022). Analisis Kesulitan Belajar Muatan Matematika Kelas IV Sekolah Dasar. *Jurnal Pendidikan dan Konseling*, 4(3), 1349–1358. <https://doi.org/https://doi.org/10.31004/jpdk.v4i3.4323>

- Mufidah, A., & Setyawan, A. (2020). Analisis Kesulitan Belajar Matematika dan Cara Mengatasinya pada Siswa Kelas IV SDN Bancaran 4 Bangkalan. *Prosiding Nasional Pendidikan*, 20, 23–28. <https://prosiding.ikipgribojonegoro.ac.id/index.php/Prosiding/article/view/1007>
- Muliani, R. (2019). Pengembangan Modul Mata Pelajaran Matematika Materi Pecahan Peserta Didik Kelas IV SD/MI [Universitas Islam Negeri Raden Intan Lampung]. In *Dasar-Dasar Ilmu Pendidikan*. <https://doi.org/http://repository.radenintan.ac.id/id/eprint/7235>
- Mullis, I. V. S., Martin, M. O., Foy, P., Kelly, D. L., & Fishbein, B. (2020). *Timss 2019 International Results in Mathematics and Science*. In International Association for the Evaluation of Educational Achievement. IEA: TIMSS & PIRLS International Study Center. [https://www.iea.nl/sites/default/files/2021-01/TIMSS\\_2019-International-Results-in-Mathematics-and-Science.pdf](https://www.iea.nl/sites/default/files/2021-01/TIMSS_2019-International-Results-in-Mathematics-and-Science.pdf)
- Ndiung, S. (2021). Using the RME Principles to Support Students Problem Solving be HOTS Oriented. *ICEHHA*, 07. <https://doi.org/10.4108/eai.3-6-2021.2310654>
- Nizar, A. (2020). Kontribusi Realistic Mathematics Education (Rme) Dalam Mengatasi Phobia Matematika. *Researchgate.Net*, September 2005. [https://www.researchgate.net/profile/Achmad-Nizar/publication/339051716\\_Kontribusi\\_Realistic\\_Mathematics\\_Education\\_RME\\_dalam\\_Mengatasi\\_Phobia\\_Matematika/links/5e3ace04299bf1cdb90fbd09/Kontribusi-Realistic-Mathematics-Education-RME-dalam-Mengatasi-Phobia-M](https://www.researchgate.net/profile/Achmad-Nizar/publication/339051716_Kontribusi_Realistic_Mathematics_Education_RME_dalam_Mengatasi_Phobia_Matematika/links/5e3ace04299bf1cdb90fbd09/Kontribusi-Realistic-Mathematics-Education-RME-dalam-Mengatasi-Phobia-M)
- OECD. (2019). *Pendidikan di Indonesia Belajar dari Hasil PISA 2018 (Nomor 021)*. Pusat Penilaian Pendidikan Balitbang Kemendikbud. <https://doi.org/https://www.oecd.org/pisa/publications/pisa-2018-results.htm>
- Prasetyawan, D. G. (2016). Diagnosis Kesulitan Belajar Matematika Siswa Kelas IV Sd Negeri Congkrang 1 Muntilan Magelang. *Basic Education*, 5(26), 2-481-2.488. <https://journal.student.uny.ac.id/index.php/pgsd/article/view/4707>
- Putri, D. M., & Suparman. (2019). Design of rme-based mathematical module development in improving problem solving ability. *International Journal of Scientific and Technology Research*, 8(10), 3629–3634. <https://doi.org/hp://www.ijstr.org/nal-print/oct2019/Design-Of-Rme-based-Mathematical-Module-Development-In-Improving-Problem-Solving-Ability.pdf>
- Putri, T. Y., & Ariani, Y. (2020). Implementasi Pendekatan Realistic Mathematic Education (RME) terhadap Hasil Belajar Penyajian Data di Sekolah Dasar. *Jurnal Pendidikan Tambusai*, 4(3), 2453–2452. <https://doi.org/10.31004/jptam.v4i3.729>
- Riyatuljannah, T., & Fatonah, S. (2021). Analisis Kemampuan Literasi Matematika Siswa Pada Penyelesaian Soal Berorientasi Konten Quantity. *EDU-MAT: Jurnal Pendidikan Matematika*, 1(9), 59–68. <https://doi.org/10.20527/edumat.v9i1.10089>
- Sari, A. D. I., Herman, T., Sopandi, W., & Jupri, A. (2023). RME Based Audiobook Development for Class IV Elementary School Students. *JTAM (Jurnal Teori dan Aplikasi Matematika)*, 7(3), 765. <https://doi.org/10.31764/jtam.v7i3.15074>
- Sholehah, S. H. (2018). Minat belajar Siswa pada Mata Pelajaran Matematika kelas IV SD Negeri Karangtoro 04 Semarang. *Jurnal Mimbar Ilmu*, 23(3), 237. <https://doi.org/https://doi.org/10.23887/mi.v23i3.16494>
- Sugiyono, D. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan Tindakan Bandung: Alfabeta*.
- Sugiyono, P. (2015). *Cara Mudah Menyusun: Skripsi, Tesis, dan Disertasi*. Bandung: CV. Alfabeta.
- Susilahudin Putrawangsa. (2017). *Desain Pembelajaran Matematika Realistik*. Mataram: Reka Karya Amerta. <https://osf.io/preprints/>
- Syarifah, L. L. (2017). Analisis Kemampuan Pemahaman Matematis Pada Mata Kuliah Pembelajaran Matematika Sma II. *Jurnal Penelitian dan Pembelajaran Matematika*, 10(2), 65. <https://doi.org/10.30870/jppm.v10i2.2031>
- Tamrin, M., S. Sirate, S. F., & Yusuf, M. (2011). Teori Belajar Vygotsky dalam Pembelajaran Matematika. *Sigma (Suara Intelektual Gaya Matematika)*, 3(1), 40–47. <https://doi.org/https://doi.org/10.26618/sigma.v3i1.7203>
- Uyen, B. P., Tong, D. H., Loc, N. P., & Thanh, L. N. P. (2021). The effectiveness of applying realistic

mathematics education approach in teaching statistics in grade 7 to students' mathematical skills. *Journal of Education and e-Learning Research*, 8(2), 188.  
<https://doi.org/10.20448/JOURNAL.509.2021.82.185.197>

Wijaya, A. (2012). *Pendidikan Matematika Realistik; Suatu Alternatif Pendekatan Pembelajaran Matematika*. Yogyakarta: Graha Ilmu.

Wulandari, R. I., & Ruqoiyyah, S. (2021). Strategi Guru Dalam Mengatasi Kesulitan Belajar Siswa Pada Masa Pandemi Covid-19. *Alifbata: Jurnal Pendidikan Dasar*, 2(1), 37-38.  
<https://doi.org/https://doi.org/10.51700/alifbata.v2i1.284>