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THE EFFECT OF PROBLEM BASED LEARNING MODEL ASSISTED BY E-LKPD BASED ON WIZER.ME WEBSITE ON MATHEMATICAL PROBLEM SOLVING ABILITY

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ABSTRACT
This study was motivated by the low mathematical problem-solving ability of students due to the lack of effective learning models being implemented. One alternative that can be used is the *Problem-Based Learning* (PBL) model combined with an e-LKPD based on the Wizer.me website. This study aims to determine the effect of implementing PBL assisted by e-LKPD Wizer.me on students' mathematical problem-solving abilities. The research instrument was a mathematical problem-solving ability test, and the data were analyzed using descriptive statistics, normality test, homogeneity test, *independent sample t-test*, and N-gain. The results showed that the mean pretest–posttest scores of the experimental class were 47.91–83.32, while the control class scored 42.82–77.15. The N-gain of the experimental class was 0.6815 and the control class 0.5891 (both in the medium category). The *t*-test indicated a significant difference ($p < 0.05$), with greater improvement in the experimental class. These findings confirm that PBL assisted by e-LKPD Wizer.me is effective in improving students' mathematical problem-solving abilities. Practically, this model can be implemented by teachers to enhance student engagement, learning independence, and achievement, particularly in mathematics subjects that require problem-solving skills.
Keywords: *E-LKPD based on wizer.me website; mathematical problem-solving ability; PBL*

ABSTRAK
Penelitian ini dilatarbelakangi oleh rendahnya kemampuan pemecahan masalah matematis siswa akibat belum diterapkannya model pembelajaran yang efektif. Salah satu alternatif yang dapat digunakan adalah *Problem-Based Learning* (PBL) yang dipadukan dengan e-LKPD berbasis situs Wizer.me. Penelitian ini bertujuan mengetahui pengaruh penerapan PBL berbantu e-LKPD Wizer.me terhadap kemampuan pemecahan masalah matematis siswa. Instrumen penelitian berupa tes kemampuan pemecahan masalah matematis, dengan analisis meliputi statistik deskriptif, uji normalitas, uji homogenitas, *independent sample t-test*, dan N-gain. Hasil menunjukkan rata-rata skor pretest–posttest kelas eksperimen 47,91–83,32 dan kelas kontrol 42,82–77,15. Nilai N-gain kelas eksperimen sebesar 0,6815 dan kontrol 0,5891 (keduanya kategori sedang). Uji *t* menunjukkan perbedaan signifikan ($p < 0,05$) dengan peningkatan lebih tinggi pada kelas eksperimen. Temuan ini menegaskan bahwa PBL berbantu e-LKPD Wizer.me efektif meningkatkan kemampuan pemecahan masalah matematis. Secara praktis, model ini dapat diterapkan oleh guru untuk meningkatkan keterlibatan, kemandirian belajar, dan hasil belajar siswa, khususnya pada mata pembelajaran matematika yang menuntut keterampilan pemecahan masalah.
***Kata kunci**:* E-LKPD berbasis website wizer.me; kemampuan pemecahan masalah matematis; *PBL*

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Introduction

Mathematics is included in the subjects that are taught continuously at all levels of education, starting from elementary, junior high, to college (Santosa et al., 2022). However, there are differences in mathematics taught at the school and college levels, where in college mathematics requires deep accuracy, and uses deductive methods of thinking, while the school level focuses more on understanding basic concepts and formulas (Santosa et al., 2019). Learning mathematics is a deep process and has various components that need to be processed simultaneously (Santosa et al., 2018).

Basic math skills include mastery of fundamental concepts such as counting operations, understanding numbers, and relationships between variables that form the basis of complex material (Natsir et al., 2023). According to Tama and Setyadi (2022), basic math skills are divided into five types: 1) presenting a picture; 2) solving mathematical problems; 3) performing mathematical reasoning; 4) building mathematical interrelationships; 5) communicating ideas appropriately. These five types of abilities have an influence in developing skills, especially problem-solving.

When understanding an idea or solving mathematical problems, the stages of thinking have a role as a balance and even a link to student achievement when understanding and solving problems (Santosa & Filiz, 2025). According to Dewi and Saharuddin (2024) who argued that these skills are not only needed in the academic realm, but also have a role in everyday life, because students are accustomed to thinking systematically and effectively in solving problems. In addition, problem solving ability is an important skill for students to achieve goals and develop critical thinking skills (Agustami et al., 2021).

The low problem solving ability among students indicates a lack of practice in facing challenges (Adawiyah et al., 2024). The low level of this ability is also evident from the findings of the PISA and TIMSS surveys. Based on the OECD report (2013), Indonesia ranked second lowest out of 65 countries in PISA 2012, at a score of 375, far below the global standard of 494. Although there was an improvement in PISA 2015, rising to 62nd out of 70 countries, Indonesian students' mathematics achievement remained behind (Munna et al., 2024). In addition, the TIMSS 2018 results indicate that Indonesia ranks 73rd out of a total of 79 countries based on an average score of 397, which further emphasizes the low mathematical ability of students (Fauziah et al., 2022).

Based on the author's findings from interviews conducted with teachers at SMPN 13 Serang City, it is known that the mathematical problem solving ability of seventh grade students is included in the low criteria and requires improvement. In addition to interviews with teachers, initial ability tests were also conducted which showed that students' abilities were included in the low classification. More clearly, the results of students' initial mathematical problem solving ability can be seen in Diagram 1. below.

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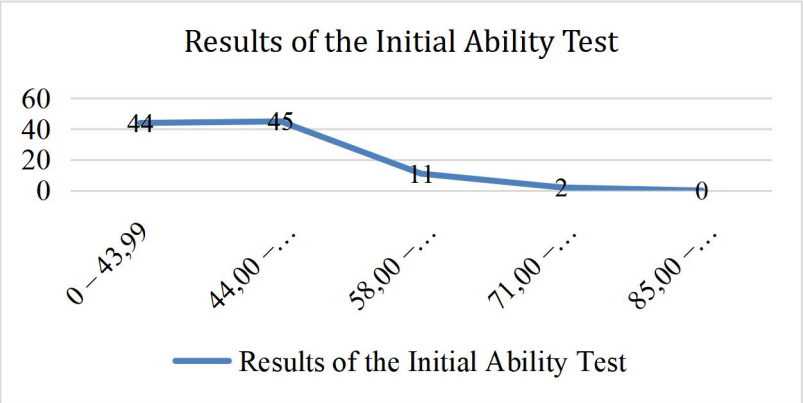
Diagram 1 Results of Initial Mathematical Problem-Solving Ability



The results of interviews with students also reinforce, where students convey that they have difficulty in solving test questions, especially the use of commas in calculations, formulating plans, and completing calculations appropriately. In addition, the use of E-LKPD media has not been applied in learning. This problem is in line with the findings of Aryani and Misdalina (2024) who indicated that students still encounter obstacles when interpreting the main idea contained in the question.

This problem can be overcome by using teaching approaches that have been used in Indonesia with the aim of developing knowledge standards. Some commonly used models include: (1) Cooperative Approach; (2) Contextual Approach; (3) Project Based Approach; and (4) Problem Based Approach (Purnomo et al., 2022). Among these models, PBL has proven to be effective because it encourages student participation to find ways to solve complex problems, which hones mathematical problem-solving skills. Problem Based Learning (PBL) is a learning approach that is often used in education, where students are actively involved in the learning process, especially when applying PBL concepts (Mita & Ihsanudin, 2024).

The PBL model provides an opportunity for students to improve their ability to solve math problems (Putri & Roichan, 2021). According to Aini et al. (2021), Problem Based Learning is a model of teaching students to solve real-world problems, encouraging them to develop their own knowledge, think critically, independently, and confidently. In this study, PBL is applied through stages: (1) Orienting students to the problem, (2) Organizing Student Learning, (3) Guiding Individual and Group Investigation, (4) Developing and presenting work, and (5) Analyzing and evaluating the problem solving process (Setiawan et al., 2022). The teacher's role is to provide problem stimulus, guide the discussion process, and provide feedback. Students work together in groups to identify problems, design strategies, collect data, and present solutions. Content based on everyday life problems also makes students more interested in learning, more active and collaborative, and able to solve everyday life problems (Sugiharti, Vahlia & Rahmawati, 2025).

In addition to implementing PBL, the use of learning media such as E-LKPD is important in supporting the learning process, emphasizing 21st century skills, including students' ability to use technology (Suryaningsih & Nurlita, 2021). E-

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LKPD is a collection of lesson content and exercises, which can be used digitally through computers, smartphones, and others (Lathifah et al., 2021). Recent research shows that PBL combined with technology-based E-LKPD has been successfully applied in mathematics learning. According to Sofiyani & Zaenuri (2023) found that the use of PBL assisted by E-LKPD can significantly improve problem solving skills and student engagement. Similar results were reported by Adawiyah et al. (2024) who showed that digital LKPD encourages collaboration between students and strengthens learning independence.

The use of technology-based learning media, such as E-LKPD, can be an effective solution as a tool for students in mathematical problem solving. Some sites that can be used to prepare E-LKPD include Liveworksheets, Google Forms, Quizizz, Microsoft Forms, Edmodo, Schoology, and Wizer.Me. One website that has special advantages in creating interactive, accessible, and interesting E-LKPD is wizer.me. This website allows teachers to create various types of questions, such as multiple choice, short form, description, task, word search, sorting, and image labeling (Sobri et al., 2023). In addition, wizer.me is a free online software that allows academics to quickly construct various types of questions, such as open-ended, multiple-choice, paired, and table questions (Kaliappen et al., 2021). Wizer.me is one of the sites with complete features for creating assignments online (Basrina et al., 2023).

Wizer.me facilitates student collaboration through its online assignment feature, enabling remote collaboration with immediate feedback from the teacher. In addition, students can access materials and exercises independently outside of class hours, which encourages independent learning while expanding opportunities to practice at any time. The wizer.me-based E-LKPD-assisted PBL model can be used to present contextually relevant problems, such as calculating sales prices or determining the amount of single interest on a loan. The findings of this study have implications for the development of educational policies that encourage the application of the PBL model assisted by E-LKPD based on wizer.me in schools. This model has the potential to improve students' problem solving ability, learning independence, and collaboration skills, so it is worth integrating widely in supporting interactive learning. The PBL learning paradigm actively involves students in the process of solving real-world problems (Darojah, Anwar & Vahlia, 2025).

The novelty of this research lies in the integration of digital technology in the PBL model through the help of E-LKPD based on the wizer.me website. The use of this website presents an innovative approach in supporting mathematical learning, especially in improving students' skills, which has not been widely applied in the educational environment. Based on the explanation above, the researcher examines the Effect of Problem Based Learning Assisted by E-Lkpd Based on Wizer.me Website on Mathematical Problem Solving Ability.

Research Methods

This study used the Nonequivalent Pretest-Posttest Control Group Design with a type of quasi-experimental research involving two groups, namely the experimental class (VII-G) which was treated with the PBL model assisted by e-LKPD based on the Wizer.me site, and the control class (VII-E) using a

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conventional learning model (lecture/collaborative), each totaling 34 students selected by purposive sampling. The research instrument was a description test of mathematical problem solving ability as many as 4 items developed based on Social Arithmetic material, such as calculating gross, netto, tare, and single interest. The preparation of questions refers to the indicators of Polya's problem solving ability, has been validated by experts, and proven valid and reliable with the results of R_{11} = 0.670. Data were analyzed using descriptive and inferential statistics, including normality test (Shapiro-Wilk), homogeneity (Levene's Test), and independent sample t-test to test the average difference as well as ability improvement based on N-Gain, with the help of SPSS.

Results and Discussion

This study aims to determine the effect of Problem Based Learning model assisted by e-LKPD based on Wizer.me site on students' mathematical problem solving ability. To achieve this goal, a series of data collection and analysis were carried out in the form of pretest, posttest, and N-Gain values in two groups, namely the experimental class and the control class. Furthermore, descriptive and inferential statistical analysis was conducted to evaluate the differences in learning outcomes between the two classes.

Analysis of Pretest Data
Descriptive Statistics

Pretest data was given to two classes, VII-G (experimental) and VII-E (control), before the learning treatment. The test consisted of 4 questions with a processing time of 60 minutes. Criteria for problem solving ability refers to the theory of Wancat and Oreovocz seen on Table 1.

Table 1. Criteria for Problem Solving Ability.

Score	Criteria	Predicate
85,00 – 100	Very Good	A
71,00 – 84,99	Good	B
58,00 – 70,99	Fair	C
44,00 – 57,99	Deficient	D
0 – 43,99	Very Deficient	E

(Rahma & Sutami, 2023)

The following are the results of descriptive statistics of pretest data from the two classes based on Table 2.

Table 2. Descriptive Statistics of Pretest Data

Class	N	Min	Max	Mean	Std. Deviation
Experiment	34	17	72	47,91	13,365
Control	34	14	70	42,82	13,436

In Table 2, shows the difference in pretest scores of the experimental class of 47.91 higher than the control class of 42.82. This shows that the initial ability of students' mathematical problem solving is included in the criteria less. From the

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table, it can be concluded that the standard deviation of the experimental class is 13.365, while that of the control class data is 13.436. This shows that the control class pretest data is more varied than the experimental class.

Inferential Statistics
Normality Test

The use of normality test for pretest data is the Shapiro-Wilk test to assess whether the pretest data is normally distributed or not. Based on the normality test, the results are listed on Table 3, namely.

Table 3. Pretest Normality Test Results

Class	*Shapiro-wilk*			Conclusion
	statistic	df	Sig.	
Experiment Pretest	0,966	34	0,349	Normal
Control Pretest	0,959	34	0,222	Normal

Based on Table 3, the significance value for the pretest in the experimental class is 0.349 and the control class is 0.222. From these results show that $sig.$ > 0,05. Thus, the data in both classes are normally distributed.

Homogeneity Test

Homogeneity test is conducted to determine whether the two samples have the same variance. The results are presented in Table 4, namely.

Table 4. Pretest Homogeneity Test Results

Data	*Based on Mean*			Conclusion
	df_1	df_2	Sig.	
Pretest	1	66	0,547	Homogeneous

Based on Table 4, shows that the pretest score is the sig value of 0.547 where sig. > 0.05, so it can be concluded that the data is homogeneous.

T-test

If the data is normal and homogeneous, then the next step is to conduct a t-test. Based on the results of the t-test, it can be presented in Table 5 below.

Table 5. Independent Sample T-test Test Results Pretest

Data	*t-test for Equality of Means*			Description	Conclusion
	T	Df	*Sig. (2-tailed)*		
Pretest experiment and control	1,566	66	0,122	H_0 accepted	There is no difference

Based on Table 5, the sig value on the pretest data for both classes is 0.122 ≥ 0.05. These results indicate that the initial ability of the two classes is no difference in students who apply the PBL model assisted by E-LKPD based on the wizer.me website with students who apply the conventional learning model (collaborative), because it shows H_0 is accepted and H_a is rejected.

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Posttest Data Analysis
Descriptive Statistics

Posttest data was conducted in VII-G (experimental) and VII-E (control) classes after learning. The problem consists of 4 items with a processing time of 60 minutes. Posttest aims to determine students' final ability in social arithmetic material. The data were processed descriptively to see the final ability, presented in Table 6.

Table 6. Descriptive Statistics of Posttest Data

Class	N	Min	Max	Mean	Std. Deviation
Experiment	34	68	100	83,32	7,654
Control	34	60	96	77,15	9,586

Based on Table 6, the average posttest of the experimental class 83.32 is higher than the control class 77.15, indicating the final ability of mathematical problem solving in the good category. In the standard deviation of the experimental class posttest data 7.654 is smaller than the control class 9.586, this shows that the control class posttest data is more varied than the experimental class.

Inferential Statistics
Normality Test

This study uses the Shapiro-Wilk test as a normality test to assess whether the posttest data from both classes are part of a normally distributed population or not. Based on the normality test conducted, the results are listed in Table 7 below.

Table 7. Posttest Normality Test Results

Class	*Shapiro-wilk*			Conclusion
	statistic	df	Sig.	
Experiment Posttest	0,977	34	0,687	Normal
Control Posttest	0,970	34	0,453	Normal

Based on Table 7, the significance value for posttest in the experimental class is 0.687 and the control class is 0.453. From these results, it shows that sig. > 0,05. Thus, the posttest score data in both classes are normally distributed.

Homogeneity Test

The homogeneity test was conducted to determine whether the two samples had the same variance. The results are presented in Table 8.

Table 8. Posttest Homogeneity Test Results

Data	*Based on Mean*			Conclusion
	df_1	df_2	Sig.	
Posttest	1	66	0,203	Homogeneous

Based on Table 8, shows the significance of the posttest score, which is 0.203 ≥ 0.05. This indicates that the posttest score is homogeneous.

T-test

If the data is normal and homogeneous, then the next step is to conduct a t-test. Based on the results of the t-test, it can be obtained in Table 9 below.

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Table 9. Independent Sample T-test Posttest Results

Data	*t-test for Equality of Means*			Description	Conclusion
	T	Df	*Sig. (2-tailed)*		
Posttest experiment and control	2,936	66	0,005	H_a accepted	There is a difference

Based on Table 9, the posttest significance value is 0.005 < 0.05. These results indicate that the final ability of the two classes is different in students who apply the PBL model assisted by E-LKPD based on the wizer.me website with students who apply conventional learning models (lecture and collaborative), indicating H_0 is rejected and H_a is accepted.

N-Gain Data Analysis
Descriptive Statistics

This data is used to evaluate the improvement of mathematical problem solving skills in experimental and control classes. The results are presented in Table 10.

Table 10. Descriptive Statistics of N-Gain Data

Class	N	Min	Max	Mean	Std. Deviation
Experiment	34	0,40	1,00	0,6815	0,13194
Control	34	0,24	0,94	0,5891	0,16142

Based on Table 10, it shows that the average n-gain value of the experimental class is 0.6815 while the control class is 0.5891, both of these classes include moderate criteria. This shows that the two classes have a significant difference, the experimental class experienced an increase in mathematical problem solving skills higher than the control class.

Inferential Statistics
Normality Test

This study used the Shapiro-Wilk test as a normality test to assess whether the n-gain data from both classes were part of a normally distributed population or not. Based on the normality test conducted, the results are listed in Table 11 below.

Table 11. N-Gain Normality Test Results

Class	*Shapiro-wilk*			Conclusion
	statistic	df	Sig.	
Experiment N-Gain	0,968	34	0,405	Normal
Control N-Gain	0,975	34	0,612	Normal

Based on Table 11, the significance value in the experimental class is 0.405 and the control class is 0.612 which means Sig.> 0.05. So it can be concluded that the n-gain results in both classes are normally distributed.

Homogeneity Test

Homogeneity test is conducted to determine whether the two samples have the same variance. The results are presented in Table 12.

Table 12. N-Gain Homogeneity Test Results

Data	*Based on Mean*			Conclusion
	df_1	df_2	Sig.	
N-Gain	1	66	0,133	Homogeneous

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In Table 12, shows that the significance value on n-gain is 0.133 > 0.05. So it can be concluded that the n-gain results in both classes are homogeneous.

T-test

If the data is normal and homogeneous, then the next step is to conduct a t-test. Based on the results of the t-test, it can be obtained in Table 13 below.

Table 13. Independent Sample T-test Results N-Gain

Data	t-test for Equality of Means			Description	Conclusion
	T	Df	$\frac{1}{2}$ Sig. (2-tailed)		
N-Gain experiment and control	2,583	66	0,006	H_a accepted	There is an improvement

Based on Table 13 above, the significance result on n-gain is 0.006 ≤ 0.05 then H_0 is rejected and H_0 is accepted. It can be concluded that there is an increase in mathematical problem solving ability that applies the PBL model assisted by E-LKPD based on the wizer.me website better than students who apply conventional learning models (lecture and collaborative).

Mathematical Problem Solving Ability

Based on the results of the study, it shows that the use of PBL model assisted by E-LKPD based on the wizer.me website is better than applying conventional learning models (collaborative and lecture). This can be seen through the final achievement of students, where data analysis is done through descriptive statistics showing the final achievement of students in two classes is in the good category. After that inferential statistical analysis, the normality and homogeneity tests showed that the data were normally distributed and had homogeneous variances.

Furthermore, conducting a t-test to determine the difference in posttest scores between the experimental and control classes, which proves that the PBL learning model assisted by e-LKPD based on the Wizer.me website is significantly more effective than the conventional learning model, so there is a significant difference. In addition, to see the improvement, the initial test and final test were analyzed through the calculation of the n-gain score. This strengthens that the use of PBL model assisted by e-LKPD based on the wizer.me website is able to have a better impact on the development of students' mathematical problem solving skills.

This finding is in line with previous findings by Sofiyani & Zaenuri (2023), stating that the application of the PBL model with ethnomathematics nuances assisted by e-LKPD significantly improves students' problem solving skills. Likewise, in line with the findings of Adawiyah et al. (2024), which states that the use of the PBL model assisted by digital LKPD is effective in improving mathematical problem solving skills, shown through higher average student scores in the experimental class compared to the control class.

The PBL model provides opportunities for students to be directly involved in the learning process, especially in structured group discussion activities. This is in line with research Hotimah (2020), which states that PBL is used as a forum for interaction and exchange of ideas between students, to encourage them to convey ideas to each other. In this process, e-LKPD assistance also strengthens student

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involvement by providing interactive learning materials and relevant practice questions.

By learning problem solving, students' motivation can be increased (Komariya, Farida & Vahlia, 2018).This process motivates students to think logically, analytically, and systematically, thus contributing significantly to the improvement of students' mathematical problem solving skills.

The findings of this study, it can be concluded that the use of PBL model assisted by e-LKPD based on the wizer.me website is more efficient than the conventional learning model (lecture and collaborative) to improve students' mathematical problem solving skills. This is evident from the final achievement (posttest) which is more effective in the experimental class, as well as significant differences found through t-test statistical analysis. The application of the PBL model assisted by e-LKPD based on the wizer.me website also shows a better improvement in ability, in line with previous findings that support the effectiveness of PBL in improving students' mathematical problem solving skills.

Analysis of Student Answers in Experimental and Control Classes to Posttest Questions

Analysis of student answers is carried out to identify errors made by students in answering posttest questions. The purpose of this analysis is to evaluate the extent to which students can fulfill each indicator of mathematical problem solving ability in the problem. These results are supported by examples of experimental class student answers in Figure 1 and control class student answers in Figure 2.

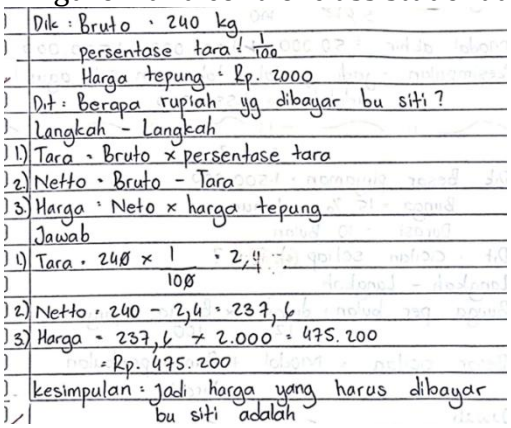

Figure 1. Posttest Answers of Experimental Class

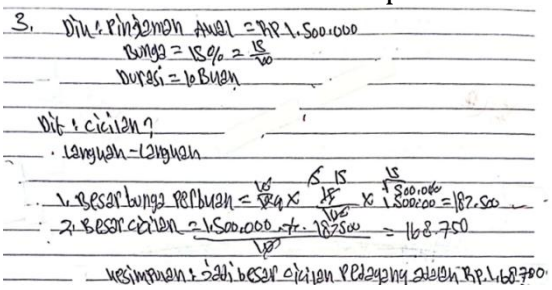

Figure 2. Posttest Answers of Control Class

In Figure 1 shows that students in the experimental class have fulfilled the indicators of problem solving ability. They are able to understand the problem well, record the known and questioned information precisely, clearly, and correctly,

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plan relevant and effective solution strategies, and solve problems by writing down the steps and strategies correctly, precisely, and systematically to produce appropriate answers. In addition, they also re-examined the procedure and solution results, and compiled an accurate and relevant summary of the problem. This achievement cannot be separated from the application of the Problem Based Learning model assisted by Wizer.me-based e-LKPD, which facilitates group discussions, collaboration, and direct feedback from the teacher.

Figure 2 shows that students in the control class have not achieved all indicators. They are indeed able to understand the problem well and record the known and questioned information correctly, but still have difficulty in planning the solution strategy appropriately. In the process of problem solving, students can write the steps correctly and systematically, but at the stage of re-examining procedures and results, even though they have written conclusions, the answers are still wrong. This shows that conventional learning used in the control class is less able to facilitate students' critical thinking skills and accuracy than the technology-assisted PBL model.

During the implementation of the research, there were several obstacles in both classes. In the experimental class (PBL model assisted by E-LKPD based on the wizer.me website), students had difficulty understanding contextual questions, were less accustomed to working together in groups, and were not used to investigating and presenting discussion results. To overcome this, researchers provided directions through powerpoint media, guided group work, and facilitated discussion and evaluation between students. In the control class (conventional model of collaborative method), students did not understand the learning objectives, tended to be passive during material delivery, and were less active in practice and asking questions. The solution is that the researcher explains the objectives clearly, provides space for questions and answers as well as individual and group exercises with teacher guidance.

Conclusion and Suggestion

Based on the results of research conducted in the 2024/2025 academic year, it was found that the Problem-Based Learning model assisted by E-LKPD based on the Wizer.me website was more effective in improving students' mathematical problem solving skills compared to conventional learning models (direct and collaborative learning), with significant differences between the experimental and control classes. The improvement of students' mathematical problem solving ability using PBL model assisted by E-LKPD is also better. Therefore, it is recommended for future researchers, to conduct further research with similar models on other teaching materials in mathematics subjects and higher grade levels. Researchers can also explore this model in different contests and use other E-LKPD sites. In addition, the addition of questionnaire instruments can also be considered to enrich the data, especially in measuring students' response, motivation, or interest in the applied learning model.

Reference

Adawiyah, R., Arjudin, Junaidi, & Azm, S. (2024). Pengaruh Model Problem Based Learning Berbantuan LKPD Digital terhadap Kemampuan Pemecahan Masalah Matematis Siswa pada Materi Statistika. *Jurnal Ilmiah Pendidikan Dasar*, *09*(5),

e-ISSN 2746-5594
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222–232. https://doi.org/10.23969/jp.v9i2.17077

Agustami, Aprida, V. &, & Pramita, A. (2021). Analisis Kemampuan Pemecahan Masalah Matematis Siswa dalam Menyelesaikan Soal Materi Lingkaran. *Jurnal Prodi Pendidikan Matematika (JPMM*, *3*(1), 94–103. https://doi.org/10.31949/dm.v4i1.2017

Aini, N. A., Syachruroj, A., & Hendracipta, N. (2019). Pengembangan LKPD Berbasis Problem Based Learning pada Mata Pembelajaran IPA Materi Gaya. *Jurnal Pendidikan Matematika Unpatti*, *10*(1), 68–76. https://doi.org/10.21009/JPD.010.07

Aryani, S., & Misdalina, M. (2024). Pengaruh Model Pembelajaran Problem Based Learning Berbantuan E-LKPD terhadap Kemampuan Pemecahan Masalah Peserta Didik di SMP Negeri 05 Prabumulih. *Jurnal EduTech*, *10*(2), 419–426. https://doi.org/10.30596/edutech.v10i2.20496

Basrina, Y., Afryansih, N., & Febriani, T. (2023). Pengembangan Aplikasi Evaluasi Pembelajaran Wizer. Me pada Mata Pelajaran IPS di MTs Darussalam Aryojeding. *JPIG (Jurnal Pendidikan Dan Ilmu Geografi)*, *8*(1), 31–38. https://doi.org/10.21067/jpig.v8i1.7361

Darojah, A. U. H., Vahlia, I., & Anwar, R. B. (2025). Pengembangan LKPD Berbasis Model Pembelajaran Problem Based Learning (PBL) Terintegrasi Nilai-Nilai Islam. *Jurnal Pendidikan Matematika Universitas Lampung*, *13*(1), 41-53. https://doi.org/10.23960/mtk/v13i1.pp41-53

Dewi, N., & Saharuddin. (2024). Kemampuan Pemecahan Masalah Matematis Siswa Sekolah Dasar dalam Menyelesaikan Soal Cerita. *JUDIKDAS: Jurnal Ilmu Pendidikan Dasar Indonesia*, *3*(2), 96–110. https://doi.org/10.51574/judikdas.v3i2.1227

Fauziah, N., Roza, Y., & Maimunah. (2022). Kemampuan Matematis Pemecahan Masalah Siswa dalam Penyelesaian Soal Tipe Numerasi AKM. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *06*(03), 3241–3250. https://doi.org/10.31004/cendekia.v6i3.1471

Hotimah, H. (2020). Penerapan Metode Pembelajaran Problem Based Learning dalam Meningkatkan Kemampuan Bercerita pada Siswa Sekolah Dasar. *Jurnal Edukasi*, *7*(3), 5. https://doi.org/10.19184/jukasi.v7i3.21599

Kaliappen, N., Ismail, W. N. A., Ghani, A. B. A., & Sulisworo, D. (2021). Wizer.Me and Socrative as Innovative Teaching Method Tools: Integrating TPACK and Social Learning Theory. *International Journal of Evaluation and Research in Education*, *10*(3), 1028–1037. https://doi.org/10.11591/IJERE.V10I3.21744

Komariya, K., Farida, N., & Vahlia, I. (2018). Pengaruh Model Pembelajaran FSLC Terhadap Kemampuan Pemecahan Masalah Matematika Ditinjau Dari Motivasi Belajar Siswa. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *7*(1), 96-102. https://doi.org/10.24127/ajpm.v7i1.1355

Lathifah, M. F., Hidayati, B. N., & Zulandri. (2021). Efektifitas LKPD Elektronik sebagai Media Pembelajaran pada Masa Pandemi Covid-19 untuk Guru di YPI Bidayatul Hidayah Ampenan. *Jurnal Pengabdian Magister Pendidikan IPA Original*, *4*(4), 0–5. https://doi.org/10.36312/jupe.v4i4.995

Mita, & Ihsanudin. (2024). Pengaruh Problem Based Learning berbantuan Scaffolding terhadap Kemampuan Berpikir Kritis Matematis dan Self-Concept Peserta Didik. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *08*(02), 1211–

1224. https://doi.org/10.31004/cendekia.v8i2.3198

Munna, N., Utami, R. E., Prasetyawati, D., & Purwaningsih, C. (2024). Problem Based Learning dengan Pendekatan Culturullay Responsive Teaching Berbantuan E-LKPD untuk Meningkatkan Kemampuan Pemecahan Masalah. *Jurnal Pendidikan Matematika (AL KHAWARIZMI)*, *4*(2), 34–41. https://doi.org/10.46368/kjpm.v4i2.2332

Natsir, I., Suryani, D. R., & Nur'aini, K. D. (2023). Profil Kemampuan Dasar Matematika Siswa SMP Kelas VIII. *Jurnal Pendidikan Matematika Unpatti*, *4*(1), 10–15. https://doi.org/10.30598/jpmunpatti.v4.i1.p10-15

Purnomo, A., Kanusta, M., Fitriyah, Guntur, M., Siregar, R. A., Ritonga, S., Nasution, S. I., Maulidah, S., & Listantia, N. (2022). *Pengantar Model Pembelajaran* (M. Yahya, Andrias, & I. Abbas (eds.); 1st ed.). Yayasan Hamjah Diha.

Putri, R. K., & Roichan, D. I. P. (2021). Pengaruh Model Pembelajaran Problem Based Learning terhadap Kemampuan Pemecahan Masalah Matematika Siswa Kelas XI SMA Negeri 15 Surabaya. *AKSIOMA : Jurnal Matematika Dan Pendidikan Matematika*, *12*(1), 1–9. https://doi.org/10.26877/aks.v12i1.7272

Rahma, T. T., & Sutami, S. (2023). Kemampuan Pemecahan Masalah Matematika Realistik dengan Langkah Polya pada Siswa SMP. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *7*(2), 1416–1426. https://doi.org/10.31004/cendekia.v7i2.2406

Santosa, C. A. H. F., & Filiz, M. (2025). Investigating the limit of peer collaboration: Insight from worked-example in multivariable calculus. *Infinity Journal*, *14*(2), 461–482. https://doi.org/10.22460/infinity.v14i2.p461-482

Santosa, C. A. H. F., Prabawanto, S., & Marethi, I. (2019). Fostering Germane Load Through Self-Explanation Prompting In Calculus Instruction. *Indonesian Journal on Learning and Advanced Education (IJOLAE)*, *1*(1), 37–47. https://doi.org/10.23917/ijolae.v1i1.7421

Santosa, C. A. H. F., Rafianti, I., & Yulistiany, D. (2022). Worked-Example Method on Mathematical Problem-Solving Ability in term of Students' Initial Ability. *Kreano, Jurnal Matematika Kreatif-Inovatif*, *13*(2), 210–220. https://doi.org/10.15294/kreano.v13i2.33301

Santosa, C. A. H. F., Suryadi, D., Prabawanto, S., & Syamsuri, S. (2018). The role of worked-example in enhancing students' self-explanation and cognitive efficiency in calculus instruction. *Jurnal Riset Pendidikan Matematika*, *5*(2), 168–180. https://doi.org/10.21831/jrpm.v0i0.19602

Setiawan, T., Sumilat, J. M., Paruntu, N. M., & Monigir, N. N. (2022). Analisis Penerapan Model Pembelajaran Project Based Learning dan Problem Based Learning pada Peserta Didik Sekolah Dasar. *Jurnal Basicedu*, *6*(6), 9736–9744. https://doi.org/10.31004/basicedu.v6i6.4161

Sobri, M., Fauzi, A., Rahmatih, A. N., Indraswati, D., & Amrullah, L. W. Z. (2023). Pemanfaatan Website Wizer. Me untuk Mengembangkan E-LKPD Interaktif Bagi Guru Sekolah Dasar. *Mitra Mahajana: Jurnal Pengabdian Masyarakat*, *4*(1), 22–29. https://doi.org/10.37478/mahajana.v4i1.2527

Sofiyani, A. N., & Zaenuri. (2023). Keefektifan Model PBL Bernuansa Etnomatematika Berbantuan E-LKPD terhadap Kemampuan Pemecahan Masalah Siswa. *Jurnal Pendidikan Matematika*, *3*(2), 125–136. https://doi.org/10.28918/circle.v3i2.1022

e-ISSN 2746-5594
p-ISSN 2746-5608

Sugiharti, A., Vahlia, I., & Rahmawati, D. (2025). Pengembangan Aplikasi Android Berbasis Problem Based Learning Berorientasi Kebudayaan Lokal Materi Baris dan Deret Aritmatika. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *14*(2), 409-423. https://doi.org/10.24127/ajpm.v14i2.10963

Suryaningsih, S., & Nurlita, R. (2021). Pentingnya Lembar Kerja Peserta Didik Elektronik (E-LKPD) Inovatif dalam Proses Pembelajaran Abad 21. *Jurnal Pendidikan Indonesia*, *2*(7), 1256–1268. https://doi.org/10.36418/japendi.v2i7.233

Tama, D. A., & Setyadi, D. (2022). Kemampuan Koneksi Matematis Siswa dalam Memecahkan Masalah Matematika Materi Trigonometri. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *6*(2), 1536–1548. https://doi.org/10.31004/cendekia.v6i2.1303