

# Relationship of Mathematical Disposition with Student Problem-Solving Construction Using Realistic Mathematics Education (RME) Model

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### ABSTRACT

The construction of problem solving is important in the learning process of mathematics. The success of students in solving problems can also be supported by psychological aspects related to student attitudes in the learning process, such as interest and curiosity, self-confidence, open-mindedness, and others, all of which include into a mathematical disposition. Teachers should know the ability of students' mathematical dispositions to help teachers provide the right treatment for problems in constructing problem solving by applying the RME model. The research method used is a concurrent embedded strategy mix method. This research was conducted at SMP 3 Bae Kudus. The subjects of this research were students of class VIII SMP 3 Bae Kudus. The instrument used in this research is a mathematical disposition questionnaire, problem solving test results, and interviews. The results showed that there was a positive correlation between students' mathematical disposition abilities and students' problem-solving construction using the RME model. The higher the student's mathematical disposition, the higher the problem-solving construction ability, supported by the application of RME.

Kata kunci: Disposition, Problem Solving, Realistic Mathematics Education

#### ABSTRAK

Konstruksi pemecahan masalah penting dalam proses belajar matematika. Keberhasilan siswa untuk memecahkan masalah juga dapat ditunjang dengan aspek psikologis yang berhubungan dengan sikap siswa dalam proses pembelajaran, misalnya minat dan keingintahuan, kepercayaan diri, berpikiran terbuka, dan lain-lain, yang semua itu termasuk ke dalam disposisi matematis. Guru seharusnya mengetahui kemampuan disposisi matematis siswa untuk membantu guru memberi penanganan yang tepat untuk permasalahan mengkonstruksi pemecahan masalah dengan menerapkan model RME. Metode penelitian yang digunakan adalah metode mix method tipe concurrent embedded strategy. Penelitian ini dilaksanakan di SMP 3 Bae Kudus. Subjek penelitian ini yaitu siswa kelas VIII SMP 3 Bae Kudus. Instrumen yang digunakan pada penelitian ini adalah instrumen angket disposisi matematis, hasil tes pemecahan masalah, dan wawancara. Hasil penelitian menunjukkan adanya korelasi yang positif antara kemampuan disposisi matematis siswa dengan konstruksi pemecahan masalah siswa menggunakan model RME. Semakin tinggi disposisi matematis siswa akan semakin tinggi pula kemampuan konstruksi pemecahan masalah didukung dengan penerapan RME.

Keywords: Disposisi, Pemecahan Masalah, Realistic Mathematics Education

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### Introduction

Mathematics is the knowledge that underlies the development of modern technology in education in Indonesia(Yaniawati et al., 2019). Mathematics plays an important role in thinking, discussing, and solving everyday problems and the working world, as well as the development of science and technology (Genc et al., 2019; Muhtadi et al., 2018; Sari & Mahendra., 2017). One of the important skills that students must master is problem solving construction (Herna Nusantara et al., 2016). The construction of problem solving is very important in the process of learning mathematics (Lee, 2011; Wu & Adam, 2006).

The reality, the construction of student problem solving is still not optimal. A number of studies have been conducted on the problem-solving construction process (Anggraini et al., 2018;

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Maharaj, 2013; Mumu & Prahmana, R. C. I. Tanujaya, 2017; Subanji, 2013; Subanji & Nusantara, 2016). This also happened at SMP 3 Bae Kudus. Based on information from one of the mathematics teachers at SMP 3 Bae Kudus, most students experience difficulties when solving non-routine questions. Students have difficulty in problem solving construction. The success of students in solving problems can also be supported by psychological aspects related to student attitudes in the learning process, such as interest and curiosity, self-confidence, open-mindedness, and others, all of which are included in the mathematical disposition.

Mathematical disposition is a link to mathematics learning (Feldhaus, 2014). The mathematical disposition regards mathematics as a schema of related conceptions that develops with persistence and determination rather than seeing mathematics as consisting of a series of subjective procedures which one must internalize through rote memorization (Şahin et al., 2016). Mathematical disposition is defined as a student's attitude towards mathematics, where the expected attitude is a positive attitude in learning mathematics (Nugroho et al., 2018).

Mathematical disposition is thought to be able to have a positive influence on students to solve the problems they face, both in mathematics and outside mathematics. This is in line with the goals of learning in schools according to BSNP, namely having curiosity, being persistent in learning mathematics and having confidence in solving problems (Nugroho et al., 2018), so that in the learning process in the classroom there will be changes in students' positive behavior. in his life. The role of the teacher in the classroom is very necessary how the teacher teaches, the model or approach used can affect the enthusiasm of students' learning which affects the mathematical disposition of students.

One of the learning models that can influence students' mathematical disposition is the RME learning model (Oftiana & Saefudin, 2017). The RME learning model is a mathematics learning model that focuses on student activities and is based on real or contextual things (Dewi & Agustika, 2020). The RME model is felt to influence mathematical dispositions because it is student-centered and connected to mathematics with real life (Prafianti, 2019). RME is also an innovative learning model and has several characteristics, namely, providing learning conditions for students, involving students in solving a problem by in their own way, so that students can learn knowledge related to the problem and at the same time, have the skills to solve problems. The RME model is very suitable to be applied to the 2013 curriculum and to improve the construction of problem solving. Based on the description above, the teacher should know the ability of students' dispositions to help teachers provide the right treatment for problems in constructing student problem solving by applying the RME model.

## **Research Methods**

The research method used is a concurrent embedded strategy mix method. This research was conducted at SMP 3 Bae Kudus. The subjects of this study were students of class VIII SMP 3 Bae Kudus. The instrument used in this research is a mathematical disposition questionnaire, problem solving test results, and interviews. The disposition questionnaire instrument consists of 30 questions. The test instrument is used to get the results of students' work in solving

questions in the form of tests. Interviews were used for triangulation, namely comparing and re-checking the problem-solving process carried out by students so that the credibility of the data was obtained.

The quantitative data analysis technique used is regression test. The data from the construction of problem solving and mathematical dispositions were processed using SPSS 16.0 software and then the output results were interpreted descriptively. The aim is to find out how much the role of mathematical disposition affects problem solving abilities Qualitative data analysis techniques used include data reduction, data presentation, drawing conclusions, and data interpretation. Determination of the subject of this research begins with the provision of a mathematical disposition questionnaire to 28 students. Mathematical disposition questionnaire with reference to disposition indicators proposed by (Yaniawati et al., 2019). Then students are grouped into 4 categories based on the results of the questionnaire. The four categories are students with very high, high, moderate and low mathematical disposition abilities. The grouping of the four categories refers to the rating scale (Rahayu et al., 2014)

Table 1. Mathematical Disposition Score Criteria

| Disposition Score                      | Kriteria  |
|--|-----------|
| $81,25 \le Disposition Score \le 100$  | Very High |
| $62,5 \le Disposition Score < 81,25$   | High      |
| $43,75 \le$ Disposition Score $< 62,5$ | Moderate  |
| $25 \le$ Disposition Score $< 43,75$   | Low       |

### **Result and Discussions**

Regression test between mathematical disposition (variable X) and problem-solving construction ability using RME model (variable Y) in this study using SPSS. The hypothesis for correlation analysis is as follows.  $H_0: \beta \leq 0$  (Mathematical disposition does not have a positive effect on students' problem-solving construction using the RME. model);  $H_1: \beta > 0$  (mathematical disposition has a positive effect on students' problem-solving construction using the RME model]. The test criteria for this correlation analysis is that  $H_0$  is rejected if the sig (2-tailed) < 0.05. The results of data processing using SPSS are presented in Table 2 and Table 3 below.

Table 2. Output SPSS Regression Equation

| Variables  | Unstandardized<br>B | Coefficients<br>Std. Error | Standardized<br>Coefficients | t      | Sig   |
|------------|---------------------|----------------------------|------------------------------|--------|-------|
| (Constant) | 18.992              | 8.955                      |                              | 2.121  | 0.044 |
| Х          | 0.67                | 0.106                      | 0.779                        | 6.3332 | 0     |

a. Dependent Variable: Y

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| Groups            | Variables                      | Sum of<br>Squares | df | Mean<br>Square | F      | Sig.  |
|-------------------|--------------------------------|-------------------|----|----------------|--------|-------|
|                   | (Combined)                     | 5461.857          | 20 | 273.093        | 5.071  | 0.018 |
| Between<br>Groups | Linearity                      | 3542.13           | 1  | 3542.13        | 65.769 | 0     |
|                   | Deviation<br>from<br>Linearity | 1919.727          | 19 | 101.038        | 1.876  | 0.201 |
| Within<br>Groups  |                                | 377               | 7  | 53.857         |        |       |
| Total             |                                | 5838.857          | 27 |                |        |       |

 Table 3. Output SPSS Regression Linearity

In the output presented in Table 2, the values of a = 18,992 and b = 0,670 are obtained so that the equation  $\hat{Y} = 18,992 + 0,670x$  is obtained. Based on the results in Table 3, the sig. (2-tailed) is 0.201, which means the value is 0,201 < 0,05, so it can be concluded that H0 is accepted. This means that the mathematical disposition has a positive effect on the construction of student problem solving using the RME model. The following are the correlation coefficients presented in Table 3.

Table 4. Output SPSS Correlation

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .779 <sup>a</sup> | 0.707    | 0.592             | 9.399                      |

a. Predictors: (Constant), X

The output presented in Table 3 obtained an R square value of 0.707. The level of closeness of the relationship between the two variables based on the Guilford Empirical Rules is in the strong category, because the coefficient value of 0.707 lies between 0.70 and 0.90. The value of 0.707 also shows the direction of a positive relationship, meaning that the mathematical disposition is directly proportional to the construction of problem solving using the RME model. One way to build students' problem solving constructions is through RME learning because according to this view, RME learning aims to help students build mathematical concepts/principles with their own abilities (Rahayu et al., 2014). Based on Piaget's theory, RME learning activities focus on students' thinking processes, not just outcomes. In addition, this teaching prioritizes the role of students in taking the initiative to find answers to contextual questions posed by the

teacher; students are encouraged to be actively involved in learning to construct or discover concepts.

RME learning activities focus on contextual learning (Oftiana & Saefudin, 2017; Prihartini, N., Sari & Hadi, 2020; Widyastuti & Pujiastuti, 2014). Students' problem-solving construction abilities will increase if learning is associated with contextual learning (Widada et al., 2018). Mathematics must be connected to reality, remain close to the student experience and relevant to society. Mathematics lessons should give students the opportunity to 'reinvent' mathematics by being directly involved in learning (Sumirattana et al., 2017).

In addition, the RME learning model can improve students' mathematical disposition. This is in line with research Prafianti, (2019) which states that learning with the RME model is a good predictor of school rankings to train students' mathematical disposition. There is a significant difference in mathematical disposition between students whose learning uses RME.

# Problem Solving Construction Process Using RME Model Based on Mathematical Disposition Very High Mathematical Disposition Subject

AAN is a subject with a very high mathematical disposition capable of understanding things that will be known. AAN subjects can be written fluently and correctly what is known in the questions. AAN subjects can construct problem solving by identifying the component problems that exist in the problem by directly integrating their new perceptions or experiences into the schemes in their minds.

In understanding the problem, the subject of AAN performs a thought process by analyzing and making symbols from what is known. AAN subjects can present the information obtained from the problem in a symbolic form that involves systematic mathematical expressions. Although writing information, the subject of AAN did not write down the purpose of solving the problem but after confirmation, students were able to solve the problem correctly. After reading and understanding about, the subject of AAN is confident that he is able to solve the problems given. AAN subjects are also used to doing things that are not routine because they are interested (high mathematical disposition).

The second step is problem solving planning. The subject of SIN performs a thought process by thinking about problem solving planning. The plans prepared by AAN on these questions have become guidelines for solving these problems. AAN subjects can receive information from these four things so that they can plan problem solving. In the third step in solving the problem, the subject of AAN can carry out the problem-solving plan that has been prepared. AAN subjects managed to answer the questions correctly without experiencing significant obstacles. AAN subjects can perform calculations correctly on all counts. The final step in the problem-solving process is to re-examine the answers.

AAN subjects re-checked the answers smoothly. AAN answers with a very high mathematical disposition can be seen that students can represent what they know and are asked what. Students

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with high mathematical dispositions are confident and confident in answering questions (Salmaniah et al., 2016), so that students' numeracy skills are very good so that the right and correct results are obtained. At the completion stage, students re-examine the answers that have been done, it can be seen from the results obtained are correct and correct. This is categorically with the results of interviews with students with high mathematics who say they have no difficulty in solving problems and can understand this well because they are used to non-routine questions. Problem solving constructs can thrive by preparing them to solve non-routine problems.

# High Mathematical Disposition Subject

NK subject is a subject with a high category of mathematical disposition. NK subjects are able to understand the problem, NK subjects can understand clearly and correctly what is known in the explanation, and use the information to understand the problem. NK subjects can directly integrate their new perceptions or experiences into the schemes in their minds, so it can be said that NK carries out a thought process. NK subjects write down the objectives developed in the question. NK subject rereads the questions until he knows the description of the problem presented by the question.

NK subjects understand the problems expressed in the form of symbols and mathematical expressions. The plans prepared by the NK subject on the questions cannot be used as a guide for solving problems. Although in planning to solve the problem of NK subject it is not written correctly, but from the results of the study it is known that NK subject has been able to plan well. At the stage of re-examining the NK subject doing the assimilation thought process, the completion NK subject was unable to answer correctly. At this stage, the NK subject was sure that the answer to the test that was completed was correct, even though the written answer was not correct. The interpretation step of the calculation results in the problem objective has also not been carried out by the NK.

The processing step stops after obtaining the calculation results. This means that the subject of NK has not carried out a complete re-check. Subjects who have high dispositional abilities have a positive correlation with problem solving. Students who have a high mathematical disposition will have higher mathematical problem solving abilities, and vice versa (Rahayu et al., 2014). Students who have high and high mathematical dispositions will have high problem-solving abilities as well. Students with high mathematical disposition have high confidence that they are able to solve all the problems correctly.

Students have a high curiosity as evidenced by reading the questions over and over again in order to understand the situation and the known elements of the questions. They are also thorough and systematic in planning problem-solving strategies. Students are able to understand the learning material well so as to distinguish the characteristics and formulas used. Students who have a high mathematical disposition are also persistent and never give up in carrying out calculations to completion (Salmaniah et al., 2016). At the re-checking stage, students are able

to re-examine the answers obtained and provide an interpretation of the results in accordance with the objectives.

## Moderate Mathematical Disposition Subject

AFP subject is a subject with a moderate mathematical disposition. At the stage of understanding the problem the subject represents what is known and what is being asked in the form of symbols. At the stage of understanding the problem, the AFP subject wrote what was known on the problem correctly, but the subject could not directly or require a process (such as repeatedly reading the existing problem or so on) to be able to write what was known and what was developed in the problem. Reading ability is the main factor for students to understand the occurrence of problems (Carlson et al., 2015).

At the strategy-determining stage, AFP subjects had difficulty choosing the right strategy due to a lack of good understanding of mathematical concepts (Sandie et al., 2019). At the problemsolving stage, AFP subjects were only able to determine the area of the tablecloth. However, the results of the calculation of the price of the tablecloth are still wrong. This is caused by inserting the wrong fingers. AFP subjects did not re-check the questions and have not completed all the calculation steps. AFP subjects feel short of time to complete and finish because they are confused in choosing a strategy.

# Low Mathematical Disposition Subject

SRN subjects are subjects with Low Criteria mathematical disposition. In the step of understanding the problem, the SRN subject carries out an accommodation thinking process that can only identify the problem in the question and does not yet know what was developed in the problem. Another contributing factor is that SRN subjects are unable to coordinate the information provided (Carlson et al., 2002). Students with low categories cannot process the stored data properly because they forget the material they have learned. SRN subjects feel insecure because they are not yet capable of the subject matter to be tested. SRN subjects find it difficult to understand about and give up with improvised explanations. The SRN subject lacks persistence in finding because it has not written anything for completion.

The second step is to solve the problem, the SRN subject does the accommodation learning process. The next step to solve the problem, the subject of SRN is only to determine the area of the tablecloth. However, in the step of calculating the price of the tablecloth, the SRN subject had difficulty in making a settlement. This happened because the SRN subject had not identified the known elements which resulted in the SRN subject feeling in determining the formula used. In the review step, the SRN subject performs the accommodation thinking process SRN subjects have not been able to understand what is given but they are still trying to work on it. This is in accordance with research that has been done that students try to solve problems, even though they do not understand what causes errors in answers (Murdiyani et al., 2013). So that they find it difficult and give up with improvised answers, in other words these students do not have the persistence to solve the problem.

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Re-examining what was originally in the form of a story into a mathematical model becomes a problem for students in solving problems (Masrurotullaily et al., 2013). The low mathematical disposition of students is very influential in solving problem solving problems. Students with low mathematical dispositions will feel unsure of answers (Hasanah et al., 2019). This is also experienced by SRN subjects who are not sure of the truth of the results obtained

## Conclusion

There is a significant relationship between students' mathematical dispositions and students' problem-solving constructions using the RME model. Students with very high and high mathematical dispositions have good problem-solving construction, students are able to understand the problem by writing down what is known and what is asked in the problem, able to make a good problem-solving plan, able to carry out the planned problem-solving plan, and able to recheck answers. Students with moderate level of mathematical disposition have moderate problem-solving plans but students have difficulty in determining the right strategy so that it affects the next process, namely re-examining the answers. Students with a low level of mathematical disposition, have not been able to understand the questions given but they are still trying to work on them, students have difficulty making problem solving plans, students have not been able to carry out problem solving plans that have been planned and experience imperfections in re-examining answers because of imperfections in the accommodation thinking process.

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## **Bibliography**

- Anggraini, D., Kusmayadi, T., & Pramudya, I. (2018). Construction of The Mathematical Concept of Pseudo Thinking Students. *IOP Conf. Series: Journal of Physics: Conf.* https://doi.org/10.1088/1742-6596/1022/1/012010
- Carlson, M. P., Madison, B., & West, R. D. (2015). Study of Students' Readiness to Learn Calculus. International Journal of Research in Undergraduate Mathematics Education, 1(2), 209–233.
- Dewi, N. P. W. P., & Agustika, G. N. S. (2020). Efektivitas Pembelajaran Matematika Melalui Pendekatan PMRITerhadap Kompetensi Pengetahuan Matematika. *Jurnal Penelitian Dan Pengembangan Pendidikan*, 4(2), 204–214.
- Feldhaus, C. A. (2014). How Pre Service Elementary School Teachers' Mathematical Dispositions are Influenced by School Mathematics. *American International Journal of Contemporary Research*, 4(6), 91–97.
- Genc, M., Camp, & Erbas, A. K. (2019). Secondary Mathematics Teachers' Conceptions of Mathematical Literacy. *International Journal of Education in Mathematics, Science and Technology*, 7(3), 222–237.
- Hasanah, S. I., Tafrilyanto, C. F., & Aini, Y. (2019). Mathematical Reasoning: The characteristics of students' mathematical abilities in problem solving. *Journal of Physics: Conference Series*, *1188*(012057).
- Herna Nusantara, T., Subanji, & Mulyati, S. (2016). The Characterization of True Pseudo Construction In Understanding Concept Of Limit Function. *Journal of Research & Method in Education (IOSR-JRME), 6*(5), 77–87.

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- Lee, S. J. (2011). Mathematics Teachers' Reasoning About Fraction and Decimal Using Drawn Representation. *Math. Think. Learn*, 13(3), 198–220.
- Maharaj, A. (2013). An APOS Analysis of Natural Science Students' Understanding of Derivatives. *South African Journal of Education*, 33(1), 1–19.
- Masrurotullaily, Hobri, & Suharto. (2013). Analisis Kemampuan Pemecahan Masalah Matematika Keuangan Berdasarkan Model Polya Siswa SMK Negeri 6 Jember. *Kadikma*, 4(2), 129–138.
- Muhtadi, D., Wahyudin, Kartasasmita, B. G., & Prahmana, R. C. I. (2018). The integration of technology in teaching mathematics. *Journal of Physics: Conference Series*, 943(1), 012020.
- Mumu, J., & Prahmana, R. C. I. Tanujaya, B. (2017). Construction and Reconstruction Concept in Mathematics Instruction. *IOP Conf. Series: Journal of Physics*.
- Murdiyani, N. M., Ilma, R., Putri, I., Eerde, D., & Van, F. (2013). Developing a Model to Support Students in Solving Subtraction. 4(1), 95–112.
- Nugroho, P. B., Nusantara, T., As'ari, A. R., Sisworo, Hidayanto, E., & Susiswo. (2018). Critical Thinking Disposition: Students Skeptic in Dealing with Ill-Logical Mathematics Problem. *International Journal of Instruction*, *11*(3), 635–648. https://doi.org/10.12973/iji.2018.11343a
- Oftiana, S., & Saefudin, A. A. (2017). Pengaruh Pendekatan Pembelajaran Matematika Realistik Indonesia (PMRI) Terhadap Kemampuan Pemecahan Masalah Matematika Siswa Kelas VII SMP Negeri 2 Srandakan. *MaPan: Jurnal Matematika Dan Pembelajaran*, 5(2), 293–301.
- Prafianti, R. A. (2019). Pengaruh Pendekatan Matematika Realistik Terhadap Disposisi Matematis Siswa. Jurnal Pendidikan Matematika Dan Matematika, 1(1), 36–43.
- Prihartini, N., Sari, P., & Hadi, I. (2020). Design Research : Mengembangkan Pembelajaran Konsep Peluang Dengan Pendekatan Pendidikan Matematika Realistik Indonesia Pada Siswa Kelas IX Di SMPN 220 Jakarta. Jurnal Riset Pembelajaran Matematika Sekolah, 4(8), 1–8.
- Rahayu, R., Kartono, & Sulhadi. (2014). The Effect Of Mathematical Disposition On Pmri Toward Problem Solving Abilit Based On Ideal Problem Solver. *International Journal of Science and Research (IJSR)*, 3(10), 1315–1318.
- Şahin, S. A., Tunca, N., Altınkurt, Y., & Yılmaz, K. (2016). Relationship between Professional Values and Critical Thinking Disposition of Science-Technology and Mathematics Teachers. *Eurasia Journal of Mathematics, Science & Technology Education*, 12(1), 25– 40.
- Salmaniah, E., Yusmin, & Nursangaji, A. (2016). Disposisi Matematis Siswa Ditinjau Dari Kemampuan Problem Solving. *Jurnal Pendidikan Dan Pembelajaran Khatulistiwa*, 5(6), 1–3.
- Sandie, Purwanto, Subanji, & Hidayanto, E. (2019). Student difficulties in solving covariational problems. *International Journal of Humanities and Innovation (IJHI)*, 2(2), 42–47.
- Sari, D. P., & Mahendra. (2017). Developing Instrument to Measure Mathematical Reasoning Ability. In 1st International Conference of Mathematics and Science Education (ICMSEd 2016). Atlantis Press.
- Subanji. (2013). Proses Berpikir Pseudo Siswa dalam Menyelesaikan Masalah Proporsi. J-Teqip, 4(2), 207–226.
- Subanji, & Nusantara, T. (2016). Thinking Process of Pseudo Construction in Mathematics Concepts. *International Education Studies*, 9(2), 17–31.
- Sumirattana, Makanong, & Thipkong. (2017). Using realistic mathem atics education and the DAPIC problem -solving proce ss to enhance secondary school students' mathematical

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literacy. Kasetsart Journal of Social Sciences, 38, 307-315.

- Widada, W., Herawaty, D., Anggoro, Yudha, & Hayati. (2018). Ethnomathematics and Outdoor Learning to Improve Problem Solving Ability. Advances in Social Science, Education and Humanities Research, 295, 13–16.
- Widyastuti, N. S., & Pujiastuti, P. (2014). Pengaruh Pendidikan Matematika Realistik Indonesia (PMRI) Terhadap Pemahaman Konsep Dan Berpikir Logis Siswa. *Jurnal Prima Edukasia*, 2(2), 183–193.
- Wu, W., & Adam, R. (2006). Modelling Mathematics Problem Solving Item Responses Using Multidimensional IRT Model. *Math. Educ. Res. J*, 18(2), 93–113.
- Yaniawati, R. P., Indrawan, R., & Setiawan, G. (2019). Core Model on Improving Mathematical Communication and Connection, Analysis of Students' Mathematical Disposition. *International Journal of Instruction*, 12(4), 639–654.