ISSN 2502-5872 (Print)
ISSN 2622-3627 (Elektronik)

Volume 8 Number 3, August 2023, 771-784

THE INFLUENCE OF THE PROBLEM-BASED LEARNING MODEL ON THE LEARNING OUTCOMES OF SEVENTH-GRADE STUDENTS JUNIOR HIGH SCHOOL

Shela Mardha Khalifah[1], Agus Susanta[2*], Hari Sumardi[3], Edi Susanto[4]
[1,4]Departement of Mathematics Education, Universitas Bengkulu, Bengkulu Province, Indonesia
[2,3]Departement of Magister Mathematics Education, Universitas Bengkulu, Bengkulu Province, Indonesia

*Correspondence: agussusanta@unib.ac.id

ABSTRACT
Learning outcomes, especially mathematics, are still low both at the international and national levels. The results of the 2021 minimum competency assessment show that student achievement in Indonesia is still low. This requires educators to be more innovative in learning in class so that they can support students' thinking skills. This study aims to determine the effect of the Problem-Based Learning model on the mathematics learning outcomes of seventh-grade students of junior high school number 1 in North Bengkulu. This research is a quasi-experimental type with Nonequivalent Pretest-Posttest Control Group Design. The population in this study were all students of seventh-grade students of junior high school number 1 in North Bengkulu. The sample selection used a simple random sampling technique with class VII D as the experimental class and class VII E as the control class. Data collection was carried out using a test using the research instrument, namely the learning achievement test. Data were analyzed using the t-test statistic. The results showed that there was a significant effect of the problem-based learning model on the social arithmetic learning outcomes of seventh-grade students of Junior High School 1 in North Bengkulu.
Keywords: Experimental Research, Learning Outcomes, Problem-Based Learning

How to Cite: Khalifah, S. M., Susanta, A., Sumardi, H., & Susanto, E. (2023). The Influence of The Problem-Based Learning Model on The Learning Outcomes of Seventh-Grade Students Junior High School. *Mathline: Jurnal Matematika dan Pendidikan Matematika, 8*(3), 771-784. http://doi.org/10.31943/mathline.v8i3.339

PRELIMINARY

Mathematics is a subject that has an important role, not only in education but also in everyday life. In the world of education, mathematics is used as basic knowledge for students to understand other subjects. Whereas in everyday life mathematics makes it easier for someone to carry out various activities. This shows that mathematics is not only limited to calculating and applying formulas but is also useful for solving problems in everyday life. For this reason, mathematics is one of the subjects that must be studied at every level of education so that students can think logically, analytically, critically, systematically, clearly, and creatively (Hadi, et al., 2020). However, in reality, the large role of mathematics in life is not matched by students' interest in learning mathematics.

Students think that mathematics is a complex and difficult subject to understand (Kamarullah, 2017). Such student thinking causes a lack of student participation in the learning process.

Therefore, efforts are needed so that students are active in the process of learning mathematics. Some efforts that teachers can make include making various changes such as learning models, teaching and learning activities, assessment techniques, and so on (Jusriawan, et al., 2020). Teachers as facilitators in developing students' abilities need to carry out innovative learning (Susanta, et al., 2022). In addition, learning mathematics students must be designed in such a way as to provide sufficient opportunities for students to train, develop and improve their mathematical literacy skills to improve learning outcomes (Firdaus, et al., 2021). In presenting teaching materials, must be interesting so that it is easy for students to understand (Fitri, et al., 2021). The success of students in the learning process can be seen from the achievement of their learning outcomes because good learning results also indicate a good learning process (Sandri, 2018). Educators must be able to innovate in designing learning in the classroom so that learning objectives are achieved (Susanto, et al, 2021).

Based on the results of observations during the second internship which was conducted from October to December 2021 at junior high school number 1 in North Bengkulu, it is known that the learning outcomes of seventh-grade students are still categorized as low. This can be seen from the value of the Final Semester Assessment that there are still many students who get scores below the Minimum Completeness Criteria, namely 70. At Junior high school number 1 in North Bengkulu in seventh grade there are 10 classes, out of 10 classes the average score The highest average was obtained for class VII B with an average value of 46.40 apart from that class getting an average below 45. This could happen because the implementation of the 2013 Curriculum was not optimal, namely, the learning process was still teacher-centered. Teachers still apply the expository method in their learning, in which students tend to only accept everything that is given by the teacher.

This causes students in the learning process to become passive, class activity is only dominated by smart students, students only memorize learning material without understanding concepts, and students can only work on questions according to the examples given by the teacher. Based on these problems, we need alternative learning that stimulates students to be active in discussing and working with friends in processing their

learning material to get the concept of the material being studied. To overcome these problems, one effort that can be done is to apply the problem-based learning (PBL) model.

The selection of the problem-based learning model is based on several arguments, First, the Problem-Based Learning model is a model that presents contextual problems so that it can stimulate students to learn besides that students work in teams to increase interaction between students (Farida, et al., 2019). Second, according to Ismail, another advantage of PBL is generating ideas and encouraging students to debate certain issues being studied to gain new knowledge from these activities (Samsudin, et al., 2021). Third, with the PBL model students are directly involved in carrying out the stages of activities to solve a problem in their way so that they can increase their creativity and deepen their knowledge (Yustianingsih, et al., 2017). Fourth, according to Ibrahim with the Problem-Based Learning model, students can develop thinking skills, develop independence, problem-solving, and intellectual skills from the real problems given (Sariningsih & Purwaningsih, 2017). And fifth, with the widest possible opportunities for independent learning and activities in the Problem-Based Learning model, it is hoped that it can help students understand the concepts being studied (Susanti & Yarah, 2022). Research by Susanta & Susanto (2020) shows that the application of problem-based learning can support students' self-confidence.

The PBL learning model has stages that require students to be active in the learning process, namely: student orientation to problems, organizing students to learn, guiding investigations, developing and presenting work, and evaluating problem-solving processes (Rusmono, 2017). One of the materials that are suitable to be applied with the PBL learning model is social arithmetic. Social arithmetic material meets interdisciplinary needs, because concepts in social arithmetic can be used in mathematics lessons but can also be used in economics lessons (Rokhim, et al., 2019). In addition, social arithmetic material places more emphasis on students' understanding of concepts and requires students to solve problems in the form of word problems related to everyday life (Kolo, et al., 2021). So arithmetic material is very suitable to be applied to the PBL learning model because it has similarities, namely discussing real problems in the daily lives of students.

Based on the description above, the purpose of this research is to find out whether there is an effect of applying the problem-based learning model to the results of learning mathematics on social arithmetic material in junior high schools in North Bengkulu.

METHODS

The type of research used was a quasi-experimental design in the form of a Nonequivalent Pretest-Posttest Control Group Design. Selection of the sample using simple random sampling. According to Sugiyono (2018), simple random sampling is taking sample members from a population that is carried out randomly without regard to the strata in the population. In this study, the sample selected from the population was class VII D, totaling 32 people as the experimental class, and class VII E, totaling 31 people as the control class.

The research instrument in this study was a learning achievement test in the form of an initial ability test (pretest) and a final ability test (posttest) consisting of 6 descriptive questions to measure student learning outcomes. The learning outcomes test was seen the logical validity test, Hoyt reliability, and question reliability. Logical validity analysis uses Aiken V with the formula $V = \frac{\sum n_i \mid i-r \mid}{N\,(t-1)}$ (1)

The following are the criteria used to interpret the degree of validity of the test instrument based on the Aiken index (Irawan & Wilujeng, 2020)

Table 1. Aiken Validity Criteria

Validity Index	Validity Interpretation
$0.80 < V \leq 1.00$	Very Valid
$0.40 < V \leq 0.80$	Valid
$0.00 \leq V \leq 0.40$	Invalid

The test instrument is acceptable if the value of V > 0.40. Based on the results of the calculation of the Aiken validity test, the following results are obtained.

Table 2. Aiken Validity Test Results

Question	Validity Index	Validity Interpretation
1	0.90	Very Valid
2	0.93	Very Valid
3	0.95	Very Valid
4	0.94	Very Valid
5	0.91	Very Valid
6	0.83	Very Valid

In Table 2, it can be seen the results of the logical validity test using the Aiken V formula by the three validators. All test questions on the test instrument are at very valid interpretation with an index value of > 0.80. So, it can be concluded, all items can be used in this study. Furthermore, the Hoyt reliability analysis uses the Hoyt ANOVA calculation with the following formula $r_{11} = 1 - \frac{MK_e}{MK_s}$ (2)

The criteria used to assess whether an instrument is reliable is if the value of $r_{11} > 0.40$. Conversely, if an instrument has a value of $r_{11} \leq 0.40$, the instrument is declared unreliable.

Table 3. Hoyt Reliability Test Results

question	R-value	Interpretation
1-6	0.92	Reliable

Table 3, it can be seen the results of the Hoyt reliability test by the three validators. All test questions on the test instrument are said to be reliable with a value of $r_{11} > 0.40$. So, it can be concluded, all items can be used in this study.

Furthermore, the reliability test was carried out to see the consistency of the research test instrument. Test the reliability of the items using Alpha Cronbach calculations with the following formula.

$$r = \left(\frac{n}{n-1}\right)\left(1 - \frac{\sum s_i^2}{s_t^2}\right) \qquad (3)$$

The following are the criteria used to interpret the degree of reliability of questions based on Guilford's criteria.

Table 4. Question Reliability Criteria

Correlation coefficient	Interpretation
$0.90 < r \leq 1.00$	Very high
$0.70 < r \leq 0.90$	high
$0.40 < r \leq 0.70$	Moderate
$0.20 < r \leq 0.40$	Low
$r \leq 0.20$	Very low

(Lestari & Yudhanegara, 2018)

The question is said to be reliable if it is in the medium to very high category with a value of $r > 0.40$. Based on the results of the calculation of the reliability test of the questions, the following results are obtained.

Table 5. The Question Reliability Test Result

Question	R-Value	Interpretation
1-6	0.92	Reliable

In table 5, you can see the results of the reliability test of the questions in the trial class. The test instrument is said to be reliable because the value of $r = 0.92$ is in the very high category. Therefore, it can be concluded that the questions are reliable and feasible to use.

Then the data is tested for prerequisites, namely the normality test using the Shapiro-Wilk test and the homogeneity test using the Fisher test with a significant level of 5% or 0.05. In this study, the hypothesis was formulated to know the effect of the application of the problem-based learning model on student learning outcomes in social arithmetic material. The hypothesis is as follows.

H_0 = There is no effect of applying the Problem-Based Learning model to the results of learning mathematics on social arithmetic material for class VII students Junior high School 1 in North Bengkulu

H_1 = There is an effect of applying the Problem-Based Learning model to the results of learning mathematics on social arithmetic material for class VII students Junior high School 1 in North Bengkulu

Data analysis techniques in this study used descriptive analysis and inferential analysis. The descriptive analysis serves to describe student learning outcomes, while inferential analysis is used to determine the effect of applying the problem-based learning model on student learning outcomes. Inferential analysis was carried out using the t-test (Independent Sample t-Test) by first conducting a prerequisite test, namely the normality test using Shapiro Wilk and the homogeneity test using Fisher. The t-test formula is as follows.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{S^2_{pooled}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} \qquad (4)$$

Testing this hypothesis is carried out at a significant level a = 0.05 with degrees of freedom dk = n1 + n2 – 2. The test criteria are H_0 is accepted if $t_{table} < t_{count} < t_{table}$ and H_0 is rejected for other t values.

RESULT AND DISCUSSION

This research was conducted at junior high school in North Bengkulu from 12 May to 2 June 2022 with six learning meetings, namely one pretest meeting, four learning meetings, and one posttest meeting. Before the pretest-posttest questions are used, the questions are validated first by the validator. After being analyzed by the validator and the questions were declared fit for use. Then the questions were given to the two sample classes, the pretest and posttest learning results were obtained as follows:

Table 6. Pretest Data for Experimental Class and Control Class

Description	Experiment Class	Control Class
Total of Students	32	31
Mean	28.87	28.54
Highest score	45	43
Lowest Score	15	13
Deviation Standard	8.4	8.9
Varians	70.56	79.98

In table 6 it can be seen that the two sample classes obtain mean values and variances that are not much different, so it can be concluded that the two sample classes have the same initial abilities.

Table 7. Posttest data for experimental class and control class

Description	Eksperiment Class	Control Class
Total of Students	32	31
Mean	68.37	55.61
Highest score	100	91
Lowest Score	41	26
Deviation Standard	16.94	17.62
Varians	287.21	310.51

In table 7 it can be seen that the average posttest result of the experimental class is higher than that of the control class, which means that learning using the problem-based learning model is better than expository learning on social arithmetic material.

After obtaining the results of learning mathematics from students in the experimental class and control class, then a prerequisite analysis test was carried out, namely the normality and homogeneity tests. Based on the results of normality test calculations, the following results are obtained.

Table 8. Normality Test Results

Test	Class	T_3 count	*P-value*	Interpretation
Pretest	Eksperiment	0.956	0.930	Data is normally distributed
	Control	0.945	0.929	Data is normally distributed
Posttest	Eksperiment	0.949	0.930	Data is normally distributed
	Control	0.963	0.929	Data is normally distributed

Based on Table 8 it can be seen that tcount > p-value, it can be concluded that each learning outcome data studied comes from a normally distributed population. Furthermore, the results of the calculation of the homogeneity test obtained the following results.

Table 9. Homogeneity Test Results

Test	F_{count}	F_{tabel}	Interpretation
Pretest	1.13	1.84	Homogen
Posttest	1.04	1.84	Homogen

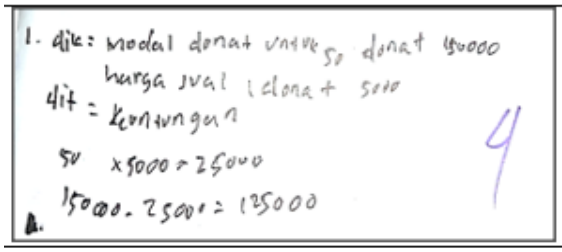
Based on table 9 it can be seen that the value of $F_{count} < F_{table}$, it can be concluded that the data on student learning outcomes in the two sample classes has a homogeneous distribution of data. After the learning outcomes data has met the criteria of normal and homogeneous distribution, then the data is then analyzed using the calculation of the t-test to test the hypothesis. The results of the calculation of the hypothesis test obtained the following results:

Table 10. Hypothesis Test Results

T_{count}	T_{tabel}	Interpretation
2.95	2.00	H_0 rejected

Based on table 10 it can be seen that Tcount > Ttable, then H_0 is rejected. So, it can be concluded that there is an influence of the problem-based learning model on the results of learning mathematics on social arithmetic material for class VII students of North Bengkulu 1 Public Middle School. In addition, in terms of the average value of learning outcomes, the class that applied the problem-based learning model was 68.37, which was 68.37 greater than the learning outcomes of the class that applied expository learning, namely 55.61.

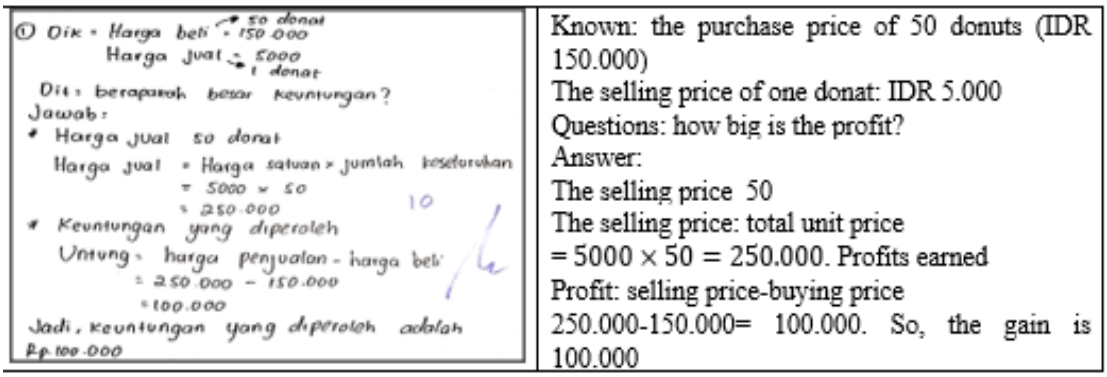
The results obtained in this study are in line with Trianto's opinion which says that the Problem-Based Learning model helps students in cultivating inquiry traits and problem-solving skills because the findings obtained can last a long time, so the learning outcomes obtained are better (Afandi, et al., 2013). In addition, according to Kurniasih, if PBL steps are carried out systematically, it will be able to develop students' abilities to solve problems and master knowledge according to certain basic competencies (Siagian, et al., 2020). Based on the results obtained by researchers in the field, when giving posttest questions there are differences in how to answer in the experimental class and the control class. The experimental class is more thorough and complete than the control class.



	In English Known: The Capital of Donut Cake is IDR. 150.000, The selling price of one donut IDR. 5.000 Question: Profit $50 \times 5000 = 25000$ $150.000 - 25000 = 125.0000$

Figure 1. Answer Number 1 of Control Class Students

Figure 1 shows that the control class students did not write down the answer process correctly because the students did not write down the formula and were not careful in the calculations. The formula is an important thing to write down in answering questions so that it is clear where the numbers in the solution come from. Therefore students do not get the maximum score.



	Known: the purchase price of 50 donuts (IDR 150.000) The selling price of one donat: IDR 5.000 Questions: how big is the profit? Answer: The selling price 50 The selling price: total unit price $= 5000 \times 50 = 250.000$. Profits earned Profit: selling price-buying price 250.000-150.000= 100.000. So, the gain is 100.000

Figure 2. Answers to Number 1 Experiment Class Students

Figure 2 shows that the experimental class students were able to answer these questions correctly and completely. This can be seen from students writing down known, asked, formulas, conclusions, and correct calculations.

In the previous explanation, there are several explanations from the answers to the post-test questions of students in the experimental class and the control class. The post-test questions given consist of 6 essay questions. The average post-test item scores in the experimental class and control class are as follows.

Table 11. Recapitulation of Average Scores Each Question

Question	Mean Score	
	Eksperiment	Control
1	6.42	4.29
2	7.62	7.22
3	5..34	3.45
4	7.53	6.25
5	7.40	6.48
6	6.68	6.09

In Table 11 it can be seen that the average value per question of students in the experimental class is higher than the control class. This can be seen from the thorough and complete way of answering students. There were some students in the control class who answered well, but there were still some students who were less thorough or didn't even answer the question.

In addition to these reasons, based on the analysis conducted by the researcher, there are several factors that cause differences in answers between the control class and the experimental class. The main cause is the difference in the learning model used and the use of learning media in the form of student worksheets. In the experimental class in the learning process, students are required to be active in discussing, gathering information, processing data, and asking and answering problems. Because in the PBL learning model students are directed to find learning concepts independently through problems given to student worksheets with their groups which makes students' memories of learning material last a long time. In line with this, finding, investigating, and developing a problem yourself will be able to increase your understanding of concepts and produce knowledge that is long-lasting in memory (Zulfikar, et al., 2020). In addition, the steps in PBL-based student worksheets help students in the learning process, namely making students trained to solve problems regularly and systematically. In addition, with PBL-based student worksheets, students are also accustomed to analyzing questions and can answer questions correctly and appropriately.

In the control class that uses expository learning, students tend to be passive in the learning process because learning is still teacher-centered, namely the teacher delivers material in front of the class and students only receive the material presented. Students in obtaining learning material in the form of understanding, formulas, and examples of questions only from the teacher's explanation in front of the class. This causes learning materials to be easily forgotten by students because there is no direct involvement in discovering the concepts of learning materials. So that on average students only memorize learning material without understanding concepts, which means that students in learning only rely on memories of formulas and solutions taught by the teacher, so if students are given questions that are different from the examples, students are not able to solve them. In addition, there is no use of learning media such as student worksheets which makes students less trained in answering questions and affects their learning outcomes.

Based on the previous explanation, it can be seen that there are many causes of differences in how to answer in the experimental class or class that uses the Problem-Based

Learning learning model and the control class or class that uses expository learning. This difference causes the learning outcomes of the experimental class to be higher than the learning outcomes of the control class, namely the experimental class obtains an average posttest score of 68.375 while the control class obtains an average posttest score of 55.613.

The results of this study are in line with previous research, namely research conducted by Ajria, et al. (2018), where there was an increase in collaboration and thematic learning outcomes of students after the implementation of the problem-based learning model. Furthermore, research by Rahayu & Istikomah (2020) results shows that the application of the problem-based learning model can improve the learning process of students and improve learning outcomes. Likewise, the results of Darlin & Fathonah's research (2021) show that students' learning outcomes in mathematics using the problem-based learning model are higher than students who use direct learning.

The results of this study indicate that there is an influence of problem-based learning models on improving student learning outcomes. This finding is implicit in classroom learning. Teachers can use these findings as a reference in improving students' ability to master mathematics material in class. In addition, the PBL model can be integrated into the form of technology-based teaching materials so as to make it easier for students to use teaching materials. Although this research has been able to prove the findings that applying the PBL model will be effective in improving learning outcomes, there are some limitations in this study that can be considered as improvements for the reader. In its implementation, it has limitations from the diversity of subjects that only come from one school. In addition, the time design of teaching materials is important to review so that it does not have an impact on the application of teaching materials that are less than optimal.

CONCLUSION

Based on the results of the study, it can be concluded that there is a significant influence of the application of the problem-based learning model on the mathematics learning outcomes of seventh-grade students junior high school number 1 in North Bengkulu. It is shown that the average class learning result of the problem-based learning model is 68.37, which is greater than the class that applies expository learning, namely 55.61. Suggestions from this study are teachers can use problem-based learning models in supporting student learning outcomes.

REFERENCES

Afandi, M., Chamalah, E., & Wardani, O. P. (2013). Model dan Metode Pembelajaran di Sekolah. UNISSULA press 2013.

Ajria, N. F., Ismanto, B., & Kristin, F. (2018). Peningkatan Kerjasama dan Hasil Belajar Tematik Melalui Model Pembelajaran Problem Based Learning Naturalistic: *Jurnal Kajian Penelitian Pendidikan Dan Pembelajaran*, 3(1), 254–268. https://doi.org/10.35568/naturalistic.v3i1.274

Darlin, I & Fathonah, N. (2021). Pengaruh Model Pembelajaran Problem Based Learning Terhadap Hasil Belajar Matematika Peserta Didik Kelas VIII SMP Negeri 48 Surabaya. *Pedagogy*, 6(1), 104–115. https://doi.org/10.30605/pedagogy.v6i1.1237

Farida, N., Hasanudin., & Suryadinata, N. (2019). Problem Based Learning (PBL) -QR-Code Dalam Peningkatan Hasil Belajar Matematika Peserta Didik. *Aksioma* (Jurnal Program Studi Pendidikan Matematika), 8(1), 225–236. https://doi.org/10.24127/ajpm.v8i1.1894

Fitri, J. A., Sumardi, H., & Susanto, E. (2021). Analisis Buku Teks Matematika Kelas VII Semester II Kurikulum 2013 Terbitan Erlangga Berdasarkan Pendekatan Saintifik. *Didactical Mathematics*, 3(2), 1-11. https://doi.org/10.31949/dm.v3i2.1351

Firdaus, A., Asikin, M., Waluya, B., & Zaenuri, Z. (2021). Problem Based Learning (PBL) Untuk Meningkatkan Kemampuan Matematika Peserta Didik. *Qalamuna: Jurnal Pendidikan, Sosial, Dan Agama*, 13(2), 187–200. https://doi.org/10.37680/qalamuna.v13i2.871

Hadi, F. Z., Fathurrohman, M., & Hadi, C. A. (2020). Kecemasan Matematika Dan Kemampuan Berfikir Kritis Matematis Peserta Didik Di Sekolah Menengah Pertama.. *AJME(Algoritma Jurnal of Mathematics Education)*, 2(1), 59–72. http://dx.doi.org/10.15408/ajme.v2i1.16312

Irawan, E., & Wilujeng, H. (2020). Development of an Online Mathematical Misconception Instrument. *Journal of Physics: Conference Series*, 1657, 012080.

Jusriawan, J., Samparadja. H., & Haji, S. (2020). Pengaruh Penggunaan Model Problem Based Learning Terhadap Hasil Belajar Matematika Untuk Soal Non Rutin Peserta Didik Kelas VII SMP Negeri 1 Molawe. *Jurnal Penelitian Pendidikan Matematika*, 8(3), 337–350. https://doi.org/10.36709/jppm.v8i3.16578

Kamarullah. (2017). Pendidikan Matematika Di Sekolah Kita, *Al Khawarizmi: Jurnal Pendidikan Dan Pembelajaran Matematika*, 1(1), 21–32. http://dx.doi.org/10.22373/jppm.v1i1.1729

Kolo, S., Nahak, S., & Disnawati, H. (2021). Penggunaan Model Pembelajaran Problem Based Learning Untuk Meningkatkan Hasil Belajar Peserta Didik Materi Aritmetika Sosial. *Range (Jurnal Pendidikan Matematika)*, 2(2), 115–122 https://doi.org/10.32938/jpm.v2i2.698

Lestari, K. E & Yudhanegara, M. (2018). Penelitian Pendidikan Matematika. PT Refika Aditama.

Rahayu, S & Istikomah, E. (2020). Model Problem-Based Learning untuk Meningkatkan Hasil Belajar Matematika Peserta Didik pada Materi Aritmetika Sosial. *Aksiomatik*, 8(1), 60–63. https://journal.uir.ac.id/index.php/AKS/article/view/3972

Rokhim, A. F., Amin, S. M., & Fuad, Y. (2019). Keefektifan Problem Based Learning pada Materi Aritmetika Sosial Kelas VII SMP. *Kreano, Jurnal Matematika Kreatif-Inovatif*, *10*(1), 10-17. http://dx.doi.org/10.15294/kreano.v10i1.16097

Rusmono. (2017). Strategi Pembelajaran dengan Problem Based Learning Itu Perlu. Ghalia Indonesia.

Samsudin, E. N., Murniningsih., & Mustadi, A. (2021). Problem-Based Learning in Basic Education. Al-Ishlah: Jurnal Pendidikan, 13(3), 2801–2809. https://doi.org/10.35445/alishlah.v13i3.749

Sandri, M. (2018). Pengaruh Media Lagu Terhadap Hasil Belajar Matematika Pada Materi Sifat-Sifat Bangun Datar Peserta Didik Kelas 5 SD Negeri 5 Kota Bengkulu, *JNPM (Jurnal Nasional Pendidikan Matematika)*, 2(1), 1–8. http://dx.doi.org/10.33603/jnpm.v2i1.698

Sariningsih, R & Purwaningsih, R. (2017). Pembelajaran Problem Based Learning Untuk Meningkatkan Kemampuan Pemecahan Masalah Matematis Dan Self Efficacy MahaPeserta Didik Calon Guru. *JNPM (Jurnal Nasional Pendidikan Matematika)*, 1(1), 163–177. http://dx.doi.org/10.33603/jnpm.v1i1.275

Siagian, T. A., Muchlis, E. E., & Oktavia, R. D. (2020). Pengaruh Model Problem Based Learning Terhadap Hasil Belajar Peserta Didik Kelas VII SMP Negeri 10 Kota Bengkulu, *JP2MS*, 4(2), 124–135. https://doi.org/10.33369/jp2ms.4.2.124-135

Sugiyono. (2018). Metode Penelitian Kuantitatif, Kualitatig, dan R&D. Bandung: Alfabeta.

Susanta, A., Koto, I., & Susanto, E. (2022). Teachers' Ability in Writing Mathematical Literacy Module Based on Local Context. Education Quarterly Reviews, 5(3), 173-179. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4185465

Susanti, I & Yarah, S. (2022). Penerapan Model Pembelajaran Problem Based Learning (PBL) Terhadap Hasil Belajar MahaPeserta Didik Program Studi Pendidikan Profesi Bidan. *Jurnal Dedikasi Pendidikan*, 6(2), 425–434. http://jurnal.abulyatama.ac.id/index.php/dedikasi

Susanto, E., Rusdi, R., & Susanta, A. (2021). Pembelajaran Matematika Realistik Berbasis Budaya Masyarakat Bengkulu dalam meningkatkan Komunikasi Matematis Mahasiswa. *Jurnal Pendidikan Matematika Raflesia*, *6*(1), 39-49. https://doi.org/10.33369/jpmr.v6i1.13601

Yustianingsih, R., Syarifuddin, H., & Yerizon, Y. (2017). Pengembangan Perangkat Pembelajaran Matematika Berbasis Problem Based Learning (PBL) Untuk Meningkatkan Kemampuan Pemecahan Masalah Peserta Didik Kelas VII. *JNPM (Jurnal Nasional Pendidikan Matematika)*, 1(2), 258–274. http://dx.doi.org/10.33603/jnpm.v1i2.563

Zulfikar, Z., Kodirun, K., & Rahmat, R. (2020). Pengaruh Model Problem Based Learning Terhadap Pemahaman Konsep Matematis Peserta Didik SMP Negeri 4 Tomia .*Jurnal Penelitian Pendidikan Matematika*, 8(1), 81–94. http://dx.doi.org/10.36709/jppm.v8i1.11123