



The Mentimeter Media-Assisted Problem-Solving Model on Elementary School Students' Creativity and Learning Outcomes

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ABSTRAK

Pendidikan bahasa Indonesia di sekolah dasar memerlukan intervensi pedagogi yang inovatif karena tantangan besar seperti pelepasan siswa, hasil pembelajaran yang kurang optimal, dan kurangnya pengembangan kreativitas. Penelitian ini bertujuan untuk menganalisis pengaruh perbedaan hasil belajar siswa antara yang diajar menggunakan pemecahan masalah berbantuan media mentimeter dan menggunakan pendekatan ekspositori dalam pembelajaran bahasa Indonesia. Penelitian ini menggunakan desain eksperimen semu dengan desain kelompok kontrol non-ekuivalen. Populasi penelitian terdiri dari seluruh siswa kelas V SD di Sewon Bantul, dengan sampel sebanyak 87 siswa yang dipilih dengan menggunakan teknik purposive cluster random sampling. Sampel dibagi menjadi dua kelompok, yaitu kelompok eksperimen (44 siswa) yang menggunakan strategi pembelajaran pemecahan masalah berbantuan media Mentimeter, dan kelompok kontrol (41 siswa) yang menggunakan pendekatan ekspositori. Instrumen penelitian yang digunakan adalah tes, dan analisis data dilakukan dengan menggunakan analisis deskriptif dan analisis statistik inferensial dengan menggunakan uji Paired Sample t-test dan Independent Sample t-test. Hasil penelitian menunjukkan bahwa penggunaan strategi pembelajaran pemecahan masalah berbantuan media mentimeter memberikan pengaruh yang signifikan terhadap peningkatan kreativitas siswa ($0,000 < 0,05$) dan hasil belajar siswa ($0,000 < 0,05$). Selain itu terdapat perbedaan kreativitas dan hasil belajar yang signifikan antara kelompok siswa yang diajar dengan pemecahan masalah berbantuan media Mentimeter dan pendekatan ekspositori pada pembelajaran bahasa Indonesia ($0,000 < 0,05$).

ABSTRACT

Indonesian language education in elementary schools requires innovative pedagogical interventions due to major challenges such as student disengagement, suboptimal learning outcomes, and a lack of creativity development. This research aims to analyze the effect of differences in student learning outcomes between those taught using problem solving assisted by mentimeter media and using an expository approach in learning Indonesian. This research uses a quasi-experimental design with a non-equivalent control group design. The research population consisted of all fifth grade students at elementary schools in Sewon Bantul, with a sample of 87 students selected using a purposive cluster random sampling technique. The sample was divided into two groups: the experimental group (44 students) who used the problem-solving learning strategy assisted by Mentimeter media, and the control group (41 students) who used an expository approach. The research instrument used was a test, and data analysis was carried out using descriptive analysis and inferential statistical analysis using the paired sample t-test and the independent sample t-test. The results of the research show that the use of problem-solving learning strategies assisted by mentimeter media has a significant influence on increasing student creativity ($0.000 < 0.05$) and student learning outcomes ($0.000 < 0.05$). Apart from that, there are significant differences in creativity and learning outcomes between groups of students taught with problem solving assisted by Mentimeter media and an expository approach to learning Indonesian ($0.000 < 0.05$).

1. INTRODUCTION

The importance of providing quality education from an early age has been emphasized by many experts, with the aim that the values and skills taught can be more easily implemented in adulthood (Ariyanti, 2020; Ennis, 2011). In the context of the learning process, the selection of strategies, methods, media, and learning models is very important to create an effective and enjoyable learning environment. This also applies to Indonesian language learning in elementary schools. The landscape of Indonesian language learning in elementary schools presents significant challenges, as evidenced by the outcomes of

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initial assessments (Birhan et al., 2021; Mee Mee et al., 2020). Based on the results of the initial interview, it was found that the Indonesian language learning process experienced obstacles in achieving its optimum. Students seem less focused and tend to play when the teacher explains the material. In addition, Indonesian language lessons are considered less important by students, so their interest in learning is low, and they do not try to achieve maximum learning outcomes. The observation results also show that students tend to be inactive in the learning process in class. They rarely respond to the teacher's questions, express opinions, or ask questions when they don't understand the material presented. The initial assessment of the Indonesian language learning process within elementary schools reveals a landscape fraught with obstacles, ranging from student disengagement to the pervasive use of conventional teaching methods. These challenges underscore the critical need for innovative pedagogical interventions to rejuvenate the educational paradigm. Through an exploration of problem-solving learning strategies augmented by Mentimeter media, this research seeks to illuminate pathways towards enhanced student engagement, the fostering of critical thinking skills, and ultimately, elevating learning outcomes.

Problem solving is a strategy that uses problem solving. There are several reasons for choosing problem solving as a suitable learning strategy to overcome these problems, including: training the way of thinking using logic to draw conclusions from various problems presented, such as by exploration; experimenting to find differences, similarities, inconsistencies, and consistency; fostering a critical attitude; and improving communication skills in expressing ideas either orally or with notes, graphs, or diagrams (Bate'e & Zebua, 2019; Irmayasari et al., 2018). Problem solving is expected to create meaningful learning and spur students' skills to be creative. It is expected that from this series of lessons, students will be able to find varied answers based on their creativity and abilities (Bate'e & Zebua, 2019; Fadillah, 2016). Through the application of problem-solving strategies, students can develop and expand their mindset, in contrast to the approach of memorization, which tends to limit thinking. The use of problem-solving strategies allows teachers to assist students in developing their way of thinking. The learning process based on problem solving is not only designed to convey extensive information to students but also aims to help students foster their creativity and critical thinking and solve a problem (Mardhiyana & Sejati, 2016; Sumartini, 2016). Problem solving also produces a process that generates new lessons, where learners are placed in a problem and they remember the rules obtained in an effort to find a solution or problem solving (Ma'ruf & Muhid, 2022; Sulasmono, 2012). Through learning with a problem-solving approach, it is expected that the material topics presented will become clearer, which in turn will improve the quality of students' educational experiences and overall have a positive impact on improving their learning outcomes and achieving learning objectives (Ma'ruf & Muhid, 2022; Margareta, 2020). Thus, learning becomes more meaningful, and students can remember the subject matter better. The learning process that involves students directly in solving problems will allow them to be more actively involved in learning, not just receiving information from the teacher (Priyanto & Kock, 2021; Widanti et al., 2015)

In addition to the use of learning models, media is also very important. One of the media that can overcome the above problems is the mentimeter media. For this reason, in addition to the use of problem-solving learning models, educators also need to involve learning media as learning aids, media that can be used to stimulate the thoughts, attention, and abilities or skills of students so as to encourage an optimal learning process. One of the media that educators can use is mentimeter media. Mentimeter media is an interactive presentation application that plays an important role in the learning experience (Hermawan & Dewi, 2023; Purba & Siregar, 2023). The application is online-based and offers various features that provide significant advantages in the context of learning. With Mentimeter, users can create engaging presentations and participate in interactions with audiences through a variety of tools, including polls, graphics, quizzes, Q&A, and other interactive features (Sari, 2021; Zulfa & Huda, 2021). The utilization of Mentimeter as a learning medium involves its use in various learning contexts. One common use is when conducting apperception or prompting questions at the beginning of learning to activate learners and prepare them for the upcoming learning material. The use of Mentimeter in the classroom can also improve the quality of learning by encouraging students to interact and discuss certain topics. This includes encouraging the participation of students who are usually more introverted. By providing a platform for students to share their thoughts directly through features such as polls and Q&A, Mentimeter also supports collaborative learning.

Mentors offer a collaborative learning experience that allows students to share their ideas and post them on the same page (Whalen et al., 2023; Wong & Yunus, 2020). This creates an inclusive learning environment and facilitates discussion between students. In the context of the problem solving model, Mentimeter can be a very useful medium. Teachers can use various features of Mentimeter to present problems or questions to students, and students can provide solutions or answers directly through this application. The novelty of this study mentimeter media not only facilitates active and participatory learning, but also allows students to collaborate in solving complex problems.

Therefore, the purpose of this study was to analyze: (1) the effect of problem solving learning strategy assisted by mentimeter media on students' creativity in learning Indonesian language in grade V elementary school; (2) the difference in creativity of grade V students between those taught using problem solving learning strategy assisted by mentimeter media and using expository approach in learning Indonesian language; (3) the effect of problem solving assisted by mentimeter media on students' learning outcomes in learning Indonesian language in grade V elementary school; (4) the difference in learning outcomes of grade V students between those taught using problem solving assisted by mentimeter media and using expository approach in learning Indonesian language.

2. METHOD

The approach applied in this study was a quantitative approach with a non-equivalent control group research design (Rusmana & Suprihatin, 2019). The research subjects consisted of two classes at SDN Jageran and two classes at SD Negeri Krapyak Wetan, with a total population of 87 students. The experimental procedure consisted of three stages, namely the preparation stage, the implementation stage, and the post-experiment stage. In the preparation stage, researchers prepared learning tools such as lesson plans, teaching materials, and student worksheets, as well as creativity test instruments and learning outcomes tests. In addition, teachers were also trained to use the learning tools that had been prepared. Then, during the experimental implementation stage, learning was carried out by applying the problem-solving method in the experimental class and the expository learning method in the control class. The post-experiment stage involved giving a post-test to both groups to evaluate students' creativity and learning outcomes during the learning process.

The data collection technique used was a test to measure students' learning outcomes and creativity. Data analysis was conducted using paired sample t-test analysis and independent sample t-test analysis, with a significance level of 0.05. Before hypothesis testing, prerequisite tests such as the normality test and the homogeneity test were conducted first. Furthermore, the creativity test grid is show in Table 1.

Table 1. Instrument Grid

Component	Creativity Indicators	Question Indicator
Word beginnings. One-letter prefix Two-letter prefix	Find words that fit specific structural requirements.	Students can compose words using the prefixes given. Students can compose words from the words provided.
Composing words	Identify letters in words.	Students can compose words from a series of letters that form words.
Form three-word sentences. Same nature	Fluency in expressing Fluency in providing ideas	Students are required to compose sentences using the letters provided. Students can think as much as possible about objects that have these two properties.
Various types of unusual uses.	Flexibility and originality force the subject to break away from the habitual function of certain objects. The originality of thoughts can be seen from the participants' answers.	Students should have as many unusual uses for objects as possible.
Consequences	Fluency and elaboration in thinking about everything as an impact of events.	Students must think about the consequences of unusual events.

3. RESULT AND DISCUSSION

Result

This test was conducted on the creativity data of students who participated in problem-solving learning assisted by mentimeter media and expository learning. The test uses the Lilliefors Significance Correction method of Kolmogorov-Smirnov with a significance level (α) of 5%. The criteria used is that if the sig value is less than 5%, then the data is considered to have an abnormal distribution. Conversely, if the sig value is greater than 5%, then the data is considered normally distributed. The results of the normality test of creativity data using problem-solving learning assisted by mentimeter media and expository learning is show in Table 2.

Table 2. The Normality Test Result

Class	Sig.	Sig level	Description
Pretest data on the creativity of the experimental group	0.071	p > 0.05	Normal
Posttest of experimental group creativity data	0.200		Normal
Pretest of creativity data for the control group	0.099		Normal
Posttest of control group creativity data	0.097		Normal

In accordance with Table 2, the results of the Kolmogorov-Smirnov normality test on student creativity data in the experimental class using the problem-solving method assisted by mentimeter media and the control group using the expository learning method, it can be concluded that both groups have a normal distribution because the p value is greater than 0.05. This is based on the significance value of the creativity pretest in the experimental and control classes, which is 0.071 and 0.099, where $(p) > 0.05$, so the data is considered normally distributed. Furthermore, in the significance value of the creativity posttest in both groups, namely the experimental and control groups, the p values are 0.200 and 0.097, respectively, with $(p) > 0.05$, which indicates that the data is also normally distributed. Homogeneity processing is used to test the homogeneity of creativity data and student learning outcomes data in groups treated with problem-solving learning methods assisted by mentimeter media and expository learning. The homogeneity test was carried out using Levene's test with a significance level of 5%. If the significance value obtained is greater than 5%, then the null hypothesis (H_0) is accepted, which means the data is homogeneous. The homogeneity test results for student creativity and learning outcomes can be seen in Table 3.

Table 3. The Homogeneity Test Result

	Statistics Parameters	Levene Statistic	df1	df2	Sig.
Creativity	Based on Mean	0.460	1	76	0.499
	Based on Median	0.478	1	76	0.492
	Based on Median and with adjusted df	0.478	1	75.146	0.492
	Based on trimmed mean	0.488	1	76	0.487

Based on Table 3, the significance value (Sig) based on the mean for creativity is 0.499, which is greater than the significance threshold value of 0.05. Thus, it can be concluded that the variance between the experimental group posttest and the control group posttest is homogeneous. Based on the results of normality and homogeneity testing, if both assumptions are met, then we can proceed with using the t test. The assumption of normality ensures that the data are drawn from a distribution that is close to normal, while the assumption of homogeneity of variance ensures that the variances between the groups being compared are equal. Then hypothesis testing was carried out on the results of creativity data and student learning outcomes with problem-solving learning methods assisted by mentimeter media and expository learning. This test was conducted to prove the hypothesis to be proposed. The researchers can use various statistical analysis techniques, such as t tests, to test them. The influence of problem solving assisted by Mentimeter media on students' creativity in learning Indonesian for class V elementary school was carried out to analyze student creativity data who carried out learning using the problem-solving method assisted by Mentimeter media. After carrying out calculations using SPSS Release 24, we obtained the results, which will be described in Table 4.

Table 4. Test Results of the Effect of Using Problem Solving Assisted by Mentimeter Media on Student Creativity

Paired Group	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pretest-Posttest	-25.56098	7.21474	1.12675	-27.83823	-23.28372	-22.686	40	0.000

Based on Table 4 show the results of calculating student creativity data through paired sample t-test testing with a significance level of 5%, the calculated t value is -22.686 with a significance level of 0.000 ($p < 0.05$). From the results of this calculation, it can be concluded that the implementation of problem-solving assisted by mentimeter media in Indonesian language lessons has a significant effect on student

creativity. The to see the difference in creativity between students who carry out learning with the problem-solving method assisted by mentimeter media and students who carry out learning with the expository method in learning Indonesian in grade V elementary school. The calculation of data on the creativity of groups of students who carry out learning with problem-solving methods assisted by mentimeter media and expository learning with the help of the SPSS release 24 program, the results are presented in [Table 5](#).

Table 5. Test Results of Differences in Student Creativity between Groups of Students Who Learned with Problem Solving Assisted by Mentimeter Media and Expository Learning

Statistics Parameters	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
Creativity	Equal variances assumed	0.460	0.499	7.920	76	0.000	13.49374	1.70374	10.10044	16.88704
	Equal variances not assumed			7.934	75.619	0.000	13.49374	1.70082	10.10599	16.88148

Based on [Table 5](#), the results of calculating student creativity data, a significance level (2-tailed) of 0.000 was obtained. These results indicate that the significance level (2-tailed) = 0.000 is smaller than the α value ($0.000 < 0.05$), so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This means that there is a significant difference in creativity between groups of students whose learning uses problem-solving assisted by Mentimeter media and expository learning. Based on the average score of student creativity, it was found that the average score for learning using problem-solving strategies assisted by mentimeter media was 76.68, while the average score for using expository learning was 63.19. From this comparison, it can be concluded that, in general, the creativity of students in the group that carries out learning using the problem-solving method assisted by Mentimeter media is higher compared to the group that uses the expository learning method. The influence of problem solving assisted by Mentimeter media on student learning outcomes in Class V elementary school Indonesian language learning is carried out calculations using SPSS release 24, the results will be described in [Table 6](#).

Table 6. Test Results of the Effect of Using Problem-Solving Learning Strategies Assisted by Mentimeter Media on Student Learning Outcomes

Paired Group		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest-Posttest	-17.29268	12.51048	1.95381	-21.24148	-13.34389	-8.851	40	0.000

Based on [Table 6](#) show the results of calculating student creativity data through a paired sample t-test with a significance level of 5%, the calculated t value was -8.851 with a significance level of 0.000 ($p < 0.05$). From these results, it can be concluded that the use of problem-solving strategies assisted by Mentimeter media in learning Indonesian has a significant influence on student learning outcomes. Differences in learning outcomes between students who follow the problem-solving learning strategy assisted by Mentimeter media and students who take part in expository learning in class V elementary school Indonesian language learning is presented in [Table 7](#).

Table 7. Test Results of Differences in Student Learning Outcomes between Groups of Students Who Learned with Problem-Solving Learning Assisted by Mentimeter Media and Expository Learning

Statistics Parameters	Levene's Test for Equality of Variances					t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
Learning Outcomes	Equal variances assumed	0.301	0.585	6.920	76	0.000	13.13184	1.89777	9.35209	16.91158
	Equal variances not assumed			6.867	71.542	0.000	13.13184	1.91231	9.31930	16.94438

From Table 7 the results of calculating student learning outcomes data, a significance level (2-tailed) of 0.000 was obtained. This shows that the significance level (2-tailed) = 0.000 is smaller than the α value of 5% ($0.000 < 0.05$), so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This means that there are significant differences in learning outcomes between groups of students whose learning uses problem solving assisted by Mentimeter media and expository learning. Based on the average value of student learning outcomes data, it was found that the average score for learning using the problem-solving method assisted by Mentimeter media was 85.78, while the average score for using expository learning was 72.65. From this comparison, it can be concluded that in general, the learning outcomes achieved by the group of students who carried out learning using the problem-solving method assisted by Mentimeter media were higher compared to the group of students who used expository learning.

Discussion

The Effect of Problem Solving Assisted by Mentimeter Media on students' Creativity in Learning Indonesian in Grade V Elementary School

The hypothesis test results show a significance level of 0.000, much smaller than the significance level set at 5%. From this, it can be concluded that the Mentimeter media-assisted problem solving learning strategy has a significant effect on student creativity. This finding consistently supports previous research. For example, research conducted by previous study showed that problem-solving-based learning has a positive contribution to student creativity (Nuzliah, 2015). In addition, research by other study also confirmed that problem-solving activities encourage students to be more creative and skillful in overcoming various challenges around them (Sulaihah et al., 2019). Similar results were found in other research, where learning that emphasized problem solving resulted in an increase in student creativity, which was reflected in higher mean scores in the experimental class compared to the control class (Usa & Pratiwi, 2021).

The interpretation of this finding illustrates that the application of problem-solving learning strategies has a significant impact on improving students' creativity in the learning context. This is in line with the view of study which states that verbal creativity, which includes the ability to think and compose new ideas in the form of words, can be improved through learning approaches that emphasize problem solving (Sulaihah et al., 2019). In addition, the presence of Mentimeter media in the learning process also provides additional benefits. This medium not only strengthens the interaction between teachers and students but also encourages students' active participation in learning. Interactive platforms such as Mentimeter can improve the overall effectiveness of learning by stimulating students' creativity (Fitrisia et al., 2022; Nuretha & Fatimah, 2023). By giving students the opportunity to think creatively and generate new ideas, the app enriches the learning experience and creates a dynamic and productive learning environment.

In broader terms, these findings illuminate the transformative potential inherent in integrating Mentimeter's media-assisted problem-solving learning strategy within educational frameworks. Beyond its immediate impact on enhancing creativity, this approach signifies a pivotal shift towards fostering a culture of active engagement and collaborative learning among students. By leveraging innovative technologies to facilitate problem-solving activities, educators can instigate a paradigmatic evolution in pedagogical practices, ultimately cultivating a more dynamic and interactive educational ecosystem. Consequently, this

holistic approach holds promise for not only elevating learning outcomes but also nurturing essential skills crucial for students' lifelong success in an increasingly complex and interconnected world.

The Difference in Creativity between groups of Students who Follow Problem Solving Assisted by Mentimeter Media and Groups of Students who Follow Expository Learning in Learning Indonesian in Class V Elementary School

The results of the data analysis show that there is a significant difference in creativity between groups of students whose learning uses Mentimeter media-assisted problem solving and expository learning. This is evidenced by the significance level of 0.000, which is much smaller than the alpha (α) value set at 5%. In other words, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. Creativity has an important role in helping students find ideas, apply them, and practice the ability to find the right solution when solving problems. Previous research, such as that conducted that shown that problem-solving-based learning has a positive impact on increasing student creativity (Firdaus et al., 2021). This finding is in line with our research, which shows that learning with a problem-solving approach aided by Mentimeter is effective in increasing students' creativity (Widada et al., 2019).

In addition, other study emphasized that expository learning is effective in instilling meaningful learning (Siswondo & Agustina, 2021). However, our research shows that the problem-solving learning approach with Mentimeter media has a more significant impact on student creativity. This shows that there are advantages to using an approach that is more interactive and involves students actively in the learning process. In addition, Mentimeter media is also effective in training students' critical attitudes. Other study highlighted the importance of a critical attitude in improving students' learning outcomes and creativity (Purba & Siregar, 2023). These results are consistent with the findings presented, which state that the level of student involvement in the learning process can increase when the learning medium used is Mentimeter (Hasyiyati & Zulherman, 2021). Our findings are in line with this, indicating that the use of Mentimeter in learning can stimulate students' engagement and strengthen their critical attitude.

This finding indicates that the application of Mentimeter's media-assisted problem-solving learning strategy is not only effective in enhancing students' creativity but also opens up opportunities to increase students' engagement and strengthen their critical attitudes. As such, the findings make a significant contribution to our understanding of how innovative learning approaches can enrich students' learning experiences as well as create a more dynamic and meaningful learning environment.

The Effect of Problem Solving Assisted by Mentimeter Media on Student Learning Outcomes in Learning Indonesian In Grade V Elementary School

The results of the data analysis showed a significance level of 0.000, which is smaller than the significance level set at 5%. From this, it can be concluded that the problem-solving learning strategy assisted by Mentimeter media has a significant effect on student learning outcomes. This finding is in line with several previous studies. For example, other research showed that the application of problem-solving strategies has an effect on student learning outcomes (Anuari & Zola, 2020; Suhendri & Mardalena, 2015). This is reinforced by research, which found that the application of problem-solving learning strategies significantly improved student interest and learning outcomes (Bate'e & Zebua, 2019). Other study also mentioned that problem-solving learning has an important role in helping students acquire knowledge more effectively and interactively based on a constructivistic paradigm (Lestari, 2020). Furthermore, the use of Mentimeter as an interactive learning medium has also been proven to make a positive contribution to student learning outcomes. Research by other study showed that the use of Mentimeter can improve student learning outcomes (Nuretha & Fatimah, 2023). This finding is supported by study who found that interactive multimedia, including Mentimeter, can increase learners' understanding and involvement in the overall learning process (Manshur & Rosdiana, 2021).

The Difference in Learning Outcomes Between Students who use Problem-Solving Assisted by Mentimeter Media and Groups of Students who follow Expository Learning in Learning Indonesian Language in Class V Elementary Schools is Different

The results of the data analysis showed a significance level of 0.000, which is smaller than the significance value set at 5%. Thus, it can be concluded that there is a significant difference in learning outcomes between student groups whose learning uses Mentimeter media-assisted problem solving and expository learning. This finding consistently supports the results of previous research. For example, research showed that problem-solving strategies can improve student learning outcomes (Jauhar, 2017). Furthermore, previous study emphasized the importance of learning outcomes in improving students' activities and assisting teachers in improving the learning process (Wibowo, 2016). The results of our study are also in line with this view, showing that the use of Mentimeter-assisted problem-solving strategies is

effective in improving students' learning outcomes. In addition, Mentimeter media has been proven to be a flexible tool for learning. Other study mentioned that Mentimeter allows students to be active in learning, creates a fun learning atmosphere, and increases student engagement (Qodriani et al., 2022). This is also reinforced by study who stated that the use of Mentimeter media can help learners absorb knowledge more optimally (Nuretha & Fatimah, 2023).

Thus, our findings confirm that the use of Mentimeter's media-assisted problem-solving learning strategy is not only effective in improving students' learning outcomes but also provides additional benefits in creating an interactive and fun learning atmosphere. This makes an important contribution to enriching students' learning experiences and improving the overall effectiveness of the learning process. Thus, the results of our study confirm previous findings showing that the implementation of Mentimeter media-assisted problem-solving learning strategies has a significant impact on consistently improving student learning outcomes. This finding not only highlights the effectiveness of technology in enhancing learning but also reflects the urgent need for innovative learning approaches that are responsive to students' needs in this digital age. In a broader context, the integration of Mentimeter in the learning process reflects a paradigmatic evolution in education, where technology is not only considered a tool but also a catalyst to expand the learning space and enrich the student experience. By adopting this approach, educators have the opportunity to create a dynamic and inclusive learning environment where students are encouraged to think critically, collaborate, and innovate. Therefore, these findings not only illustrate the potential of Mentimeter in enhancing learning effectiveness but also affirm the importance of adapting to technological developments to achieve broader learning goals and support students' comprehensive development in the future.

4. CONCLUSION

Based on the results of the study, it can be concluded that the use of problem-solving strategies assisted by mentimeter media significantly contributed to the improvement of students' creativity and their learning outcomes. There is a significant difference in the level of creativity and learning outcomes between students who received mentimeter-assisted problem-solving learning compared to those who received the expository learning approach. Therefore, the implementation of a problem-solving learning strategy with mentimeter media can be considered more effective in stimulating students' creativity and improving their academic achievement. This finding indicates that the use of Mentimeter-assisted problem-solving strategies plays a significant role in improving students' creativity and learning outcomes. There is a significant difference in the level of creativity and learning outcomes between students who received Mentimeter-assisted problem-solving learning compared to students who received the expository learning approach. Thus, the implementation of problem-solving learning strategies with Mentimeter media is a more effective alternative for stimulating students' creativity and improving their academic achievement. This finding provides a strong foundation for the use of the Mentimeter-assisted problem-solving strategy as a learning approach that is not only effective but also innovative.

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