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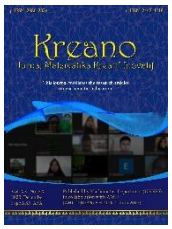

Intuitive Understanding of Kinesthetic Students in Solving Mathematics Problems with Realistic Mathematic Education Approach

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Abstract

Intuitive understanding is the ability to understand something without going through reasoning, so it is very important in solving math problems. One approach that can improve students' intuitive understanding is the Realistic Mathematic Education (RME) approach. However, not all students can use their intuitiveness in solving math problems. One of them is influenced by students' learning styles. For this reason, it is necessary to conduct research that aims to describe the intuitive understanding of students who have a kinesthetic learning style in solving math problems with the RME Approach. However, not all students can use their intuitiveness in solving math problems. One of them is influenced by students' learning styles. For this reason, it is necessary to conduct research that aims to describe the intuitive understanding of students who have kinesthetic learning styles in solving math problems with the RME Approach. The subjects of this research are students who have kinesthetic learning styles at SMKN 2 Tulungagung. The selection of research subjects is based on the results of the learning style questionnaire. Data collection methods with test questions, interviews, and documentation. Data analysis includes data reduction, data presentation, and conclusions. To test the validity of the data using method triangulation. Based on the research results, subject K1 leads to affirmatory intuition understanding, and subject K2 leads to anticipatory intuition understanding. It can be concluded that the intuitive understanding of kinesthetic students in solving opportunity problems has fulfilled the indicators of affirmatory intuition and anticipatory intuition. Furthermore, it is recommended to use the RME approach to improve students' intuitive understanding in solving math problems based on students' daily experiences or activities.

Keywords: Intuitif Understanding; Kinestetic Learning Style; RME.

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Abstrak

Pemahaman intuitif merupakan kemampuan memahami sesuatu tanpa melalui penalaran, sehingga sangat penting dalam menyelesaikan masalah matematika. Salah satu pendekatan yang dapat meningkatkan pemahaman intuitif siswa adalah pendekatan Realistic Mathematic Education (RME). Namun, tidak semua siswa dapat menggunakan intuisinya dalam menyelesaikan masalah matematika. Salah satunya dipengaruhi oleh gaya belajar siswa. Untuk itu perlu dilakukan penelitian yang bertujuan untuk mendeskripsikan pemahaman intuitif siswa yang memiliki gaya belajar kinestetik dalam menyelesaikan masalah matematika dengan Pendekatan RME. Namun, tidak semua siswa dapat menggunakan intuisinya dalam menyelesaikan masalah matematika. Salah satunya dipengaruhi oleh gaya belajar siswa. Untuk itu perlu dilakukan penelitian yang bertujuan untuk mendeskripsikan pemahaman intuitif siswa yang memiliki gaya belajar kinestetik dalam menyelesaikan masalah matematika dengan Pendekatan RME. Subyek penelitian ini adalah siswa yang memiliki gaya belajar kinestetik di SMKN 2 Tulungagung. Pemilihan subjek penelitian didasarkan pada hasil angket gaya belajar. Metode pengumpulan data dengan soal tes, wawancara, dan dokumentasi. Analisis data meliputi reduksi data, penyajian data, dan penarikan kesimpulan. Untuk menguji keabsahan data menggunakan triangulasi metode. Berdasarkan hasil penelitian, subjek K1 mengarah pada pemahaman intuisi afirmatif, dan subjek K2 mengarah pada pemahaman intuisi antisipatif. Dapat disimpulkan bahwa pemahaman intuitif siswa kinestetik dalam menyelesaikan masalah peluang telah memenuhi indikator intuisi afirmatif dan intuisi antisipatif. Selanjutnya disarankan untuk menggunakan pendekatan RME untuk meningkatkan pemahaman intuitif siswa dalam menyelesaikan masalah matematika berdasarkan pengalaman atau aktivitas siswa sehari-hari.

INTRODUCTION

One of the skills that students must go through in solving problems is the process of thinking analytically and using rational logic. The thinking process is followed by understanding, if someone understands and can explain something correctly, then that person can be said to understand or understand. Understanding is a way of drawing conclusions (Komariyah et al., 2018b). Comprehension is a person's ability to understand or comprehend something after something is known or remembered, including the ability to capture the meaning of a meaning that is studied or convert data presented in a certain form into another form. (Suendarti & Liberna, 2021).

Piaget views that knowledge needs to be formed and built by someone who wants to know and understand it. (Ardiansyah et al., 2022). However, not all math problems can be solved with analytical understanding, sometimes students must have estimates or conjectures related to answers that might be the solution to a problem without having to go through proof. This is called intuitive understanding (Usodo, 2012).

Byers & Herscovics (1997) said that intuitive understanding means understanding where students have not yet **reflected** on schemas and have not rationalize how they think about the problem. Intuitive understanding is the ability to understand something without going through reasoning. Intuitive understanding according to Polya is an understanding that can estimate the truth of something without hesitation, before analysing analytically. (Anggrayani et al., 2019). For this reason, intuitive understanding is very important in solving math problems. This is in accordance with Wuryanie et al., (2020) which states that if students' intuitive understanding is good, it will help students easily determine the solution to each problem faced. And vice versa, if students' intuitive understanding is not good, it will hinder the problem solving process.

Furthermore, intuitive skills are also very helpful in problem-solving situations (Hirza et al., 2014) Because when students face difficult situations, logical thinking is needed based on previous experiences or intuitions they have. So that in intuitive understanding students can solve math problems directly without us-

ing formal mathematical reasoning.

However, not all students have good intuitive understanding. It can be seen when researchers conducted observations and interviews with several students at SMKN 2 Tulungagung which showed that when students use routine procedures in solving math problems, these students take a long time and a lot of consideration in determining solutions. Meanwhile, students who do not use routine procedures are faster in solving math problems because consciously or unconsciously the chosen solution is based on previous experience. In addition, students who have good intuitive understanding will have different solutions from other students. (Sa'o et al., 2019).

In this study, intuitive understanding is categorized into 2 (two), namely affirmatory intuition and anticipatory intuition, this is in accordance with the definition of intuitive understanding. (Fischbein, 2002). Students' intuitive understanding in solving math problems is certainly different from one another. The ability to solve math problems is inseparable from the characteristics that students have. These characteristics that need to be considered during the teaching and learning process in the classroom are learning styles. A person's learning behavior must be different, there are those who like pictures, sounds and hands-on practice. A person's learning behavior must be different, there are those who like pictures, sounds and hands-on practice. Learning style is an approach method chosen and used by someone according to their needs in learning by adjusting the learning strategy needed (Ariandi, 2016). Connell includes: (1) visual learning style, a learning style that predominantly uses the sense of sight in absorbing information, (2) auditory learning style, a learning style that predominantly uses the sense of hearing in absorbing information, and (3) kinesthetic learning style, a learning style that predominantly uses movement in absorbing information.

In this study, the focus is on students who have a kinesthetic learning style. According to Deporter & Hernacki, students with kinesthetic learning styles have characteristics, namely: (1) speak slowly, (2) have difficulty remembering, (3) memorize by walking and seeing, (4) use fingers as a guide, (5) cannot sit still for a long time, (6) may have poor writing, (7) are physically oriented and move a lot, (8) want to do everything. (Tanamir & Dkk, 2020).

Students who have a kinesthetic learning style are unique. Generally, in absorbing information, they apply strategies and expressions that are characterized by physicality. Students with kinesthetic learning styles when given instructions in writing or verbally are often easily forgotten, because they tend to understand the task better if they try it directly, for that it is necessary to know the intuitive understanding of students who have kinesthetic learning styles in solving math problems.

The National Council of Teachers of Mathematics states that problem solving is a skill in high-level mathematical thinking to be able to develop thinking skills. (Ariandi, 2016). There are 4 (four) problem solving steps according to Polya, namely: (1) understanding the problem, (2) planning the solution, (3) implementing the solution plan, (4) re-examining the procedure and solution results.

O'Daffer (2008) said "porblem solving is a process by which an individual uses previously learned concepts, facts, and relationships, along with various reasoning skills and strategies, to answer a question or question about a situation", which means problem solving is a process

carried out by an individual to answer questions about a situation by using previously learned concepts, facts, and relationships, as well as using various reasoning skills and strategies. (Riastini, P. N, 2017).

In this case it is important to know the learning style of students to make it easier for students to obtain information. However Kurniawati et al., (2022) I found that learning is still teacher-centered so without actively involving students. In addition, learning also lacks linking one material to another so that students cannot build their own knowledge. This causes students' intuitive thinking or understanding skills not to develop.

To improve students' intuitive understanding, teachers can use a learning approach. One of the learning approaches that can be used to improve students' mathematical intuition skills is the Realistic Mathematic Education (RME) approach.(Hirza et al., 2014). RME is an approach that is oriented towards realistic student reasoning by developing practical, logical, critical, and honest thinking patterns and is oriented towards mathematical reasoning in solving problems (Bunga et al., 2016).

Learning with RME provides realistic problems to students, because this learning is essentially a learning method that is actually very close to students' daily lives. That way students will be easier to lead to solve problems or solve math problems in accordance with their daily experiences (Susilowati, 2018).

The opinion of Hirza et al., (2014); Bunga et al., (2016); dan Susilowati, (2018) RME approach is one of the approaches that can be used in learning mathematics by involving students directly in solving mathematical problems based on students' previous experiences. (Dickinson & Hough, 2012). This supports the improvement of students' intuition in solving mathematical problems, so that teachers can use the RME approach to find out and improve students' intuitive understanding in solving mathematical problems.

There have been many studies related to understanding such as Suindayati et al., (2019) about layers of understanding based on pirie theory &Kieren; (Komariyah et al., 2018a) on concept understanding in problem solving. While research on intuitive understanding such as the results of research (Amir et al., 2020). Furthemore Hirza et al., (2014) examines the improvement of intuition skills with the RME approach; Purwaningsih et al., (2019) related to the characteristics of intuitive thinking based on cognitive style. Based on the results of the description, it is necessary to conduct research on students' intuitive understanding using the RME approach based on learning styles, so that teachers can improve students' understanding so that learning objectives are achieved by utilizing the intuitions that students have before.

METODE

The type of research used is descriptive research with a qualitative approach because it aims to describe intuitive understanding in solving math problems with the RME approach in terms of kinesthetic learning styles. The research subjects were students of class XI SMKN 2 Tulungagung who have kinesthetic learning style. The collection method is by test questions, interviews, and documentation. The data will be collected through interviews, while the purpose of the interview is to explore students' intuitive understanding. Furthermore, intuitive understanding is categorized into 2 (two), namely affirmatory intuition and anticipatory intuition. To test the validity

of the data using triangulation method.

The stages in this study include (1) observation by conducting a preliminary study and studying the problem; (2) preparation of instruments; (3) instrument validation; (4) conducting classroom learning using the RME approach; (5) giving questions to find out the problem solving steps; (6) determining research subjects; (7) data analysis by conducting interviews with research subjects and comparing the results of student answers; (9) drawing conclusions as a result related to students' intuitive understanding in solving mathematical problems.

To test the validity of the data, researchers conducted a credibility test using method triangulation, namely comparing the data from the test results of mathematical ability questions with the results of interviews. Data analysis techniques include (1) data reduction, researchers take the results of the answers, (2) data presentation, clarify and identify student answers, (3) draw conclusions about students' intuitive understanding in solving problems with RME in terms of kinesthetic learning styles.

The indicators of intuitive understanding used in this study refer to the indicators proposed by Fischbein (Anjayani, 2017)found in Table 1.

Table 1. Indicators of Intuitive Understanding

A. Affirmative Intentions

Characteristics	Indicators
Direct	Students can immediately understand the meaning of the problem. Description: coherent answer, read the problem once, know what is known and asked.
Self-evident	Students can solve the solution without using empirical evidence. Description: statements that can be accepted directly (mentioning statistical formulas).
It must be intrinsically	Students can show the odds formula without proof. Description: use of the formula.
Tilt	Students can find the solution of the problem by following the arrangement of the known pattern from the beginning. Description: using theories that have been done or using experiences that have been done in solving opportunity problems. For example, using the formula.
Inspection	Students can conjecture the solution of the problem. Description: can write the formula and answer correctly, if one of the clues is known.

B. Anticipatory Intuition

Appears when striving to solve a problem	Students can find the solution to the problem, but it takes a long time. Description: read the problem more than once, knew what was known and asked but had to think for a while.
Using global ideas	Students can solve problems using other or different ways. Description: without using formulas, theorems, books, and definitions can use global ideas.
Contrary to popular belief	Students can conjecture the solution of the problem but in a different way or contrary to their conjecture (using feeling).

RESULTS AND DISCUSSION

Result

The research subjects were selected based on the instrument results of the learning style questionnaire. The results of the learning style questionnaire in class XI AKL 2 SMK Negeri 2 Tulungagung, out of 36 students in the class there are 2 students who are included in the kinesthetic learning style. From the list of students in class XI AKL 2, subjects were selected based on research that focuses on kinesthetic learning styles and obtained 2 students who have kinesthetic learning styles which are presented in Table 3.

Table 3. List of Research Subjects

No	Student Initials	Result	Subject Code
1	NSA	Kinesthetic	K1
2	NMZ	Kinesthetic	K2

Data Analysis of Subject K1 in Solving Opportunity Problems

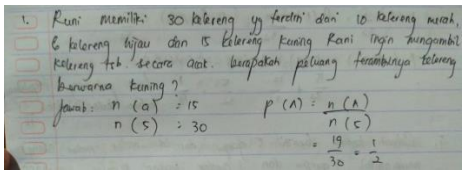

Figure 1. Subject K1's answer

Based on the written results of the problem solving carried out by subject K1, the subject can answer in detail and is equipped with a formula, this shows that he understands the meaning of the problem. The subject identifies the known and questionable information.

P: "Try to read question number 1, do you understand what it means??"
K1: "yes"
P: "What do you understand from the meaning of the question?"
K1: "Find the probability that a yellow marble is picked up"
P: "What information do you get from the problem?"
K1: "Value of all marbles and number of colored marbles"
P: "What did you do first after reading the question?"
K1: "Write down what is known, the number of all marbles owned, then the number of red, green, yellow marbles"

From the interview results, the subject was able to mention what was known and what was asked directly and in detail and could explain what he understood from the problem text. Thus, subject K1 was able to understand the problem directly and spontaneously took place after reading the problem.

Furthermore, at the stage of planning the problem based on the results of the test answers of subject K1, it was revealed that in the stage of planning the problem solving subject K1 immediately thought of using the formula for the probability of an event.

P: "Then what will you do next?"
K1: "Find the probability of the yellow marble being picked up, with a known value."
P: "How did you work on this problem? Was it by guessing, or trying out formulas, or how??"
K1: "I work according to the formula that I have learned"
P: "What formula did you use to solve the problem?"
K1: "Event probability formula"
P: "Are you sure that the formula can solve the problem?"
K1: "Yes, I'm sure"

From the interview results, subject K1 made a problem solving plan directly after understanding the meaning of the problem. Subjek langsung thought of applying the odds of occurrence formula, then according to the instructions solve the problem. Thus, subject K1 used the feeling that arose immediately when reading the problem in organizing the problem solving strategy using the odds of occurrence formula.

At the plan implementation stage, based on the written results carried out by subject K1, it can be revealed that subject K1 carries out the problem solving plan in accordance with the predetermined plan. Subject K1 can answer in detail and arranged according to the formula.

P:" After obtaining the formula for the probability of an event, what do you do next?"
K1: "Entering into the formula the value of the yellow marbles divided by the whole marbles, namely are $\frac{n(A)}{n(S)}$ *"*
P: "Please explain how you did it?"
K1: "First, I wrote down the known value, which is the total number of marbles owned then also the number of red, green, and yellow marbles. After that, I wrote down what was asked in the question, which was about the probability of the appearance of yellow marbles, then worked according to the probability formula, namely the

number of yellow marbles 15 divided by the total number of marbles of 30, so the result was ½".

P: "Have you done this problem before?"
K1: "Never been"

From the interview results, subject K1 can answer in detail the completion steps that have been done. The subject said he had never done a similar problem and the subject copied the steps from the material previously explained. Thus, it means that subject K1 utilizes his knowledge and experience that arises automatically, immediately, and spontaneously to solve problems. At the rechecking stage, based on the answer results, subject K1 did not recheck the answers that had been written.

P: "After finishing working on problem number 1, what did you do??"
K1: "I continue working on the next problem"
P: "Are you sure your answer is correct"
K1: "Yes, I'm sure"

From the results of the interview, subject K1 directly drew conclusions and said that he was sure of his answer.

Data Analysis of Subject K2 in Solving Opportunity Problems

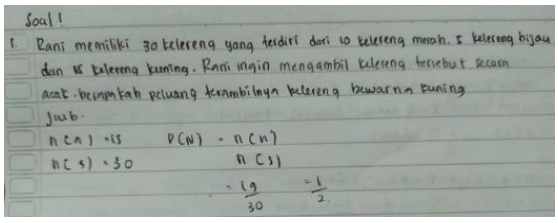

Figure 2. Subject K2's Answer Results

Based on the written results of the problem solving carried out by subject K2, the subject can answer in detail and is equipped with a formula, this shows that he understands the meaning of the problem. The subject identified the known and questionable information.

P : "Try to read question number 1, do you understand what it means?"
K2 : "Understood ma'am"
P : "What do you understand from the meaning of the question?"
K2 : "Searching for the yellow marble"
P : "What information did you get from the?"
K2 : "Number of red, green, yellow marbles"
P : "What was the first thing you did after reading the question?"
K2 : "Write down the known number of marbles Ms."

From the interview results, the subject was able to mention what was known and what was asked directly and in detail and could explain what he understood from the problem text. Thus, subject K2 was able to understand the problem directly and spontaneously took place after reading the problem.

At the stage of planning the problem based on the results of the test answers, subject K2 immediately thought of using the formula for the probability of an event.

P : "Then what will you do next?"
K2 : "Yes, looking for the probability of the yellow marble being picked up, ma'am."
P : "How did you work on this problem? Was it by guessing, or trying out formulas, or how?"
K2 : "Trying out formulas that have been learned"
P : "What formula did you use to solve the problem?"
K2 : "Formula for probability of occurrence Bu"
P : "Are you sure that the formula can solve the problem??"
K2 : " Sure ma'am"

From the interview results, subject K2 made a problem solving plan directly after understanding the meaning of the problem. The subject thought of trying out the formula for the probability of events that had been learned, then applying according to the instructions in the problem. Subject K2 stated that he was sure that the formula to be used was in accordance with the problem. Thus, subject K2 in organizing the problem solving strategy needed time to solve the problem using the probability of occurrence

formula.

At the plan implementation stage, based on the written results carried out by subject K2, the problem solving plan is carried out in accordance with the predetermined plan. Subject K2 can answer in detail and is equipped with the formula.

P :" After obtaining the formula for the probability of an event, what do you do next??"
K2 :" Calculate it with the odds formula earlier ma'am "
P : "Please explain how you did it?"
K2 : "I wrote down the number of yellow marbles and all known marbles, then calculated according to the odds formula until I found the answer."
P : "Have you done this problem before?"
K2 : "Not yet ma'am"

From the interview results, subject K2 can answer well the steps of solving the problem in outline. The subject said he had never worked on a similar problem before, but the subject worked on this problem according to the formula he understood. Thus, subject K2 utilized his knowledge and experience to solve the problem.

P : "After finishing working on problem number 1, what did you do??"
K2 : "I double check ma'am"
P : "How do you double-check that?"
K2 : "Yes... making sure the amount I write is in accordance with the question until I find the answer"
P : "Are you sure your answer is correct?r"
K2 : "Sure ma'am"

At the re-examination stage, based on the results of the answer, it can be revealed that subject K2 re-examined the answers that had been written down. Subject K2 finished the calculations and problem solving that had been done using all the information and concepts of the existing material, then subject K2 drew conclusions directly. From the results of the interview, subject K2 did not immediately draw conclusions and said that he was sure of his answer. However, the subject crosschecks the solution steps that are done, until the subject feels confident with the final answer that has been obtained.

Discussion

Application of Realistic Mathematics Education (RME)

The research results from the application of RME are carried out in the classroom. The things that will be discussed in this section include planning, learning implementation, and observation. In the discussion, it will be associated with the Realistic Mathematics Education (RME) approach to improve the ability to solve opportunity problems.

In the planning stage, the researchers analyzed the boundaries of the opportunity material referring to the curriculum (K13) which had previously been consulted with the math teacher at school. The basic competencies conveyed are determining the chance of events and solving problems related to the chance of events. The learning process was designed following the steps in the RME approach. Then make a teacher observation sheet that refers to the application of the characteristics of the RME approach.

The second stage is the implementation of learning, the stages carried out include preliminary activities, core activities and closing activities. The learning steps are carried out in accordance with the steps contained in the RME approach, namely (1) understanding real problems with teachers providing real problems related to everyday life in mathematics learning and students understand these problems, (2) solving problems the teacher explains the situation and conditions of the problem by

providing limited instructions / advice on certain parts that students do not understand, (3) comparing and discussing answers, namely the teacher provides time and opportunities for students to solve problems. comparing and discussing answers to questions in groups, and then comparing and discussing in class discussions, (4) concluding, namely the teacher directs students to draw conclusions about a procedure or concept with the teacher acting as a guide.

From the details of the steps in RME, the teacher acts as a facilitator or guide. This is in accordance with Laurens et al., (2018) dan Irdawati et al., (2019) that students can be actively involved in learning and the teacher is only a facilitator. So, classroom learning starts from things that are real for students, emphasizes skills, discusses, and collaborates, argues with classmates so that students can find their own and can finally solve mathematical problems either individually or in groups.

In the third stage, namely observation, observation is carried out by the observer to find out the teacher's activities, in this case the researcher, which is carried out during the learning process by looking at the suitability of the RME characteristics with reference to the lesson plans that have been prepared. The observer in this case is the XI grade math teacher at SMK Negeri 2 Tulungagung.

The results obtained with the RME approach are very significant. Students remain conducive, there are some students who find it difficult to solve math problems, after being given a direct picture using the media students understand. This is in line with (Fahmi et al., 2022) with the application of the (RME) approach makes it easier for students to solve the problems given.

In addition, the RME approach can improve students' real experience in learning. Because students are required to develop their thinking process in order to construct their own knowledge. (Widyasari &, 2021).

Results of Data Analysis of Intuitive Understanding of Students with Kinesthetic Learning Style (K1 and K2) in Solving Problems

At the stage of understanding the problem, subjects K1 and K2 did not experience difficulties in understanding the problem, so the subject suggested that it was easy to understand the information known in the problem. Affirmatory intuition is used by subject K1, this can be seen by the subject making a series of efforts to be able to understand the problem such as making auxiliary media in the form of illustrations, scribbles or certain sketches Anticipatory intuition is used by subject K2. This can be seen in the answer sheets of subjects K1 and K2 which are written clearly and in detail, the subject is believed to have understood the problem correctly because the subject can mention the known and questioned information properly and correctly and can explain the flow of problem solving coherently.

The results of the above analysis are relevant to previous research (Sari, N.I, 2017) which reveals the cognitive learning outcomes of students, which when students do practicum with the tools and materials and work procedures used, more and more senses will work, especially the sense of motion related to the kinesthetic learning style, so that the learning process becomes meaningful. Through practice by making auxiliary media, students who have a kinesthetic learning style will tend to be able to follow well because from the learning process when students observe, hear, and then carry out the steps of the procedure

students will tend to involve their limbs which will encourage students to be more active in the learning process.

At the stage of planning problem solving, it can be concluded that subject K1 uses anticipatory intuition. This can be seen by the finding of subject K1 who argued that problem solving appeared shortly after the subject made a problem solving plan and tried to think about solving the problem. Subject K2 found the idea/problem solving plan at the time after reading the problem. Without using additional information other than in the problem, the subject believes that the solution idea obtained directly by the subject is correct and appropriate.

Nurrakhmi (2014) The subject used in making a problem-solving plan, the subject made a problem-solving plan based on the thoughts that appeared shortly after he tried to think about solving the problem.

At the stage of implementing the problem solving plan, subjects K1 and K2 worked according to the plan made. This happened because the subject felt that there were no obstacles at the implementation stage, so the subject worked according to the formula for the probability of events that had been studied previously. At the rechecking stage, subject K1 did not recheck his answers that had been written. Subject K1 uses affirmatory intuition, subject K1 directly draws conclusions without reviewing the formula, steps, or calculations he has done in accordance with the problem. Meanwhile, subject K2 did not directly draw conclusions and said that he was sure of his answer. However, the subject crosschecked the solution steps that were done, until the subject felt confident with the final answer that had been obtained.

Implication

Henceforth, teachers can use RME as an alternative learning approach to familiarize students in solving mathematical problems based on their experiences. With this, students can gradually use their intuition in understanding the mathematical concepts learned and can easily solve math problems. In addition, teachers can also use students who have kinesthetic learning styles in peer tutors in classroom learning.

Limitation

The limitation of this research is the number of subjects, namely two students and limited to intuitive understanding.

CONCLUSIONS

During the learning process in the classroom using the Realistic Mathematics Educaton (RME) approach, students remained conducive. There are some students who find it difficult to solve opportunity problems, after being given a direct picture using the media students understand. The Realistic Mathematics Education (RME) approach can be used as an alternative to choosing a mathematics learning approach to improve student understanding in solving mathematical problems.

Intuitive understanding in the stages of understanding the problem, making a problem solving plan, implementing a problem solving plan, and the process of checking back is included in the understanding aspect of Affirmatory Intuition, this is in accordance with the indicators of intuitive understanding in the affirmatory intuition category which shows students can immediately understand the meaning of the problem, students can show the opportunity formula, students can solve the problem according to the

pattern known from the beginning, and students can write the formula and answer correctly. Intuitive understanding in the stage of understanding the problem and implementing the problem solving plan is included in the understanding aspect of Affirmatory Intuition, this is in accordance with the indicators of intuitive understanding in the affirmatory intuition category which shows students can immediately understand the meaning of the problem after reading the problem and students can solve the opportunity problem according to the pattern known from the beginning. At the stage of making a problem solving plan and the stage of checking back the subject is included in the aspect of understanding Anticipatory Intuition.

REFERENSI

Amir, M. F., Rahayu, D. S., Amrullah, M., Rudyanto, H. E., & Afifah, D. S. N. (2020). Pemahaman Intuitif Siswa Sekolah Dasar Pada Pengukuran Luas Jajargenjang. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *9*(1), 31-42. https://doi.org/10.24127/ajpm.v9i1.2641

Anggrayani, H. D. L., Fuady, A., & Alifiani. (2021). Analisis Pemahaman Konsep Berdasarkan Kemampuan Berpikir Intuitif Pada Materi Bilangan Bulat Siswa Kelas VII SMP Negeri 2 Malang. *Jurnal Penelitian, Pendidikan, dan Pembelajaran*. *16*(30), 1-5.

Anjayani, V. Y. (2017). Deskripsi Intuisi Siswa Berdasarkan Tingkat IQ Dalam Penyelesaian Masalah Matematika Pada Materi Geometri Kelas VII SMPN 6 Kediri. *Prosiding SI MaNIs (Seminar Nasional Integrasi Matematika Dan Nilai Islami)*, 1(1), 641–647.

Ardiansyah, K., Kurniati, D., Trapsilasiwi, D., & Osman, S. (2022). Truth-Seekers Students' Critical Thinking Process in Solving Mathematics Problems with Contradiction Information. *Kreano, Jurnal Matematika Kreatif-Inovatif*, *13*(1), 1-13.

Ariandi, Y. (2016). Analisis Kemampuan Pemecahan Masalah Berdasarkan Aktivitas Belajar pada Model Pembelajaran PBL. *PRISMA, Prosiding Seminar Nasional Matematika*, *X*(1996), 579–585.

Bunga, N., Isrok'atun, & Julia. (2016). Pendekatan Realistic Mathematics Education Untuk Meningkatkan Kemampuan Koneksi Dan Komunikasi Matematis Siswa. *Jurnal Pena Ilmiah*, *1*(1), 441–450.

Byers, V., & Herscovics, N. (1997). Understanding school mathematics. *Mathematics Teaching*, 24–27.

Dickinson, P., & Hough, S. (2012). *Using realistic mathematics education in UK classrooms.* Centre for Mathematics Education, Manchester Metropolitan University, Manchester, UK.

Fahmi, S., Rahmawati, R. Y., & Priwantoro, S. W. (2022). Two-Variables Linear System: A Smartphone-Based-E-Module with a Realistic Mathematic Education Approach. *Kreano, Jurnal Matematika Kreatif-Inovatif*, *13*(1), 55-66.

Fischbein, E. (2002). *Intuition and Schemata in Mathematical Reasoning*. Educational Studies in Mathematics. Netherland: Kluwer Academic Publishers.

Hirza, B., Kusumah, Y. S., Darhim, & Zulkardi. (2014). Improving intuition skills with realistic mathematics education. *Journal on Mathematics Education*, *5*(1), 27–34. https://doi.org/10.22342/jme.5.1.1446.27-34

Irdawati, A., Marlina, R., Marlina, & Murni, I. (2019). Realistic Mathematics Education (RME) Approach to Enhance Mathematical Cognition of Elementary School Students. *Journal of Physics: Conference Series*, *1387*(1). https://doi.org/10.1088/1742-6596/1387/1/012140

Komariyah, S., Afifah, D. S. N., & Resbiantoro, G. (2018a). Analisis pemahaman konsep dalam memecahkan masalah matematika ditinjau dari minat belajar siswa. *Sosiohumaniora*, *4*(1), 1–8.

Komariyah, S., Afifah, D. S. N., & Resbiantoro, G. (2018b). Analisis Pemahaman Konsep Dalam Memecahkan Masalah Matematika Ditinjau Dari Minat Belajar Siswa. *SOSIOHUMANIORA: Jurnal Ilmiah Ilmu Sosial Dan Humaniora*, *4*(1), 1–8. https://doi.org/10.30738/sosio.v4i1.1477

Kurniawati, L., Farhana, I. S., & Miftah, R. (2022). Improving students' mathematical intuitive thinking ability using analogy learning model. *Journal of Physics: Conference Series*, *2157*(1). 012042. https://doi.org/10.1088/1742-6596/2157/1/012042

Laurens, T., Batlolona, F. A., Batlolona, J. R., & Leasa, M. (2018). How does realistic mathematics education (RME) improve students' mathematics cognitive achievement? *Eurasia*

Journal of Mathematics, Science and Technology Education, *14*(2), 569–578. https://doi.org/10.12973/ejmste/76959

Nurrakhmi, R. Z. F. (2014). Profil Intuisi Siswa SMA dalam Memecahkan Masalah Turunan Ditinjau Dari Gaya Kognitif Field Dependent dan Field Independent. *MATHEdunesa*, *3*(3), 208–214.

Purwaningsih, W. I., Astuti, E. P., Nugraheni, P., & Rizkyaningtyas, N. P. (2019). Characteristics of intuitive thinking in solve mathematical issue based on cognitive style. *Journal of Physics: Conference Series*, *1254*(1), 012081. https://doi.org/10.1088/1742-6596/1254/1/012081

Sari, N. I. (2017). Pengaruh Model Pembelajaran *Student Facilitator and Explaining* Terhadap Kemampuan Menulis Paragraf Argumentasi Oleh Siswa Kelas X SMA Pembangunan Nasional Lubuk Pakam Tahun Pembelajaran 2016-2017 (Doctoral dissertation), Universitas Negeri Medan.

Sa'o, S., Mei, A., & Naja, F. Y. (2019). The Application of Intuition in Solving the Problems of Math in the Olympiad of Mathematics. *International Journal of Multidisciplinary Research and Publications*, *2*(6), 11–15.

Suendarti, M., & Liberna, H. (2021). Analisis Pemahaman Konsep Perbandingan Trigonometri Pada Siswa SMA. *JNPM (Jurnal Nasional Pendidikan Matematika)*, *5*(2), 326–339.

Suindayati, S., Nur Afifah, D. S., & Sukwatus Suja'i, I. (2019). Teori Pirie-Kieren: Lapisan Pemahaman Siswa Smp Berkemampuan Matematika Tinggi Dalam Menyelesaikan Soal Bangun Ruang. *MaPan*, *7*(2), 211–228. https://doi.org/10.24252/mapan.2019v7n2a4

Susilowati, E. (2018). Peningkatan Aktivitas dan Hasil Belajar Matematika Siswa SD Melalui Model Realistic Mathematic Education (RME) Pada Siswa Kelas IV Semester I Di SD Negeri 4 Kradenan Kecamatan Kradenan Kabupaten Grobogan Tahun Pelajaran 2017/2018. *Jurnal PINUS*, *4*(1), 44–53.

Tanamir, M. D., & Dkk. (2020). Analisis Karakteristik Gaya Belajar Remaja Di Korong Sijangek Kenagarian Sungai Durian Kecamatan Patamuan Kabupaten Padang Pariaman. *Curricula: Journal of Teaching and Learning*, *5*(1), 50–59. https://doi.org/10.22216/jcc.2020.v5i1.5035

Usodo, B. (2012). Karakteristik Intuisi Siswa SMA dalam Memecahkan Masalah. *Aksioma*, *01*(01), 1–14.

Widyasari, N., & Jakarta, U. M. (2021). *K r e a n o*. *12*(2), 365–375.

Wuryanie, M., Wibowo, T., Kurniasih, N., & Maryam, I. (2020). Intuition Characteristics of Student in Mathematical Problem Solving in Cognitive Style. *Journal of Education and Learning Mathematics Research (JELMaR)*, *1*(2), 31–42. https://doi.org/10.37303/jelmar.v1i2.25