

AN ANALYSIS OF IMPROVED INTEREST AND LEARNING OUTCOMES IN MATHEMATICS AT JUNIOR HIGH SCHOOL RME TEACHING MODEL

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ABSTRACT

The problem behind this research is the lack of student interest in learning and the results of grades in mathematics in class VII. Class VII students' interests and grades in mathematics subjects can be seen from students' understanding of mathematics subjects and internal and external factors. The objectives to be achieved in the research are (1) to determine students' interest in learning using the Realistic Mathematic Education learning method, and (2) to determine student learning outcomes when using the realistic mathematical education method. The type of research used in this research is qualitative research. The instruments used in this research were initial and final student interest questionnaires, interview guide sheets, and student test questions. Based on the research results, it can be seen that: (1) the lack of interest in learning and the results of grade VII students in mathematics subjects, namely that students are lazy and sleepy when learning mathematics and consider mathematics to be a boring lesson. (2) the cause of students' lack of interest is seen from the results of questionnaires and interviews, namely that students lack interest in mathematics due to internal and external factors. Based on the research results, it can be concluded that students' lack of interest in mathematics lessons can be seen from internal factors consisting of attention and willingness, while external factors consist of changes in the teacher's teaching methods.

Keywords: *Student Learning Interests, Student Learning Outcomes, RME*

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INTRODUCTION

In Law of the Republic of Indonesia Number 20 Year 2003 concerning the National Education System, it is stated that national education functions to develop abilities and shape the character and civilization of a dignified nation in order to enlighten the life of the nation, aiming for the development of the potential of learners to become individuals who are faithful and devoted to the One and Only God, possess noble character, are healthy, knowledgeable, competent, creative, independent, and become democratic and responsible citizens. This indicates that education is very important to achieve the educational goals, which is to improve the quality of human resources through efforts to enhance the quality of education (Catrining & Widana, 2018).

Education is a significant investment that needs to be well organized, prepared, and provided with adequate facilities and resources. However, at present, Indonesia is still grappling with the classic issue of educational quality. This problem, when traced to its roots, resembles a circular chain, and it is unclear where to begin addressing it first. Schools play a crucial role in developing the potential of students in terms of attitude, knowledge, and skills. The role is expected to produce high-quality students with strong character, beneficial knowledge, and skills that can compete in the current era of globalization. Speaking about education, it cannot be separated from discussions about learning. Learning is an activity that transforms teaching materials for the learning subject. In this aspect, the teacher becomes a facilitator to make it understandable for the students, employing various efforts and strategies. This is done so that the teaching materials or content can be easily understood by the students (Dewi et al., 2019). For this reason, there needs to be a process of observation or findings carried out by the teacher to overcome this problem. The problems found will certainly hinder the purpose of learning mathematics because it does not run optimally (Fauzi & Shodiq, 2022).

One effort to improve the quality of education is by enhancing the quality of mathematics education (Fauzi et al., 2023). Mathematics is a universal science that underpins the development of modern technology, plays an important role in various disciplines, and advances human thinking ability (Ananda, 2018). Mathematics is one of the subjects that falls under the category of essential thinking skills necessary for fostering the development of students' logical, systematic, and critical thinking abilities to aid in successful learning throughout their education. However, in the present era, many teachers still struggle with making mathematics interesting for students, which often leads to boredom. One contributing factor is the understanding, or lack thereof, of the given material. Another cause is that, during teaching, many instructors make the learning process too abstract, making it challenging for students to comprehend the material, leading to boredom during the learning process.

Many people consider mathematics to be very difficult, even though everyone has to learn it since mathematics is also a way to solve problems in daily life. Students often face challenges in completing mathematics assignments because teachers may struggle to address difficulties in students' learning of the subject. This situation has persisted for years, ingraining in students the belief that mathematics is very difficult, and many do not like it. According to Susilowati in (Lestari et al., 2020), mathematics learning has been less attractive to students, resulting in inadequate mathematics learning outcomes. Mathematics is often perceived as a difficult subject due to its formulas, leading many students to dislike it, which in turn affects their learning outcomes. In mathematics education, educators must be able to instill concepts through engaging and varied learning activities. By using attractive and varied learning models, students will find it easier to understand mathematical concepts, making learning enjoyable and less challenging, thereby improving students' mathematics learning outcomes.

Based on a brief interview with mathematics teachers and the author's observation of the learning outcomes in class VII at SMP Negeri 2 Randuagung, it was found that there has been no improvement in students' learning outcomes from year to year. This indicates that many students are still not proficient in mathematics. The low learning outcomes in students are attributed to the lack of interest in learning, mainly because the lessons taught are perceived as very dull.

According to Astuti (2018) in reality, we often hear complaints from students about mathematics, stating that mathematics confuses students (and their parents) and is even considered daunting by some students. The role and responsibility of mathematics teachers are so significant that they contribute to students' worries about their learning achievements. Another factor that also contributes to boredom in mathematics is the delivery of material or teaching methods that lack variety.

From interviews conducted with eight students from class VII at SMP Negeri 2 Randuagung, it can be concluded that (1) teachers still use traditional teaching methods, and (2) teachers are too absorbed in delivering lessons without considering the diverse understandings of the students. Students engage in learning activities that force themselves, and one of the factors influencing this is interest. The situation becomes even better when students' learning is driven by a strong interest. Interest is disrupted by the students themselves; if a student is interested in something, they have a significant need for it or feel that it is something essential to learn, they will understand the material better and find it useful.

Students' interest in learning has a tangible impact on their learning outcomes. If students have a high interest in learning, it is highly likely to impact their learning outcomes. Mathematics learning outcomes are a level of success or the ability of students in the field of mathematics after gaining experience or undergoing the learning process, which can be seen from the grades obtained (Delif Zuldesnita, 2020). Learning outcomes in mathematics appear as a change in the behavior of students that can be observed in the form of attitude and skill changes. Learning outcomes are competencies obtained from a learning process undertaken by an individual through active and positive interaction with their environment. Meanwhile, interest in learning is a feeling of curiosity, enjoyment, attention, and involvement in the ongoing learning process (Rozikin et al., 2018). The students' interest in learning will influence the process and outcomes of their learning.

Hamalik (Ramadhani, 2019) stated factors from within (internal) and factors from outside (external) that affect learning outcomes. Internal factors originate from within the individual, namely physical and spiritual factors, while external factors come from outside the individual, such as family, school, and community environmental factors. Physical factors are related to the students' physical condition, such as body fitness and normal body condition (having no physical deficiencies or disabilities). Maintaining physical condition by regulating a good diet and lifestyle, such as nutritious eating and regular exercise, is expected to keep the body healthy and fit. A good physical condition (healthy and fit) allows the body parts to function properly, and the health of the individual significantly affects the achievement of individual learning outcomes.

The process of learning mathematics will be intrinsic and meaningful for students if, during the learning process, they construct their own ideas in mathematics (Kurino, 2017). Based on the descriptions, it can be concluded that students lack learning related to real-life situations. This is consistent with the views of (Jarmita & Hazami, 2013), indicating that students are unable to apply the knowledge they acquire in school to their daily lives. One of the learning models that can apply real-world concepts is by using Realistic Mathematics Education (RME).

To achieve the learning objectives, teachers are expected to have the skills and abilities to handle mathematics teaching in the classroom. The teaching and learning process that only characterizes the teacher's activities cannot produce an active teaching and learning process because communication between the teacher and students is crucial in the teaching and learning process. Conversely, if students are active without the teacher doing so, it is not considered teaching and learning. Realistic Mathematics Education (RME) is a mathematics lecture activity that is not a means of delivering mathematics from the teacher to the students but a means for students to rediscover mathematical ideas and concepts by exploring real-world problems. RME uses various real-world problems as sources for generating mathematical concepts or knowledge, where students are encouraged to think about problem-solving, find tasks, and articulate key points.

Retnowati (2010) outlines the steps of the Realistic Mathematics Education (RME) learning model as follows: (1) Understanding contextual problems, (2) Solving contextual problems, (3) Comparing and discussing answers, and (4) Drawing conclusions. The Realistic

Mathematics Education (RME) learning model also has its strengths and weaknesses. The strengths of Realistic Mathematics Education (RME) include: (1) Providing clear understanding to students about daily life in accordance with reality and its benefits to humanity, (2) Conveying the understanding that mathematics can be developed by students in accordance with reality, and (3) Communicating the idea that problem-solving does not have to be the same for everyone; individuals can solve problems in different ways. The weaknesses of Realistic Mathematics Education (RME) are: (1) It is not easy for educators to motivate students to solve problems in various ways, and (2) It is not easy for educators to encourage students to discover new ideas.

Susilowati (2018) in her research revealed that The Realistic Mathematics Education (RME) model has been developed in the Netherlands for more than 30 years and has shown good results. RME has also been developed in several other countries such as the USA (known as Mathematics in Context), South Africa, Malaysia, England, Brazil, and others. Reports from the Third International Mathematics and Science Study (TIMSS) state that based on TIMSS assessments, students in the Netherlands achieve satisfactory results both in computational skills and problem-solving abilities.

Given the interesting nature of this topic, a research study titled "Analysis of the Improvement of Interest and Mathematics Learning Outcomes of Students Using the RME Learning Model" was conducted. Based on the conditions and learning needs, the aim of this research is to analyze the implementation of the Realistic Mathematics Education (RME) learning model that can enhance students' mathematics learning outcomes and determine the improvement in mathematics learning outcomes obtained by students when using the Realistic Mathematics Education (RME) learning model. This research is in line with the study by Rahayu in (Ardina et al., 2019) which states that learning using the Realistic Mathematics Education (RME) approach is carried out through stages of introducing context, solving contextual problems with the help of manipulative media such as rainbow blocks, discussing and comparing answers, and drawing conclusions.

METHOD

This research utilizes a qualitative approach. The reason for choosing a qualitative approach is that the researcher aims to directly engage in the field, exploring the research object with a focus on the goal of improving interest and learning outcomes in mathematics using the Realistic Mathematics Education method for students. The steps of the meta-analysis method are carried out by summarizing and analyzing research data from several studies that have been conducted previously (Irdam Idrus & Sri Irawati, 2019). The subjects used in this study are seventh-grade students from SMP Negeri 2 Randuagung. The data collection procedure is the researcher's method of collecting research data. Firstly, the researcher conducts observations. Next, the researcher administers two interest questionnaires (initial and final) followed by a test containing three questions on the topic of ratios. Subsequently, the researcher conducts interviews to assess the alignment between the answers from the questionnaire and the interview results.

RESULT AND DISCUSSION

The interest questionnaire, written test, and interviews were administered to seventh-grade students, with a total of 29 students selected as subjects, including four students. The analysis results from various stages of the research will be presented as follows:

A. Results of Student Interest Questionnaire

In the initial interest questionnaire, there are 20 questions about students' interest in mathematics, while in the final interest questionnaire, there are 25 questions about students' interest in mathematics after using the Realistic Mathematics Education method. The student interest questionnaires can be seen in the appendices. The completion of the student interest questionnaire was directly observed by the researcher.

Table 1. Results of Student Interest Questionnaire (Initial)

Number	Student's Name	Learning Interest	Information
1	S1	30	Moderate
2	S2	20	Low
3	S3	27	Low
4	S4	25	Low
5	S5	50	High
6	S6	30	Moderate
7	S7	20	Low
8	S8	15	Low
9	S9	20	Low
10	S10	25	Low
11	S11	22	Low
12	S12	20	Low
13	S13	14	Low
14	S14	20	Low
15	S15	27	Low
16	S16	23	Low
17	S17	20	Low
18	S18	25	Low
19	S19	20	Low
20	S20	20	Low
21	S21	20	Low
22	S22	24	Low
23	S23	27	Low
24	S24	25	Low
25	S25	20	Low
26	S26	27	Low
27	S27	27	Low
28	S28	25	Low
29	S29	26	Low

The value of the initial student interest questionnaire results in mathematics, which consists of 4 answer categories with options: very high = 0, high = 1, moderate = 2, low = 26. For the highest score, which is 4 multiplied by the number of questions (20), the result is 80. The grade categories for student interest questionnaire results are 70-80 = Very High, 60-50 = High, 40-30 = Moderate, 20-0 = Low. Based on the above data, it indicates that the interest of seventh-grade students at SMP Negeri 2 Randuagung in mathematics learning falls into the low category.

Table 2. Student Interest Questionnaire Results (Final)

Number	Student's Name	Learning Interest	Information
1	S1	62	High
2	S2	40	Moderate
3	S3	45	Moderate
4	S4	50	Moderate
5	S5	67	High
6	S6	50	Moderate
7	S7	40	Moderate
8	S8	55	Moderate
9	S9	47	Moderate
10	S10	30	Low
11	S11	39	Low
12	S12	50	Moderate
13	S13	30	Low
14	S14	36	Low
15	S15	40	Moderate
16	S16	39	Low
17	S17	42	Moderate
18	S18	40	Moderate
19	S19	40	Moderate
20	S20	32	Low
21	S21	20	Low
22	S22	35	Low
23	S23	71	High
24	S24	27	Low
25	S25	26	Low
26	S26	30	Low
27	S27	29	Low
28	S28	30	Low
29	S29	40	Low

From the results of the final student interest questionnaire in mathematics learning, as seen in the table above, out of 29 students, the test results for student interest are categorized as follows: very high = 0, high = 3, moderate = 12, and for the low category = 14 in terms of interest in learning mathematics in class VII at SMP Negeri 2 Randuagung. Based on the description of the assessment results above related to the student interest questionnaire, it indicates that the learning interest of seventh-grade students at SMP Negeri 2 Randuagung has improved.

B. Student Interest Questionnaire Data

The material used for this test is the topic of Ratios. The test consists of 3 essay questions, and the test questions can be seen in the attachment. The implementation of the written test was directly observed by the researcher. At the beginning of the test, the researcher reminded the students to answer the questions seriously and individually, using the knowledge they already possessed. After the test, the researcher corrected the answers from the written test given to the students and selected 4 students as the research sample. Here are the test results from the seventh-grade students at SMP Negeri 2 Randuagung:

Table 3. Student Test Assessment Results

Number	Student's Name	Midterm Exam Scores (UTS)	Final Exam Scores (UAS)
1	S1	35	45
2	S2	45	50
3	S3	65	69
4	S4	61	65
5	S5	70	80
6	S6	65	65
7	S7	65	65
8	S8	66	69
9	S9	38	55
10	S10	40	65
11	S11	30	40
12	S12	20	50
13	S13	40	65
14	S14	20	25
15	S15	50	61
16	S16	65	70
17	S17	66	65
18	S18	67	70
19	S19	65	72
20	S20	65	65
21	S21	48	65
22	S22	67	69
23	S23	66	75
24	S24	40	65
25	S25	65	65
26	S26	30	40
27	S27	65	72
28	S28	42	65
29	S29	40	65

The Minimum Mastery Criteria (KKM) for seventh-grade Mathematics is set at 65. Based on the data provided, 9 students scored above the Minimum Mastery Criteria (KKM), 12 students scored exactly at the KKM, and 8 students scored below the KKM. The highest score obtained by a student is 80. Consequently, two students, namely S5 and S23, who achieved scores at or above the KKM, were selected as samples, along with two students, S1 and S14, who scored below the KKM.

The research results indicate that the use of the Realistic Mathematics Education (RME) teaching model can enhance students' interest and learning outcomes. This is supported by the data from the initial student interest questionnaire in mathematics, which consists of 4 answer categories with the options very high = 0, high = 1, moderate = 2, low = 26. The highest achievable score is 80, obtained by multiplying the highest score (4) by the number of questions (20). The grade categories for the student interest questionnaire results are defined as follows: 70 – 80 = Very High, 60 – 50 = High, 40 – 30 = Moderate, 20 – 0 = Low. The results indicate that the interest of seventh-grade students at SMP Negeri 2 Randuagung in mathematics learning falls into the low category. Additionally, from the final student interest questionnaire results in mathematics, as shown in the table above, out of 29 students, the test results for student interest are categorized as follows: very high = 0, high = 3, moderate = 12, and for the low category = 14 in terms of interest in learning mathematics in class VII at SMP Negeri 2

Randuagung. Based on the assessment results discussed above related to the student interest questionnaire, it is shown that the learning interest of seventh-grade students at SMP Negeri 2 Randuagung has improved.

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CONCLUSION AND SUGGESTIONS

Based on the obtained data, the following conclusions can be drawn: 1) The seventh-grade students at SMP Negeri 2 Randuagung have a low interest in the subject of mathematics, primarily due to internal and external factors, especially a lack of self-confidence and a lack of understanding of mathematics. 2) The factor influencing students' learning interest is the teacher's explanation using a lecture method that is not well understood by students. To address the lack of understanding, the use of the Realistic Mathematics Education teaching method is proposed. 3) Students' learning outcomes improve when using the Realistic Mathematics Education teaching method. Initially, only 14 students passed, but in the final test, 21 students passed, indicating an improvement. The study recommends using these findings to enhance mathematics education by adopting interactive, creative teaching methods that engage students. Encouraging students to stay motivated and confident in math, even during challenging times, can foster a positive attitude toward the subject. Schools should consider these results as a basis for improving the quality of math education, with a focus on upgrading facilities and infrastructure that support innovative teaching approaches. Additionally, future studies could investigate alternative teaching methods to gain deeper insights into students' interests and learning outcomes, providing further opportunities to refine educational practices.

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