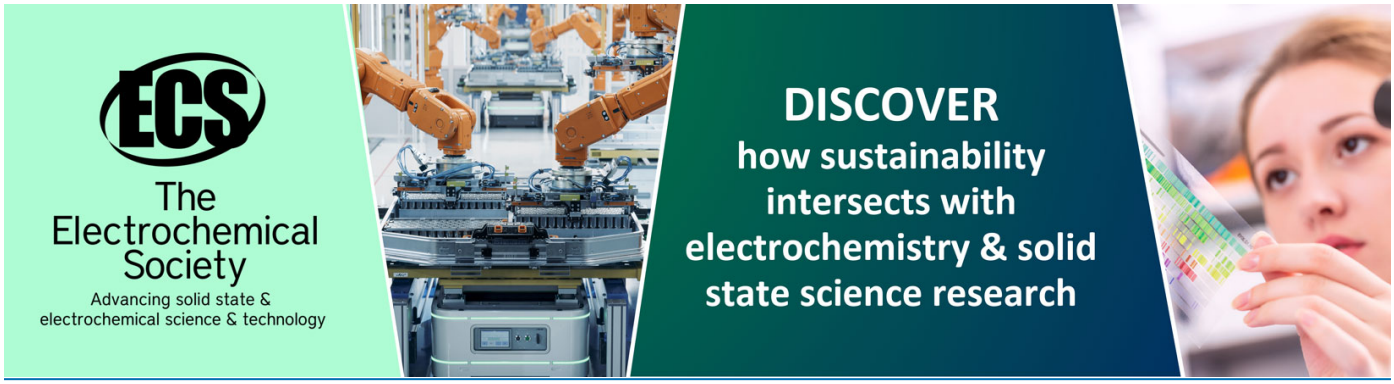
The effect of application of realistic mathematics education (RME) approach to mathematical reasoning ability based on mathematics self efficacy of junior high school students in Pekanbaru



Journal of Physics: Conference Series **1776** (2021) 012039 doi:10.1088/1742-6596/1776/1/012039

The effect of application of realistic mathematics education (RME) approach to mathematical reasoning ability based on mathematics self efficacy of junior high school students in Pekanbaru

Zubaidah Amir MZ[1], Athik Urrohmah[2], Lies Andriani[3]

[1-3)] Mathematics Education Department, Universitas Islam Negeri Sultan Syarif Kasim Riau, Indonesia

Corresponding email: zubaidah.amir@uin-suska.ac.id

Abstract. This research was purposed tofind the differences on mathematic reasoning ability between students using Realistic Mathematics Education (RME) approach and those taught by direct learning derived from their self-efficacy. This research was an experimental research with factorial experimental design. The samples of this research were 66 students on 8th grade students at SMPIT Az-Zuhra Islamic School Pekanbaru on the material number pattern. Sampling technique was cluster random sampling. Data were collected with reasoning ability test, questionnaire self-efficacy.The research findings were: there was a difference on mathematic reasoning ability between students taught by using RME approach and those with Direct learning, there was a difference on mathematic reasoning ability among students having high, medium, and low self-efficacy, and there was no interaction between learning approach and self-efficacy toward student mathematic reasoning ability.

1. Introduction

Reasoning is a thought process in drawing conclusions based on existing statements. Mathematics and reasoning are inseparable links, because in mathematics we need the ability to have reasoning in understanding mathematical material or concepts. Mathematics learning in the 2013 curriculum aims to understand mathematical concepts, use reasoning on patterns and properties, solve problems, communicate ideas, and have an attitude of respecting the usefulness of mathematics in life [1].Based on the learning objectives, it can be summarized that mathematical reasoning ability is one of the five mathematical abilities students should have. Therefore, mathematical reasoning ability is expected to be developed and trained in the process of learning mathematics.

Gadner, et al [2] stated that the ability of reasoning is the ability to analyze, generalize, synthesize / integrate, provide the right reasons and solve problems that are not routine. Whereas according to Keraf [3] reasoning ability is a thought process that seeks to connect known facts to a conclusion. In mathematics, mathematical reasoning is a process of mathematical thinking in obtaining mathematical conclusions based on facts or data, concepts, and methods available or relevant. According to Hariyani and Amir MZ [4] the ability of reasoning is needed to obtain conclusions based on facts before making a decision.

Indicators of mathematical reasoning ability based on the Directorate General of Elementary Education of the Ministry of National Education number 506/C/Kep/PP 2004 are the ability to submit allegations, the ability to do mathematical manipulation, the ability to arrange evidence, provide reasons / evidence for the truth of the solution, the ability to draw conclusions from statements, check the validity of an argument, and find patterns or properties of mathematical symptoms to make generalizations [3].

But in the field, based on the observations at SMP Az-Zuhra Islamic School Pekanbaru, with providing tests of reasoning ability in the form of 5 essay questions, it was found that 54.8% of students were not able to submit suspicions, 55.2% of students were not able to manipulate mathematics , 67.8% of students have not been able to provide evidence of the truth of the solution, 60.7% of students have not been able to draw conclusions from statements, 71.8% of students have not been able to check the validity of an argument, and 77.3% of students have not been able to find patterns or traits from mathematical symptoms to make generalizations. And these results are relevant to the results of observations made by Nurfadhilah and Amir MZ [5] which states that the mathematical reasoning ability of students in one of the State Junior High Schools in Pekanbaru is categorized as low and problematic. Based on the results of tests conducted by Rahman, Fitraini, and Fitri also stated that the mathematical reasoning ability of students at SMP Negeri 3 Tambangwais still relatively low [6].

Inductive reasoning in mathematics is often found in various materials, one of which is the material of number patterns [7]. Marion et.al [8] explains that activities with patterns can help students in developing reasoning skills, constructing conjectures and testing students' ideas. Furthermore learning number patterns can explore students' thinking skills [9]. Students can use inductive reasoning to look for mathematical relationships through learning patterns [10]. Thus, studying number patterns can train students' mathematical reasoning abilities. Through number patterns students will learn to find the relationship between terms in a pattern to determine the nth term formula and then test its truth.

But in reality, some students have difficulty in understanding Number Patterns. Sari and Hidayanto [7] from the results of their research on junior high school students, concluded that students still experience difficulties in this material. In line with this, the difficulty of students in this material is in terms of mathematical modeling which is a process that starts from looking at real phenomena and attempts to mathematicize these phenomena [11], [12]. Therefore, it is necessary to study in depth efforts to improve the learning process that can facilitate students to understand this number pattern learning material. In the end it is hoped that it can improve mathematical reasoning abilities well.

According to Slameto [13] factors that influence student learning outcomes include internal factors which include physical and psychological factors, then external factors which include family factors, school factors, and community factors. Based on these factors, to develop reasoning abilities need a lot of things to consider. One of the factors in developing reasoning ability is the strategy used by the teacher in the learning process and psychological factors of students, in this study the psychological factors discussed are student self efficacy [14].

Self efficacy (SE) is a belief held by someone about their ability to display a form of behavior related to the situation they face [15]. According to Firmansyah and Fauzi this self-efficacy is an assessment of students' confidence in their ability to complete a particular task. Self efficacy is very important for students to have [16]. Self efficacy has a role to influence someone's choice in making and carrying out an action they are targeting. Someone tends to concentrate on tasks that are felt capable and believe can be completed and avoid tasks that cannot be done. Self effiacy also helps in determining the extent to which a person exerts effort in his activities, how long they will persevere against obstacles faced, and how resilient they will face situations that are not suitable for themselves [17]. Students who have a good SE will have the following as stated by Bandura [18] namely: (1) confidence in dealing with uncertain situations that contain blur, unpredictable and stressful, (2) confidence in the ability to overcome problems or challenges that arise, (3) confidence in achieving

the set targets, and (4) confidence in the ability to grow motivation, cognitive ability and take the actions needed to achieve an outcome.

A way to develop students' mathematical reasoning abilities is by applying the Realistic Mathematics Education (RME) learning approach. RME is a learning approach that uses contextual problems as a starting point for learning to show that mathematics is actually very close to the daily lives of students [19].The main principle of this RME approach is that learning must start from something real so students can be actively involved in the learning process and can develop students' minds to find problems. Then students are given the opportunity to build their own knowledge and understanding based on student experience.

Realistic Mathematics Education (RME) or in Indonesian known as Realistic Mathematics Education (PMR) is a learning developed specifically for mathematics. The concept of PMR is in line to improve the problem of students' understanding of mathematics and the development of reasoning that needs to be improved in mathematics education in Indonesia [20]. This is consistent with the results of research conducted by Herwati [21], Harahap [22], as well as those conducted by Nisa, Zulkardi, and Susanti [23] which state that students' mathematical reasoning abilities are better after using the RME approach. Based on research conducted by Wibowo [24], and Saputri [25] stated that there is an effect of the RME approach on students' mathematical reasoning abilities.

From these problems, we need a learning approach that is easy to understand, meaningful and acceptable to students to improve mathematical reasoning abilities based on students' mathematical self efficacy. In connection with the problems raised earlier, the purpose of this study was to determine whether there were differences in students' mathematical reasoning abilities in classes treated with the RME learning approach and students who took part in direct learning. Then to see if there are differences in students' mathematical reasoning abilities at high, medium, and low self efficacy. And to see if there is an interaction between the learning approach with self-efficacy towards mathematical reasoning abilities.

2. Research Method

The type of research was an experiment using factorial experimental design. Experimental factorial design is a research design that allows a moderator variable that influences the treatment (independent variable) on the outcome of the dependent variable [26]. The design of this study was chosen because in this study applied a learning approach, namely the Realistic Mathematics Education (RME) approach in the experimental class in terms of student self-efficacy. The following is an experimental factorial design based on Hartono [27].

Table 1. Research Design

Group	*Pretest*	Treatment	*Self Efficacy*	*Posttest*
Random	O1	X	Y1	O2
Random	O3	-	Y1	O4
Random	O5	X	Y2	O6
Random	O7	-	Y2	O8
Random	O9	X	Y3	O10
Random	O11	-	Y3	O12

Remarks:
Random : Experiment class and Control class
O1, O3, O5, O7, O9, O11 : *Pretest*
O2, O4, O6, O8, O10, O12 : *Posttest*
Y1 : *Self efficacy* – high
Y2 : *Self efficacy* – middle
Y3 : *Self efficacy* – low

This research was conducted at the Az-Zuhra Islamic School SMPIT Pekanbaru in the odd semester of 2019/2020. The population in this study were students of 8 th grade with a total of 136

students. The sampling technique is cluster random sampling, which is random sampling of members based on groups, where the sample members are not individuals of the population but individual groups [28]. So that the samples obtained in this study are class VIII C as a control class that follows direct learning and class VIII D as an experimental class that is given the treatment of the RME learning approach.

Data collection techniques used in this study were to use tests, questionnaires. The instrument used was the syllabus, Learning Implementation Plan (RPP) for 5 meetings on number pattern material, reasoning test questions, and SE questionnaire. All instruments are validated beforehand by experts so that they are declared suitable for use. SE data collected through a questionnaire was given at the beginning before the treatment was given. SE data were analyzed divided into three levels namely high, medium and low. The SE indicator refers to Bandura [18] as stated earlier. While the reasoning problem is in the form of a description with reasoning indicators referring to the Regulation of the Directorate General of Elementary Education, Ministry of National Education number 506 / C / Kep / PP2004 which has been found in the introduction. The reasoning test is given at the end after all treatments have been completed. The data analysis technique used in answering hypotheses is the two-way ANOVA test.

3. Research Findings and Discussion

In this study, students' self-efficacy questionnaires were analyzed to be classified with high, medium, and low criteria. Based on the results of the calculation that has been done, the grouping criteria are obtained in the following table 2.

Table 2. Criteria for Grouping Student Self Efficacy

Criteria *Self Efficacy* of students	**Remarks**
$X \geq 75{,}28$	High
$52{,}35 \leq X < 75{,}28$	Middle
$X < 52{,}35$	Low

Based on the grouping criteria as above, then a group of students who have high, medium, and low self efficacy were found from the experimental and control classes. The results of grouping the self efficacy of the experimental class and control class students could be checked in the below table 3.

Table 3. Grouping Student Self Efficacy In This Study

Categories	**Experiment**	**Control**
High	6 Students	6 Students
Medium	20 Students	22 Students
Low	7 Students	5 Students

From the self efficacy grouping analysis as above, it can be concluded that there was not more to 10 students in high category. Most students were in the medium category, while the lower category was more in the experimental than the control class. The reason was because of more students answered the self efficacy questionnaire in the doubt category, and did not agree to positive questions. Then, there were also some students answering the category strongly agree and agree to negative statements. This is what causes the group to be more than the high group on the student self efficacy questionnaire.

Then based on the research that has been done, obtained the average data value of mathematical reasoning ability from the results of the posttest as shown in the following table 4:

Table 4. Descriptive of Data Analysis

Class	**N**	**Lowest Score**	**Highest Score**	**Deviation Standard**	**Variance**	**Averages**

Experiment	33	17	88	18,50	342,07	54,85
Control	33	8	83	18,58	345,31	43,76

Table 4 as above showed the average of posttest scores was higher in experimental class compared to the control class. This indicated that the class participating in learning directly was lower than the class treated with the RME learning approach. Then, it could be found that the standard deviation of the experimental class and the control class had only a slight difference. It demonstrated that the experimental class and the control class have almost the same homogeneity. Homogeneous aims to determine the diversity of a class group.

Furthermore, from the results of the posttest mathematical reasoning ability to get the final score of the total score per question or indicator, please find the average results per question indicator as the following figure 1:

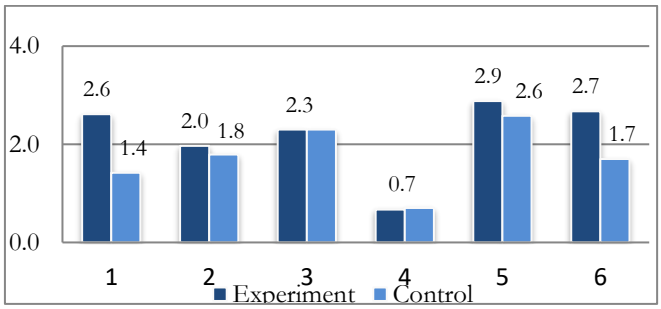


Figure 1. Diagram of Average Per-Indicator

From the figure as above, the highest average in the experimental class was in problem number five with the indicator checking the validity of an argument. In this indicator, a lot of students had answered correctly so that they get a perfect score. While the lowest mean was question number four with indicators drawing conclusions from statements, most of the students did not make logical conclusions, and some students found it difficult to draw conclusions from their answers. Likewise, the highest and lowest average scores in the control class were in questions similar to the experimental class, but had differences in average score.

Then the posttest results from the experimental class and the control class were analyzed by using a hypothesis test. Previously, the normality test was conducted first to show that both sample classes were normally distributed. The results of the normality test using the chi-square test in this study are presented in the following table 5.

Table 5. Normality Test of *Posttest*

Class	X^2_{count}	X^2_{table}	**Criteria**
Control	3,46	11,07	Normal
Experiment	6,19	11,07	Normal

Homogeneity tests are then performed to show that both sample classes have homogeneous variance. Homogeneity test results using the F test in this study can be seen in table 6 below.

Table 6. Homogeneity Test of Posttest

Variance Score of Sample	**Class**		**Fcount**	**Ftable**	**Criteria**
	Control	**Experiment**			
S	342,07	345,31	1,01	1,84	Homogen
N	33	33			

The scores of the normality test and homogeneity test for both sample classes were normally distributed and homogeneous and the hypothesis test used was the two-way ANOVA test, with a significance level of 5%. The results of the two way ANOVA test are summarized in the details below.

Table 7. Two Way Anova Results

Source of Variance	*dk*	*JK*	*RK*	*Fh*	*Ft*
Between lines (Model)A	1	2164,91	2164,91	7,58	4,00
Between Column (*Self Efficacy*)B	2	3902,05	1951,03	6,83	3,15
Interaction (*SelfEfficacy**Model) AxB	2	845,33	422,67	1,48	3,15
In	60	17142,74	285,71	-	-
Total	65	-	-	-	-

From these data it could be concluded that, the findings of the first analysis had F (A) count> F (A) tables, so there were differences in mathematical reasoning abilities between students learning with the Realistic Mathematics Education (RME) approach and students with direct learning. From the previous data analysis, the experimental class mean and control class mean were 54.85 and 43.39, respectively. The average posttest value of the experimental class was better than the average posttest value of the control class.

The findings of the study are relevant to the results of research by Afrida and Haji [29] as well as those by Lestari, Prahmana, and Wiyanti [30] that the mathematical reasoning ability of students taught using realistic mathematical approaches was higher than students with conventional learning. The results of research by Gusnarsih, Utami, and Wahyuni [31] also showed that there were differences in the improvement of students' mathematical reasoning abilities by using the Realistic Mathematics Education (RME) learning model and conventional learning models. If the treatment group was better than the control group, then the treatment given to the treatment group had a positive effect [26].

That is because the RME learning approach trains students to find mathematical concepts independently, so students do not easily forget in solving the given problems. That way students will get used to thinking to find solutions to the problems given, and the teacher acts as a facilitator to direct students in efforts to find mathematical concepts. Based on the results of the observation sheet observations of teacher and student activities stated that there was an increase in each meeting. The below table are the results of the recapitulation of the teacher's and student's activity observation sheet evaluation.

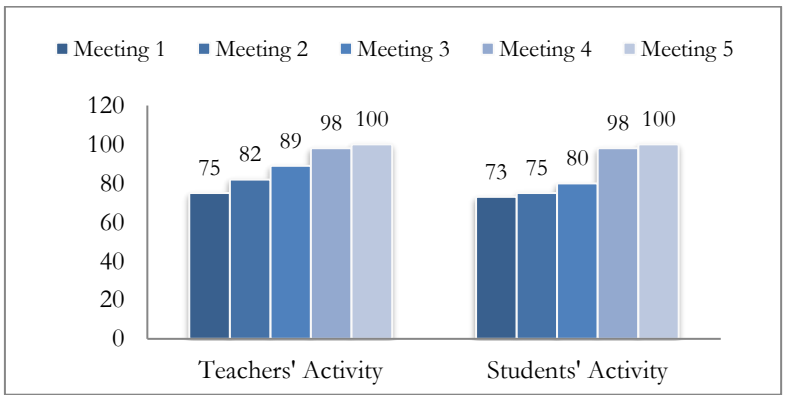


Figure 2. The recapitulation results of the observation sheet assessment

Based on Figure 2 the recapitulation results of the observation sheet assessment, the first meeting obtained a value of 75. At this first meeting there were some shortcomings in the implementation of the RME learning approach, researchers were still not accustomed to dealing with students so they felt nervous. So that some steps in the RME learning approach that have not been maximally carried out, therefore it is needed habituation in dealing with students.

Furthermore, at the second meeting a score of 82 was obtained, at this meeting there were still deficiencies in the implementation of the RME learning approach but there was an increase compared to the first meeting. Then at the third meeting a value of 89 was obtained, at this meeting researchers were getting used to interacting with students. But when students present the results of their discussions in front of the class, researchers are less able to control noisy students. Whereas at the fourth meeting a score of 98 was obtained, at this meeting the RME learning approach was implemented quite well but was not perfect.

At the fifth meeting a score of 100 was obtained, at this meeting the researcher got a value of 4 for each step in the steps of the RME learning approach which meant that for each step it was implemented well. The average obtained by researchers from the beginning of the meeting to the end of the meeting was classified in the good category with an average of 88.64.

Next will be discussed regarding the results of student activity observation sheets. Based on Figure 2, it was found that student activity in each meeting also increased. At the first meeting a value of 73 was obtained, in this meeting students were still somewhat confused in the implementation of learning with the RME learning approach. There are still many students who do not interact well during discussions. At the second meeting the value of 75 was obtained, at this meeting students had started to follow learning well and systematically but there were still students who did not participate in group activities.

At the third meeting a value of 80 was obtained, at this meeting students had begun to interact well with their group friends in discussions. This meeting was much better than the previous meeting. However, there are still some students who do not pay attention to their friends when presenting the results of their discussion. Then in the fourth meeting a score of 98 was obtained, at this meeting all students were willing to participate in the learning process, on average students had played an active role in the implementation of learning. At the fifth meeting a score of 100 was obtained, students were accustomed to learning to discuss and were accustomed to being active in expressing ideas in solving problems.

Then, the results of the second data analysis showed that F (B) count> F (B) table, so it could be concluded that there were differences in mathematical reasoning abilities in students with high, medium, and low self efficacy. Based on the average results of students' mathematical reasoning abilities, each category of self efficacy showed different results. In the category of high self efficacy students obtained an average of 55.58. Then in the medium category of self efficacy had an average of 51.86, while in category of low self efficacy students got an average of 33.08. The result was relevant to research by Sanhadi [32], which showed that there was an effect of self efficacy on mathematical reasoning abilities. It was stated that the higher the students' self efficacy, the reasoning ability could increase, and vice versa. Because, students who have high self-efficacy will have confidence, assertiveness, and are willing to take risks so that learning objectives were achieved. They believe in the results of their work which are considered more difficult. In contrast to students with low self-efficacy, they were afraid of doing assignments because they did not have confidence in the results of their work so that there would be a desire to cheat the work of their friends [33].

The third data analysis summarized that F (AxB) count <F (AxB) table, so it can be concluded that there is no interaction between the learning approach with self efficacy on students' mathematical reasoning abilities. In other words, the learning approach to mathematical reasoning ability did not depend on students 'self efficacy, and students' self efficacy towards reasoning ability does not depend on the learning approach. The results of this study were relevant to research conducted by Agustiana, Supriadi, and Komarudin [34] which stated there was no interaction between approach and self-efficacy towards increasing mathematical reasoning abilities. The findings of study are in line with

what was stated by Kerlinger, et al in Suprapto [35] which stated that the interaction did not occur if two or more independent variables carry influences separately that are very strong (significant) to the dependent variable. The separate effects of these independent variables are called the main effect.

4. Conclusion

The findings showed that there were differences in mathematical reasoning abilities between students learning with the RME approach and students with direct learning. Then there were differences in mathematical reasoning abilities in students who have high, medium and low self efficacy. Beside, there was no interaction between the application of learning approaches and self-efficacy towards students' mathematical reasoning abilities.

For further research, it is expected that good preparation so that the learning process runs smoothly, effectively, and usefully. Researchers are advised to design LAS by displaying steps so students can understand it easily and there are no misunderstandings in finding concepts. In this study only applies to material number patterns, the next researcher is expected to research with different material and classes.

5. References

[1] Permendikbud. (2014). Peraturan menteri pendidikan dan kebudayaan republik indonesia nomor 58 tahun 2014 tentang kurikulum 2013 sekolah menengah pertama/madrasah tsanawiyah.
[2] Lestari, K. E., dan Yudhanegara, M. R. (2017). *Penelitian pendidikan matematika.*Bandung: PT Refika Aditama
[3] Hendriana, H., Rohaeti, E. E.,dan Sumarmo, U. (2017).*Hard skills dan soft skills matematik siswa*.Bandung: PT Refika Aditama.
[4] Hariyani, M., dan Amir MZ, Z. (2018). Peningkatan kemampuan penalaran matematis mahasiswa pendidikan guru madrasah ibtidaiyah melalui *concept attainment model*. *Journal of Madrasah Ibtidaiyah Education*, 2(1), 119-130
[5] Nurfadhilah dan Amir MZ, Z. (2018). Kemampuan penalaran matematis melalui pembelajaran *contextual teaching and learning* (CTL) pada siswa SMP. *Jurnal Elemen*, 4(2), 171-182.
[6] Rahman, L., Fitraini, D., dan Fitri, I. (2019). Pengaruh penerapan model *discovery learning* terhadap kemampuan penalaran matematis ditinjau dari pengetahuan awal siswa SMP Negeri 3 Tambang Kabupaten Kampar.*Juring (Journal for Research in Mathematics Learning)*, 2(1), 001-010
[7] Sari, N. I. P., & Hidayanto, E. (2016). Diagnosis Kesulitan Penalaran Matematis Siswa dalam Menyelesaikan Masalah Pola Bilangan dan Pemberian Scaffolding.
[8] Marion, M., Zulkardi, Z., & Somakim, S. (2015). Desain pembelajaran pola bilangan menggunakan model jaring laba-laba di SMP. *Jurnal Kependidikan: Penelitian Inovasi Pembelajaran*, *45*(1).
[9] Anno, M., & Anno, M. 1983. Anno's Mysterious Multiplying Jar. New York: Philomel Book.
[10] NCTM. 2000. Principle and Standards for School Mathematics. USA.
[11] Kaput, J.J. 1999. "Teaching and Learning a New Algebra". In Fennema, E., & Romberg, T.A. (Eds.). Mathematics Classrooms that Promote Understanding, p. 133-155. Mahwah, NJ: Erlbaum
[12] Walle, J.A.V. 2008. Matematika Sekolah Dasar dan Menengah: Pengembangan Pengajaran. (Jilid 2). Jakarta: Erlangga
[13] Slameto. (2013).*Belajar dan faktor –faktor yang mempengaruhi*.Jakarta: Rineka Cipta.
[14] Amir, Z., dan Risnawati. (2015).*Psikologi pembelajaran matematika*. Yogakarta: Aswaja Pressindo.
[15] Masnia, F., dan Amir MZ, Z. (2019). Pengaruh penerapan model *scaffolding* terhadap kemampuan pemahaman konsep matematis berdasarkan *self efficacy* siswa SMP.*Juring (Journal for Research in Mathematics Learning)*, 2(3), 249-256.
[16] Fitri, I. (2017). *Self efficacy* terhadap matematika melalui pendekatan *aptitude treatment*

interaction. *Jurnal Review Pembelajaran Matematika*, 2(2), 167-175
[17] Amir MZ, Z., dan Muhandaz, R. (2019). Profil kesulitan belajar matematika dan *self efficacy* matematis siswa sekolah menengah di Riau. *Suska Journal of Mathematics Education*, 5(2), 141-148.
[18] Bandura. (1986). Sosial fondation of thought and a chon a social cognitive theory. Englewood Cliffs. New York: Prestice Hall
[19] Atika, N., dan Amir MZ, Z. (2016). Pengembangan LKS berbasis pendekatan RME untuk menumbuhkembangkan kemampuan berpikir kritis matematis siswa. *Suska Journal of Mathematics Education*, 2(2), 103-110
[20] Hadi, S. (2017).*Pendidikan matematika realistik: Teori, pengembangan, dan implementasinya*. Jakarta: PT RajaGrafindo Persada
[21] Herwati. (2015). Efektifitas pendekatan realistik dalam meningkatkan kemampuan penalaran matematis di SMA Negeri 1 Tembilahan Inhil Riau.*Jurnal Peluang*, 4(1), 11-14.
[22] Harahap, N. A. (2018). Efektivitas penggunaan pendekatan RME (*realistic mathematic education*) terhadap kemampuan penalaran matematis siswa di kelas XI SMA Negeri 7 Padang Sidempuan.*Jurnal MathEdu (Mathematic Education Journal)*, 1(2), 65-72.
[23] Nisa, S., Zulkardi, Z., dan Susanti, E. (2019). Kemampuan penalaran statistis siswa pada materi penyajian data histogram melalui pembelajaran PMRI.*Jurnal Pendidikan Matematika*, 13(1), 21-40
[24] Wibowo, A. (2017). Pengaruh pendekatan pembelajaran matematika realistik dan saintifik terhadap prestasi belajar, kemampuan penalaran matematis dan minat belajar. *Jurnal Riset Pendidikan Matematika*, 4(1), 1-10.
[25] Saputri, L. (2018). Pengaruh pendekatan *realistic mathematics education* (RME) terhadap kemampuan penalaran matematika siswa SMKS-PP STABAT.*Jurnal Mathematic Paedagogic*, 2(2), 180-187.
[26] Sugiyono. (2014). *Metode penelitian pendidikan pendekatan kuantitatif kualitatif, dan R&D*. Bandung: Alfabeta.
[27] Hartono. (2019). *Metodologi penelitian*. Pekanbaru: Zanafa Publishing.
[28] Sanjaya, W. (2013). *Penelitian pendidikan: Jenis, metode, prosedur*. Jakarta: Kencana Prenada Media Group.
[29] Afrida dan Haji, S. (2017). Pengaruh pendekatan matematika realistik terhadapkemampuan penalaran dan kemampuan pemahaman konsep matematika di kelas VIII SMPN 1 Selupu Rejang kabupaten Rejang Lebong.*Jurnal Pendidian Matematika Raflesia*, 2(1),128-133.
[30] Lestari, I., Prahmana, R. C. I., Wiyanti, W. (2016). Peningkatan kemampuan penalaran matematis siswa menggunakan pendekatan pendidikan matematika realistik.*Jurnal Inovasi Pendidikan Dasar*, 1(2), 1-8.
[31] Gusnarsih, D., Utami, C., dan Wahyuni, R. (2017). Pengaruh model pembelajaran *realistic mathematics education* (RME) terhadap kemampuan penalaran matematis siswa pada materi lingkaran kelas VIII. *Jurnal Pendidikan Matematika Indonesia*, 2(1), 32-36.
[32] Sanhadi, K.C.D. (2015). Pengaruh kemampuan penalaran dan *self-efficacy* terhadap hasil belajar matematika siswa kelas VIII.*Seminar Nasional Matematika dan Pendidikan Matematika UNY*, 341-350.
[33] Fitri, I. (2017). Peningkatan *self efficacy* terhadap matematika dengan menggunakan modul matematika kelas VIII SMP Negeri 2 Bangkinang. *Journal Cendekia: Jurnal Pendidikan Matematika*, 1(2), 25-34.
[34] Agustiana, N., Supriadi, N., dan Komarudin. (2019). Meningkatkan kemampuan penalaran matematis dengan penerapan pendekatan *bridging analogy* ditinjau dari keyakinan diri. *Inovasi Pembangunan - Jurnal Kelitbangan*, 7(1), 61-74.
Suprapto, E. (2015). Pengaruh model pembelajaran kontekstual, pembelajaran langung dan motivasi berprestasi terhadap hasil belajar kognitif.*INVOTEC*,11(1), 23-40.