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The Impact of Mathematical Learning based on Sorogan Methods Assisted by Peer Tutors against Students' Mathematical-Concepts Understanding

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Abstract

This study aims to determine the effect of learning with Sorogan Methods on students' mathematical-concept understanding, knowing the effect of peer tutors on students' mathematical-concept understanding and find out the increase between sorogan methods assisted peer tutor and students' mathematical-concept understanding. The method used in this study was the Quasy Experiment method, this study used a one way variance analysis (ANAVA) technique with unequal cells. The results showed that there was an influence of the Sorogan Method on students' mathematical-concept understanding, where the Sorogan Method was better than the conventional learning model. There was an influence of the Peer Tutor Method on students 'understanding of mathematical concepts, where the Peer Tutor Method was better than the Conventional Learning Model. There was an increase in the Sorogan method of peer tutor assistance on students' mathematical-concept understanding. This study shows that the Peer Tutor Assisted Sorogan method has a good effect on students' mathematical-concept understanding.

Keywords: the sorogan method, students' mathematical-concept understanding, peer tutors.

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh pembelajaran dengan metode *Sorogan* terhadap pemahaman konsep matematis siswa, mengetahui pengaruh *Tutor Sebaya* terhadap pemahaman konsep matematis siswa dan mengetahui apakah terdapat peningkatan antara metode *Sorogan* berbantu *Tutor Sebaya* terhadap pemahaman konsep matematis siswa. Metode yang digunakan adalah metode *Quasy Experiment*, penelitian ini menggunakan teknik analisis varians (ANAVA) satu jalan dengan sel tidak sama. Hasil penelitian menunjukan bahwa Terdapat pengaruh Metode Sorogan terhadap pemahaman konsep matematis siswa, dimana Metode Sorogan lebih baik daripada Model pembelajaran Konvensional. Terdapat pengaruh Metode Tutor Sebaya terhadap pemahaman konsep matematis siswa, dimana Metode Tutor Sebaya lebih baik daripada Model pembelajaran Konvensional.Terdapat peningkatan Metode Sorogan Berbantu Tutor Sebaya terhadap Pemahaman Konsep Matematis siswa. Hal ini menunjukan bahwa metode Sorogan Berbantu Tutor Sebaya berpengaruh baik terhadap Pemahaman Konsep Matematis siswa.

Kata kunci: Metode Sorogan, Pemahaman Konsep Matematis, Tutor Sebaya

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Introduction

Various basic abilities in learning mathematics include the ability to understand mathematical concepts, use reasoning, solve problems, communicate ideas, and appreciate the usefulness of mathematics in life (Novitasari & Putra, 2018; F. G. Putra, Widyawati, Asyhari, & Putra, 2018; R. W. Y. Putra, 2015; D. P. Sari, Putra, & Syazali, 2018; S. L. Sari, Masykur, & Putra, 2018; Sri Hartati, Ilham Abdullah, 2017; Wakit, 2016). The purpose of mathematical learning is to prepare students to be able to use mathematics and mathematical thinking in daily life and in learning various sciences (Septriani, 2014). In other sides, the process of mathematical learning still has many problems related to students' abilities.

One problem often encountered by students is about the ability of understanding mathematical concepts (B. Uno, 2012; Dimyanti dan Mudjiono, 2015). Students feel difficult when they are given a

different task from commonly (Rahman, 2012). This lack of mathematical-concept understanding also occurs in MTs N 1 Bandar Lampung, based on the Pre-Research conducted at MTs N 1 Bandar Lampung, students' understanding of concepts is still relatively low. Some factors that cause concept understanding are still low are inadequate methods in learning. The cause of the lows of students' concept understanding is the monotony of the learning model used and the questions given by the teacher during the learning process (Murizal, 2012). Some factors that cause concept understanding are still low are inadequate methods in learning. The cause of the lows of students' concept understanding is the monotony of the learning model used and the questions given by the teacher during the learning process. (Murizal, 2012) One learning method that can support to improve concept understanding is Sorogan methods assisted by peer tutor.

The famous learning method in the *Salaf pesantren* environment is the Sorogan method, this sorogan method requires *santri* (students) to construct their own understanding or study with their friends. The Sorogan learning system is used to shape an independent student because the learning system is directly practiced in front of the scholars (*ustadz*/teacher). The sorogan method is also known as independent learning, learning using the sorogan method focuses on individual learning (Masitoh & Prabawanto, 2016) and learning methods that are modified with peer tutors will get a good impact on learning (Heni, 2014).

Mathematical learning with the Sorogan method assisted by peer tutors in this study is that a learning method that demands every single student to face the teacher in turn to solve a tast from teacher and if there are mistakes in working on, then the teacher directly justify or give other tasks so that students understand their mistakes. In the next sorogan, students are demand to do not make the same mistakes. Students can learn the tasks after they finish the tasks first assisted by their peer tutors (Damopoli, 2011).

Research on the sorogan method has been carried out by previous researchers (Wakit, 2016) as well as various studies in improving students' understanding of mathematical concepts (Dewi Purwanti, Dinda Pratiwi, & Rinaldi, 2016; Fahrudin, 2018; Fahrudin, Netriwati, & Putra, 2018; Fatqurhohman , 2016; Fitrah, 2017; Herawati, 2010; Hidayat & Nurrohmah, 2016; Masitoh & Prabawanto, 2016; Nurintasari, 2015; Rahman, 2012; Sarniah, Anwar, & Putra, 2019; Septriani, 2014; Sri Hartati, Ilham Abdullah, 2017; Wakit, 2016). But there is no research that tries to see the effect of the sorogan method assisted by Surabaya tutors on the ability to understand students' mathematical concepts. The renewal of this research is based on previous research namely on the use of the sorogan method assisted by peer tutors on the ability to understand students' mathematical concepts. So, the purpose of this study is to find out the influence of the Sorogan Method on understanding students' mathematical concepts, to know the influence of Peer Tutors on students' mathematical concept understanding and to find out whether there is an increase between the Peer Tutor assisted Sorogan methods on understanding students' mathematical concepts.

Method

The method used in this study was a quasi-experiment with the design described in Table 1.

Tabel 1. Research Design

Group	Pre-test	Treatment	Post-Test
Experiment 1	O_1	X_1	O_2
Experiment 2	O_3	X_2	O_4
Experiment 3	O_5	X_3	O_6
Control	O_7	X_4	O_8

Notice:
O1 = pre-test given to the experimental class 1.
O2 = post-test given to the experimental class1.
O3 = pre-test given to the experimental class 2.
O4 = post-test given to the experimental class 2.
O5 = pre-test given to experimental class 3.
O6 = post-test given to experimental class 3.
O7 = pre-test given to the control class
O8 = post-test given to the control class
X_1 = the treatment of the experimental group with learning using the Sorogan method of MTs students' conceptual understanding
X2 = treatment of the experimental group with learning using the Peer Tutor method of MTs students' conceptual understanding
X3 = the treatment of the experimental group with learning using the Sorogan method with the help of Peer Tutors to the MTs students' conceptual understanding
X4 = treatment of the control group with conventional learning.

Data collection techniques that we used were observation, interviews, documentation and tests. Analysis techniques of instrument testing included tests of validity, reliability, level of difficulty and different power, while the data analysis technique used to test the hypothesis was the Anova test one way with unequal cells, with the prerequisite test using the normality test and homogeneity test. In this study, an increase in the ability to understand the concept seen from the gain analysis obtained from the pretest and posttest values. The data obtained were analyzed to find out the magnitude of the increase (gain) with the normalized gain formula (normalized gain).

Results and Discussion

In this study, the value data of mathematical-concepts understanding were obtained by trialling questions consisting of 15 about algebra in the study sample students who had obtained the learning material. The test was conducted on 30 students of class VIII MTs Negeri 1 Bandar Lampung on August 13, 2019. The characteristics of each item were analyzed using the validity test, reliability test, difficulty level test, and different power test, and analyzing the pretest data. Based on the research design, the results of the posttest test statistical data analysis can be seen in the descriptive form presented in Table 2:

Table 2. Description of Posttest Results Data Understanding Mathematical Concepts

Group	$\mathbf{X_{max}}$	$\mathbf{X_{min}}$	***Measuring Central Tendency***			**Measuring Central Tendency**	
			$\bar{x}$	M_0	M_e	R	Sd
	75	57	66,7	68	68	18	5,86
	70	50	61,66	66	64	20	6,35
	70	50	61,16	50	61	20	7,09
Control	64	43	52,76	43	53,5	21	7,42

Based on Table 2 above it can be seen that the posttest value with the highest value in the experimental class 1 is 75, experiment 2 is 70, experiment 3 is 70 and the control class is 64, while the lowest value for experimental class 1 is 57, experiment 2 is 50, experiment 3 is 50 and control class is 43. The measurement of central tendency which includes the average class (mean) for experimental class 1 is 66.7, experiment 2 is 61.66, experiment 3 is 61.16 and control class is 52, 76. While for the middle value of experimental class 1 is 68 experiments 2 that is 64, experiment 3 is 61 and the control class is 53.5 while the mode in experimental class 1 is 68, experiment 2 is 66, experiment 3 is 50 and the control class is 43. The size of the group variance includes the range or range for the experimental class 1 is 18, experiment 2 is 20 experiment 3 is 20 and the control class is 21. The standard deviation

of experimental class 1 is 5.86, experiment 2 is 6, 35, experiment 3 was 7.09 and the control class was 7.42. Prior to the Anava test, the prerequisite test is the normality and homogenity tests. The normality test is used to determine whether the data is normally distributed or not. The normality test results of the experimental class Posttest data group are presented in Table 3:

Table 3. Results of Experiment Class Normal Tests

	$\bar{x}$	S	*A*	L_{count}	L_{table}	**Test Decision**
Experiment Class	66,7	5,86	0,05	0.137	0.159	H_0 accepted
	61,66	6,35	0,05	0,100	0,159	H_0 accepted
	61,16	7,09	0,05	0.142	0.159	H_0 accepted

Based on Table 3 above, it can be seen that the final test data of the mathematical concept understanding ability of the experimental class has an average (mean) of 66.7, 61, 66 and 61.16 with standard deviation values of 5.86, 6.35 and 7, 09 then obtained L_{count}= 0.137, 0.100 and 0.142. For a sample of 30 students and the level of significance α = 0.05, obtained L_{table} = 0.159 from the calculation results shows that at the level of significance α = 0.05 and, so H_0 is accepted which means the sample comes from a normally distributed population. The results of the normality test of the ability to understand mathematical concepts by the control class students can be seen in Table 4 below:

Table 4. Control Class Normality Test Results

Control Class	$\bar{x}$	S	*A*	L_{hitung}	L_{tabel}	Keputusan Uji
	52,76	7,42	0,05	0.139	0.159	H_0 Diterima

Based on Table 4 above, it can be seen that the final test data of the mathematical concept understanding ability of the control class has an average (mean) of 52.76 and a standard deviation value of 7.42, then a Lhitung = 0.139 is obtained. For a sample of 30 students and significance level α = 0.05, L_{table} = 0.159 and $L_{count} < L_{table}$ are obtained, so H0 is accepted, which means the sample comes from a normally distributed population.

Homogeneity test is used to determine whether the four classes have relatively the same characteristics or not. Homogeneity test is performed on the dependent variable data that is understanding mathematical concepts. The homogeneity test conducted in this study is the two variance test. A summary of the results of the posttest homogeneity test can be seen in Table 5 below:

Table 5. Results of Post-Test Homogeneity

:Group	N	F_{hitung}	F_{tabel}	Decide
Experiment 1	30	1,958	7,815	H_0 diterima
Experiment 2	30			
Experiment 3	30			
Control	30			

Based on the calculation results of Table 5 above, it is obtained $F_{table} = 7.185$ and $F_{count} = 1958$, it can be seen $F_{count} < F_{table}$. Thus it can be concluded that H_0 is accepted or the sample comes from populations that have the same variance.

The next step is because the data comes from a homogeneous normally distributed population then the next one Anava analysis. One way variance analysis using a significance level of 0.05, the results of one way variance analysis test with the same cell. The summary of one way analysis of variance with cells is the same using SPSS as follows:

Table 6. Anova Test Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2988.600	3	996.200	22.117	.000

Within Groups	5224.867	116	45.042		
Total	8213.467	119			

Based on Table 6, the value of significant is obtained. = 0,000. Because the value of sig. less than 0.05. Then H0 is rejected, at least there are at least 1 pair of methods that give a different average learning outcomes. Based on the results of the ANAVA test calculation the same cell path is obtained H0 results are rejected, then then a double comparison test is done using the Scheffe method, using SPSS multiple data is obtained comparisons as in Table 7:

Table 7. S*cheffe* Analysis by using SPSS

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Experiment 1	Experiment 2	5.000*	1.733	.044	.08	9.92
	Experiment 3	5.500*	1.733	.021	.58	10.42
	kontrol	13.900*	1.733	.000	8.98	18.82
Experiment 2	Experiment 1	-5.000*	1.733	.044	-9.92	-.08
	Experiment 3	.500	1.733	.994	-4.42	5.42
	kontrol	8.900*	1.733	.000	3.98	13.82
Experiment 3	Experiment 1	-5.500*	1.733	.021	-10.42	-.58
	Experiment 2	-.500	1.733	.994	-5.42	4.42
	kontrol	8.400*	1.733	.000	3.48	13.32
Control	Experiment 1	-13.900*	1.733	.000	-18.82	-8.98
	Experiment 2	-8.900*	1.733	.000	-13.82	-3.98
	Experiment 3	-8.400*	1.733	.000	-13.32	-3.48

*. The mean difference is significant at the 0.05 level.

Notice:

μ_1 : Classes use the Sorogan Method assisted by Peer Tutors

μ_1 : Classes use the Sorogan Method

μ_1 : Classes use the Peer Tutor Method

μ_1 : Classes use the conventional learning model

Based on the results of the double compatibility test on each learning model, with a significance level of 0.05 the following conclusions are obtained:

a. At H_0: $\mu_1 \neq \mu_2$ sig. is obtained. 0.044, the value of sig. <0.05. Thus it can be concluded that H0 is rejected, meaning that there are significant differences or effects between students with the Peer Assisted Tutor Sorogan learning method and the Sorogan learning method to improve understanding of mathematical concepts.
b. H_0: $\mu_1 \neq \mu_3$ sig is obtained. 0.021 then the value of sig. <0.05. Thus it can be concluded that H0 is rejected, meaning that there are significant differences or influences between students with the Peer Assisted Tutor Sorogan learning method and the Peer Tutor learning method to improve understanding of mathematical concepts.
c. H_0: $\mu_1 \neq \mu_4$) sig is obtained. 0,000, the value of sig. <0.05. Thus it can be concluded that H0 is rejected, meaning that there are significant differences or influences between students with the Peer Assisted Tutor Sorogan learning method and Conventional learning models to improve understanding of mathematical concepts.

d. H_0: $\mu_2 = \mu_3$ the sig value is obtained. 0.994, the value of sig. > 0.05. Thus it can be concluded that H0 is accepted, meaning that there is no significant difference or influence between students with the Sorogan learning method with the Peer Tutor method to improve understanding of mathematical concepts.
e. H_0: $\mu_2 \neq \mu_4$ sig is obtained. 0,000, the value of sig. <0.05. Thus it can be concluded that H0 is rejected, meaning that there are significant differences or influences between students with the Sorogan learning method and the conventional learning model to improve understanding of mathematical concepts.
f. H_0: $\mu_3 \neq \mu_4$ sig is obtained. 0,000, the value of sig. <0.05. Thus it can be concluded that H0 is rejected, meaning that there are significant differences or effects between students with Peer Tutor learning methods and Conventional learning models to improve understanding of mathematical concepts.

Based on the value of sig. <α so that it can be concluded that there are differences or effects between experiment 1 and experiment 2, experiment 1 and experiment 3, experiment 1 and experiment 4, experiment 2 and experiment 4, experiment 3 and experiment 4. Whereas in experiment 2 and experiment 3 there is no differences or influences due to sig. > α.

This research was conducted at MTs Negeri 1 Bandar Lampung. The author took a sample of 4 classes, namely class VIIA, VIIB, VIIC, and VIID. As an experiment class 1 VIIA that was treated using the Peer Tutor Assisted Sorogan Method, the experimental class 2 VIIC that was treated using the Sorogan Method and a class VIID experiment that was treated by the Peer Tutor Method, VIIB as a control class where the learning process used conventional learning. The number of students in the experimental class numbered 90 students and the number of control class students amounted to 30 students, so the total sample was 120 students. This study consisted of independent variables (X), namely the Sorogan Method Assisted Peer Tutor, and the dependent variable (Y), namely the ability to understand mathematical concepts.

The material taught in this research is the Material of Algebra Form, then to collect data for Anova testing, the author applies the learning method of Peer Assisted Tutor Sorogan in the Material of Algebra Form as much as 4 meetings. In this study the authors provide a pretest and posttest for students conducted at the beginning and end of the meeting. Pretest and posttest given to students in the form of a description test questions to determine whether or not there is an increase in the ability to understand mathematical concepts of MTs students. The test questions are instruments that have been tested for validity, reliability, level of difficulty and difference in power.

Before the writer does the learning process, students of the experimental class and the control class have already done a Pretest test to see that all four classes have the same ability. The results obtained turned out that four classes have the same ability, then the next researcher will do the learning phase process.

In experimental class 1, the researcher applied the Sorogan method with peer tutors. The first meeting the researcher conducted the peer tutoring assisted sorogan method in accordance with the steps in the lesson plan, but students still did not understand the implementation of the peer tutored sorogan assisted method and frequent commotion in the classroom resulted in a less conducive class. At the second meeting students have begun to understand the implementation of the sorogan method with peer tutors and can conclude the material that has been explained. At the third meeting the students looked active and enthusiastic when discussing with their respective tutors. At the last meeting the researcher conducted a final test (Postest) of the ability to understand mathematical concepts, students take the test well and class conditions can be controlled.

In the experimental class 2 the researcher applied the Sorogan Method. At the first meeting the obstacles faced by the authors were noise among students who scrambled to ask for more attention, and students were not accustomed to using the sorogan learning method. Students feel embarrassed when appointed to move forward facing the teacher. At the third meeting the obstacles have been reduced and students have begun to understand about the methods applied. At the last meeting the researchers conducted a final test (Postest) ability to understand mathematical concepts, students take the test well and class conditions can be controlled.

In the experimental class 3, researchers applied the peer tutoring method. In the first study students were given group assignments to work with peer tutors, but they were still lacking in time

because when given assignments they were often seen chatting and finally given an understanding to do the task first. At the second meeting the students had begun to be conducive but there were still cool people chatting with each other. In all three students have started to be enthusiastic about their peer tutors, because if students can complete the task quickly and can work on the board the students will be given a gift by the author. At the last meeting the researcher conducted a final test (Postest) of the ability to understand mathematical concepts, students take the test well and class conditions can be controlled. In the control class, students are treated using conventional methods. At the first meeting, the second and third writers provided material and several questions to broaden the concept of the material that was presented. Constraints faced are noise among students who ask for more attention. At the last meeting the researcher conducted a final test (Postest) of the ability to understand mathematical concepts, students take the test well and class conditions can be controlled. After research both in the experimental class and in the control class have completed, then the writer can draw the conclusion that there is an influence of the Sorogan learning method assisted by peer tutors to improve students' understanding of mathematical concepts. This is supported by the results of data analysis and calculations that have been carried out. Because all four data come from normally distributed data so that it can be continued with further analysis.

The final test results show that there is an increase in the ability to understand mathematical concepts of students in the experimental class better than the control class this is due to several factors including students in the experimental class feel more comfortable with learning because in learning methods carried out in heterogeneous groups. So that students with low mathematical concept comprehension ability are encouraged and helped to follow students with high mathematical concept comprehension ability, students in the experimental class are better prepared in the learning process because in learning Peer-Assisted Sorogan Tutor students are emphasized to study first before leaving for school.

Conclusion

Based on the results of data analysis and hypothesis testing that has been done, it can be concluded that the influence of the Sorogan Method on students' understanding of mathematical concepts, where the Sorogan Method is better than the Conventional learning model. Conventional learning model. There is an increase in the Method of Sorogan Assisted Peer Tutors for Students' Understanding of Mathematical Concepts. The suggestion that can be given based on the conclusion is that the teacher can use the Srogan method in the learning process and for a future research to be able to examine the srogan method to improve the various abilities that exist in learning mathematics.

References

B. Uno, H. (2012). *Model Pembelajaran Menciptakan Proses Belajar Mengajar yang Kreatif dan Efektif*. Jakarta: PT Bumi Aksara.

Damopoli, M. (2011). *Pesantren Modern Immim (Pencetak Muslim Modern)*. Jakarta: Rajawali Press.

Dewi Purwanti, R., Dinda Pratiwi, D., & Rinaldi, A. (2016). Pengaruh Pembelajaran Berbantuan Geogebra Terhadap Pemahaman Konsep Matematis Ditinjau Dari Gaya Kognitif. *Al-Jabar*, *7*(1), 115–122.

Dimyanti dan Mudjiono. (2015). *Belajar dan Pembelajaran*. Jakarta: Rineka Cipta.

Fahrudin. (2018). Pembelajaran Problem Solving Modifikasi untuk Meningkatkan Kemampuan Pemahaman Konsep Matematis Siswa SMP 1. *Desimal: Jurnal Matematika*, *1*(2), 181–189.

Fahrudin, Netriwati, & Putra, R. W. Y. (2018). Pembelajaran Problem Solving Modifikasi untuk Meningkatkan Kemampuan Pemahaman Konsep Matematis Siswa SMP. *Desimal : Jurnal Matematika*, *1*(2), 181–189.

Fatqurhohman, F. (2016). Pemahaman Konsep Matematika Siswa dalam Menyelesaikan Masalah

Bangun Datar. *JIPM (Jurnal Ilmiah Pendidikan Matematika)*, *4*(2), 127–133.

Fitrah, M. (2017). Pembelajaran Berbasis Masalah Untuk Meningkatkan Pemahaman Konsep Matematika Pada Materi Segiempat Siswa SMP. *KALAMATIKA Jurnal Pendidikan Matematika*, *2*(1), 51–70.

Heni, D. M. (2014). Efektivitas Model Pembelajaran Kooperatif Tipe Student Teams Achievement Divisions (STAD) Yang Dimodifikasi Dengan Tutor Sebaya Ditinjau Dari Kecerdasan Majemuk Siswa. *Jurnal Edutama*, *1*(1), 1–7.

Herawati, O. (2010). Pengaruh Pembelajaran Problem Posing terhadap Kemampuan pemahaman Konsep Matematika Siswa Kelas XI IPA SMA Negeri 6 Palembang. *Jurnal Pendidikan Matematika*, *4*(1), 70–80.

Hidayat, R., & Nurrohmah. (2016). Analisis Peningkatan Kemampuan Pemahaman Konsep Matematis Siswa MTs Lewat Penerapan Model Pembelajaran Problem Based Learning Berbantuan Software Geogebra Berdasarkan Kemampuan Awal Matematika. *JPPM*, *9*(1), 12–19.

Masitoh, I., & Prabawanto, S. (2016). Peningkatan Pemahaman Konsep Matematika dan Kemampuan Berfikir Kritis Matematis Siswa Kelas V Sekolah Dasar Melalui Pembelajaran Eksloratif. *EduHumaniora: Jurnal Pendidikan Dasar*, *7*(2), 186–197.

Murizal, A. (2012). Pemahaman Konsep Matematis dan Model Pembelajaran Quantum Teaching. *Jurnal Pendidikan Matematika*, *1*(1), 19–23.

Novitasari, & Putra, R. W. Y. (2018). Analisis Proses Berpikir Kritis Dalam Memecahkan Masalah Matematika Ditinjau Dari Tipe Kepribadian Rational Dan Guardian. *Jurnal Pendidikan Matematika*, *2*(2), 1–13.

Nurintasari, A. (2015). Pengembangan Lembar Aktivitas Siswa (LAS) Matematika Berbasis Metode Penemuan Terbimbing Untuk Memfasilitasi Pencapaian Pemahaman Konsep dan Keaktifan Belajar Siswa Kelas VII pada Pokok Bahasan Segi Empat. Universitas Islam Negeri Sunan Kalijaga.

Putra, F. G., Widyawati, S., Asyhari, A., & Putra, R. W. Y. (2018). The Implementation of Advance Organizer Model On Mathematical Communication Skills in terms of Learning Motivation. *Tadris : Jurnal Keguruan Dan Ilmu Tarbiyah*, *3*(1), 41–46.

Putra, R. W. Y. (2015). Pembelajaran Konflik Kognitif Untuk Meningkatkan Kemampuan Komunikasi Matematis Siswa Berdasarkan Kategori Pengetahuan Awal Matematis SMA. *Al-Jabar : Jurnal Pendidikan Matematika*, *6*(2), 155–166.

Rahman, A. (2012). Implementasi CTL dalam Meningkatkan Pemahaman Konsep Matematika Siswa. *Journal Pendidikan Matematika UNP*, *1*(1).

Sari, D. P., Putra, R. W. Y., & Syazali, M. (2018). Pengaruh Metode Kuis Interaktif Terhadap Kemampuan Pemecahan Masalah Matematis Mata Kuliah Trigonometri. *JPM : Jurnal Pendidikan Matematika*, *12*(2).

Sari, S. L., Masykur, R., & Putra, R. W. Y. (2018). Penerapan Strategi The Firing Line Untuk

Meningkatkan Kemampuan Pemahaman Konsep Matematis Siswa SMP. *Jurnal Program Studi Pendidikan Matematika*, *7*(2), 229–236.

Sarniah, S., Anwar, C., & Putra, R. W. Y. (2019). Pengaruh Model Pembelajaran Auditory Intellectually Repetition terhadap Kemampuan Pemahaman Konsep Matematis. *Journal of Medives: Journal of Mathematics Education IKIP Veteran Semarang*, *3*(1), 87–96.

Septriani, N. (2014). Pengaruh penerapan pendekatan scaffolding terhadap kemampuan pemahaman konsep matematika siswa kelas VIII SMP Pertiwi 2 Padang. *Jurnal Pendidikan Matematika*, *3*(3).

Sri Hartati, Ilham Abdullah, S. H. (2017). Pengaruh Kemampuan Pemahaman Konsep, Kemampuan Komunikasi Dan Koneksi Terhadap Kemampuan Pemecahan Masalah. *JPM : Jurnal Pendidikan Matematika*, *11*(2).

Wakit, A. (2016). Efektivitas Metode Sorogan Berbantuan Tutor Sebaya Terhadap Pemahaman Konsep Matematika. *JES-MAT (Jurnal Edukasi Dan Sains Matematika)*, *2*(1).