Mathematical Literacy Viewed from Self-Efficacy through Creative Problem Solving Learning Assisted by Google Classroom

Rahmah[1*]; Wardono[2]; Sugiman[3]

[1,2,3] *Faculty of Mathematics and Natural Science, Universitas Negeri Semarang, Indonesia*
[1*]*Corresponding Email: rahmahm96@gmail.com, Phone Number: 0823 xxxx xxxx*

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Abstract: This study aims to determine the influence of implementing Creative Problem Solving assisted by Google Classroom on students' mathematical literacy based on Self-efficacy. The research method employed is quasi-experimental. The study population consists of all seventh-grade students at MTsN 3 West Aceh. The research sample includes Class VII B as the experimental group and Class VII F as the control group. Quantitative data were analyzed using statistical tests processed with IBM SPSS Statistics 16. The research findings indicate (1) the average mathematical literacy of students in the experimental group, who received Creative Problem Solving assisted by Google Classroom, was higher than that of students in the control group who received Discovery Learning, with a calculated t-value of 5.75 > critical t-value of 1.99 using a one-tailed test for the difference in means; (2) the increase in mathematical literacy among students in the experimental group, who received Creative Problem Solving assisted by Google Classroom, was greater than that of students in the control group who received Discovery Learning, with a calculated t-value of 2.89 > critical t-value of 1.99 using an improvement test; and (3) Self-efficacy positively influenced the mathematical literacy of students in the experimental group who received Creative Problem Solving assisted by Google Classroom, accounting for 49.4% of the influence using an influence test. Based on the research, Creative Problem Solving assisted by Google Classroom proves effective in enhancing students' mathematical literacy in schools.

Abstrak: Penelitian ini bertujuan untuk mengetahui pengaruh penerapan Creative Problem Solving berbantuan Googleclassroom terhadap literasi matematika siswa berdasarkan Self-efficacy. Metode penelitian yang digunakan yakni metode quasi eksperimen. Populasi penelitian yaitu seluruh siswa kelas VII MTsN 3 Aceh Barat. Sampel penelitian adalah kelas VII B sebagai kelas eksperimen dan kelas VII F sebagai kelas kontrol. Data kuantitatif dianalisis menggunakan uji statistik yang diolah menggunakan program IBM SPSS Statistc 16. Hasil penelitian menunjukkan (1) Rata-rata literasi matematika siswa kelas eksperimen yang memperoleh pembelajaran Creative Problem Solving berbantuan Googleclassroom lebih tinggi dibandingkan rata-rata literasi matematika siswa kelas kontrol yang memperoleh pembelajaran Discovery Learning yakni t hitung 5.75 > t tabel 1.99 mengunakan uji beda dua rata-rata satu pihak; (2) Peningkatan literasi matematika siswa kelas eksperimen yang memperoleh pembelajaran Creative Problem Solving berbantuan Googleclassroom lebih tinggi dibandingkan peningkatan literasi matematika siswa kelas kontrol yang memperoleh pembelajaran Discovery Learning yakni t hitung 2.89 > t tabel 1.99 menggunakan uji peningkatan ; dan (3) Self-efficacy berpengaruh positif terhadap literasi matematika siswa kelas ekperimen yang memperoleh pembelajaran Creative Problem Solving berbantuan Googleclassroom yakni memberikan pengaruh sebesar 49,4% dengan mengunakan uji pengaruh. Berdasarkan penelitian pembelajaran Creative Problem Solving berbantuan Googleclassroom efektif dilakukan untuk meningkatkan literasi matematika siswa di sekolah.

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A. Introduction

Mathematics is the study of logic concerning shape, arrangement, quantity, and other relational concepts, segmented into three primary fields: algebra, analysis, and geometry (James and James, 1976, as cited in Rahmah, 2018). The educational landscape of mathematics in Indonesia is evolving rapidly, aligning with global advancements in mathematics education. Changes in classroom practices are driven by technological and scientific progress. According to the Ministry of Education and Culture (Afif et al., 2021), students must develop 21st-century skills, known as the 6Cs: Critical Thinking and Problem Solving, Communication, Creativity and Innovation, Collaboration, Character, and Citizenship, to be competitive and prepared for the future. In this context, mathematical literacy plays a crucial role in mastering these skills. Wardono & Mariani (2018) define mathematical literacy as the ability to comprehend and apply fundamental mathematical knowledge in everyday life. Mathematics education inherently encompasses basic mathematical skills and mathematical literacy (Dwiyanto & Kurniasih, 2023). For a developing nation like Indonesia, high levels of mathematical literacy are essential for future competitiveness. However, Indonesia has consistently ranked low in mathematical literacy, evident from the 2018 PISA results where Indonesia placed 74th out of 79 participating countries. Since Indonesia's inception in PISA in 2001, its science achievements have fluctuated but remained relatively stable, whereas its mathematics achievements exhibited initial variability but have since stabilized since 2009. Given the significance of mathematical literacy, it is imperative for students to acquire this skill to support their daily lives within educational, social, economic, and cultural contexts.

The Ministry of Education's Regulation Number 20 of 2016 (Depdiknas, 2016) outlines the scope of mathematics subjects in SMP/MTs education units (Depdiknas, 2006), covering topics such as numbers, algebra, geometry and measurement, and statistics and probability. At MTsN 3 West Aceh, one of the subjects taught in mathematics education is quadrilaterals. Based on field observations, it is evident that students' mathematical literacy is not fully implemented in their education, particularly at MTsN 3 West Aceh. Initial interviews with mathematics instructors and preliminary tests indicate low levels of mathematical literacy and students' lack of problem-solving comprehension. Many students encountered difficulty answering the preliminary test questions.

Efforts are required to enhance students' mathematical literacy. Teachers must select appropriate learning models to augment students' mathematical literacy. Initial studies suggest that instructors frequently utilize the Discovery Learning model, emphasizing conceptual exploration while overlooking problem-solving aspects, including mathematical literacy. One potential resolution is the Creative Problem Solving (CPS) learning model. According to Abduloh et al (2018), the CPS learning model prioritizes teaching and problem-solving capabilities, encouraging students to develop creative and imaginative solutions. This model promotes active participation and creativity in problem-solving, aligning with the goal of enhancing mathematical literacy.

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Students' achievement in assignments and problem-solving is influenced by their self-efficacy. Zahn et al (2018) describe self-efficacy as an individual's belief in their capability to succeed in a task. Initial study findings indicate that instructors have not evaluated students' self-efficacy, although it is critical for improving learning outcomes (Haryanto & Setiadi, 2021; Indrawati et al., 2019). Sari et al (2021) suggest that low learning outcomes may result from low self-efficacy. Self-efficacy significantly influences learning, motivation, and performance (Utami & Wutsqa, 2017). Enhancing self-efficacy empowers students to confront and succeed in their tasks and assignments.

Advancements in information technology have facilitated internet access, making internet-based learning more prevalent, especially during the Covid-19 pandemic. Google Classroom stands out as a widely used internet-based learning platform that provides teaching materials and integrates assessments. Fauzan (2020) emphasizes the effectiveness and efficiency of Google Classroom in both classroom and remote learning settings. Wicaksana et al (2016) observes that utilizing the internet in mathematics education can create a meaningful and enjoyable learning environment. Implementing Google Classroom-based learning can bolster students' mathematical literacy (Utami & Wutsqa, 2017). Structured around the Creative Problem Solving learning model, Google Classroom supports students in problem-solving and mastering components of mathematical literacy. The CPS model requires students to be actively engaged and creative, qualities essential for mathematical problem-solving, particularly amid the Covid-19 pandemic (Feriansyah et al., 2021). This research aims to optimize mathematics education using Google Classroom to enhance students' mathematical literacy and analyze the impact of Creative Problem Solving learning facilitated by E-Learning on the mathematical literacy of seventh-grade students at MTsN 3 West Aceh, as well as the influence of student self-efficacy on their mathematical literacy.

B. Method

This study utilizes a quasi-experimental approach employing a Pretest-Posttest Control Group design, which includes two distinct groups: an experimental group and a control group. The research process is depicted in Figure 1 below.

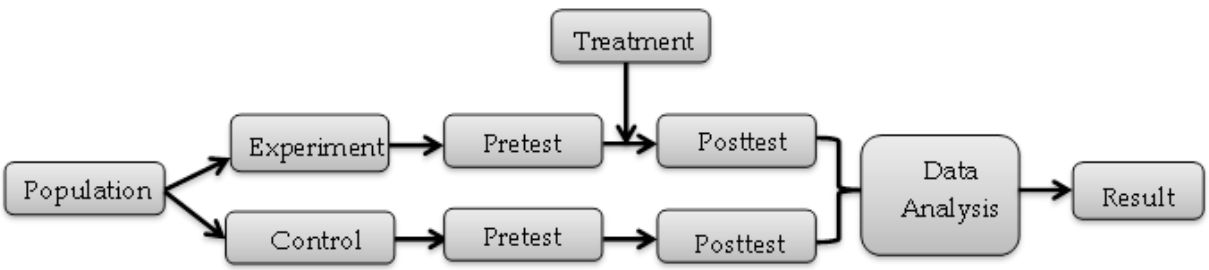

Figure 1. Research Flow

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According to the diagram above, the research process involves conducting a pretest, which assesses students' initial mathematical literacy related to rectangular materials, followed by a posttest to evaluate their final understanding of the same material. Both the control and experimental groups undergo these assessments. The experimental group experiences Creative Problem Solving learning facilitated by E-Learning, whereas the control group does not undergo any specific treatment. Subsequently, the collected data from these tests are analyzed to derive the research findings.

Table 1 Pretest-Posttest Control Group Research Design

Class	Pretest	Treatment	Posttest
Experiment	T_1	X	T_2
Control	T_1	-	T_2

Information:
T_1: Initial test of students' mathematical literacy with rectangular material
X: Application of Creative Problem Solving learning assisted by E-Learning
T_2: Final test of students' mathematical literacy with quadrilateral material

The study population consisted of all seventh-grade students at MTsN 3 Aceh Barat, encompassing a total of six classes. From this population, a sample was selected comprising two seventh-grade classes chosen randomly using a random sampling method. The selection criteria ensured that the chosen classes shared similar characteristics: they followed the same curriculum, were at the same academic level, and were grouped without regard to academic ranking. Below is the mathematical literacy scoring rubric based on seven components of mathematical literacy.

Table 2. Mathematical Literacy Scoring Rubric

No	Component	Scoring Rubric
1	**Communication** (Formulating the situation mathematically) Express and formulate mathematical ideas/ideas according to the problem	Score 4 Write ideas/ideas about questions correctly and completely Score 3 Write ideas/ideas on the question correctly but incompletely Score 2 Writing ideas/ideas on the questions is incomplete and contains several errors Score 1 Writing ideas/ideas on questions is incomplete and wrong
2	**Mathematising** (Interpreting, applying and evaluating mathematical results)	Score 4 Transforming problems from the real world into correct mathematical form Score 3

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No	Component	Scoring Rubric
	Transforming problems from the real world into mathematical form (formulating mathematical models)	Problems are changing from the real world to mathematical form, but inaccurate definitions exist. Score 2 Problems are changing from the real world to mathematical form, but some definitions are less precise. Score 1 Changing problems from the real world to mathematical form, but the definition is not precise
3	**Representation** (Formulating the situation mathematically) Represent the problem by making a picture	Score 4 Sketch the shape contained in the question with a proportional size according to the question and write a description. Score 3 Sketch the shape in the question with a proportional size according to the question, but write down the explanation. Score 2 Sketch the shape of the question with a disproportionate size, but correct it when writing the explanation. Score 1 Sketch the shape in the question, and do not write down the explanation
4	**Reasoning and argument** (Interpreting, applying, and evaluating mathematical results) Think logically to draw conclusions, examine, or provide justification for statements or solutions to problems	Score 4 Make conclusions and the reasons correctly Score 3 Makes conclusions correctly, but the reasons are not correct Score 2 Gives reasons correctly but is less precise in concluding Score 1 Wrong in concluding and giving reasons
5	Devising strategies for solving problems (Formulating situations mathematically) Apply sequential solution steps to resolve the problem.	Score 4 Steps for correct completion, sequential writing, correct formulas and correct calculations Score 3 The steps for solving it are correct, but the writing needs to be in order, the formula is accurate, and the calculation needs to be corrected. Score 2 The steps for solving it are correct: the writing needs to be in order, the formula needs to be corrected, and the calculations need to be corrected.

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No	Component	Scoring Rubric
		Score 1 Wrong completion steps, writing out of order, wrong formulas and wrong calculations
6	**Using symbolic, formal and technical language and operation** (using concepts, facts, processes and mathematical reasoning) Using symbols, formal and technical language as well as arithmetic operations to formulate solutions or interpret mathematics	Score 4 Writing letters/symbols correctly, writing numbers correctly, writing clearly Score 3 Writing letters/symbols, numbers, and writing needs to be clarified. Score 2 Writing letters/symbols correctly, miswriting numbers, writing unclear Score 1 Wrong writing of letters/symbols, wrong writing of numbers, unclear writing
7	**Using Mathematics Tools** (Using concepts, facts, procedures and mathematical reasoning) Using mathematical tools, for example, to carry out measurements, operations, etc.	Score 4 Draw a rectangle with a ruler; the shape of the rectangle is correct and neat. Score 3 Draw a rectangle with a ruler. The shape of the rectangle is correct but needs to be neat. Score 2 Draw a rectangle with a ruler, but the rectangle is not quite right Score 1 Drawing a quadrilateral is not done with a ruler, and the quadrangle needs to be entirely right.

Table 2 above is a table containing the mathematical literacy scoring rubric used as a reference in assessing the results of students' mathematical literacy tests in both the control and experimental classes.

The type of questionnaire used in this research uses a Likert Scale . The Likert scale is also used as a tool to measure attitudes, opinions and perceptions of individuals or groups of people regarding social phenomena (Sugiyono, 2017). The questionnaire consists of 20 statements containing 4 alternative answers. This statement is made based on a Likert scale with answer choices between 1 and 5. The answer choices provided in this questionnaire are Strongly Agree (SS), Agree (S), Disagree (TS), and Strongly Disagree (STS). Sugiyono (2017) suggests that for quantitative analysis purposes, the answers can be given a score, for example:

1. Strongly Agree (SS) score 4
2. Agree (S) score 3
3. Disagree (TS) score 2
4. Strongly Disagree (STS) score 1

The score calculation steps used by researchers are as follows:

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1. Self-efficacy inventory scores
2. Look for the average value (mean) and standard deviation (standard deviation).
3. Determine group boundaries as in Table 3 below.

Table 3. Criteria for Grouping Students Based on Self-Efficacy

Criteria	Category
$X \geq (\bar{X} + SD)$	Tall
$(\bar{X} - SD) < X < (\bar{X} + SD)$	Currently
$X < (\bar{X} - SD)$	Low

Table 3 above is a table that contains the criteria for grouping students based on Self-Efficacy to assist researchers in grouping the results of the categories of students who have filled out the research questionnaire.

The following is a grid distribution of student Self-Efficacy indicators on the Self-Efficacy questionnaire sheet.

Table 4. Self-Efficacy Indicator Grid

No	Dimensions/Indicators	No. Spread
	Magnitude: The level of confidence to overcome task difficulties as a perception of self-ability	
1	How much interest in lessons and assignments?	1
2	Have an optimistic view in carrying out tasks	2
3	Develop self-ability in problem-solving	3
4	Make a plan to complete the task	4
5	How confident you are in solving problems	5
6	Confidence to study according to the schedule	6
7	View complex tasks as a challenge	7
8	Act selectively in achieving its goals	8
	Strengths: The level of strength or weakness based on beliefs about one's abilities	
1	The efforts made can improve good performance	9
2	Commitment to completing assigned tasks	10
3	Believe in your superiority	11
4	Persistent in completing tasks	12,13
5	Think positively in completing tasks	14
6	Have good self-motivation for self-development	15
	Generally: Indicates whether beliefs will apply in a wide variety of activities and situations	
1	Respond well to different situations and think positively	16
2	Make past experiences a path to achieving success	17
3	Likes to look for new situations to solve problems	18
4	Can handle all situations effectively	19
5	Want to try a new challenge	20

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Table 4 above contains a grid of student Self-Efficacy indicators on the Self-Efficacy questionnaire sheet. Used as a reference for assessing the results of questionnaires filled out by students.

C. Result and Discussion

Result

A summary of the final data for the control and experimental classes is presented in Table 4 below.

Table 5. Summary of Final Data for Control Class and Experimental Class

No	Aspect	Control class	Experimental class
1	Many students	34	34
2	Average value	37.61764706	54.558824
3	Maximum Value	64	85
4	Minimum Value	20	28
5	Variance	102.9431818	191.99621
6	Standard Deviation	10.14609195	13.85627

Based on Table 5, the final data for the control and experimental classes were obtained, and then testing was carried out on the two classes to see whether they had the same characteristics. These tests include final data normality tests, final data homogeneity tests, and research hypothesis tests.

The results of the final data normality test are presented in Table 6 below.

Table 6. Final Data Normality Test Results

	Kolmogorov-Smirnov[a]		
	Statistics	**df**	**Sig.**
Control class final data	,112	34	,200
Final data of experimental class	.134	34	,092

Based on Table 6, it can be seen that the significance value for the normality of the final data for the control class is 0.200 > 0.05 and the significance value for the normality of the final data for the experimental class is 0.095 > 0.05. This shows that H_0it is accepted. Thus it can be concluded that the final data for both samples came from comes from a normally distributed population. The final data homogeneity test results are presented in Table 7 below.

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Table 7. Final Data Homogeneity Test Results

	Levene Statistics	df1	df2	Sig.
Final data	.011	1	66	,915

Based on the results in Table 7, the final data homogeneity test results are obtained. The test criteria with a significance level of 5% used are if the Sig. > 0.05, then H_0accepted. Based on Table 7, the Sig value = 0.915 > 0.05. Thus H_0accepted, it can be concluded that the final data variance for the control class and experimental class comes from a homogeneous population. The test is calculated using the difference test between two party averages (right), namely using the following formula:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left(\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}\right)\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

The calculation results using Microsoft Excel are presented in Table 8 as follows.

Table 8. Results of the Difference Test for Two Means of One Party

df	n_1	n_2	Experimental class average	Control class average	t count	t table
68	34	34	54.55882353	37.61764706	5.75	1.9971

Based on the results in Table 8, the calculated t result is 5,75197 more than the t table, namely 1.9971, so reject H_0 and accept H_1. This means that the average mathematical literacy results of students in Creative problem-solving learning assisted by Google Classroom are more than those of students in Discovery Learning.

The test is calculated using the difference test between two party averages (right), namely using the following formula:

$$t = \frac{\overline{gE} - \overline{gK}}{\sqrt{\left(\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}\right)\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

The calculation results using Microsoft Excel are presented in Table 9 as follows.

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Table 9. Value Improvement Test Results:
Difference Test between Two Means of One Party

df	n_1	n_2	Average experimental class Gain value	Average control class Gain value	t count	t table
68	34	34	0.35911	0.132175	2.89	1.9971

Based on the results presented in Table 10, the test outcomes demonstrate the impact of student self-efficacy on the Mathematical Literacy Test (TLM) scores. The Significance value (Sig) obtained from the output is 0.000, which is less than the significance level of 0.05. This indicates that the null hypothesis (H_0) is rejected, confirming that student self-efficacy indeed influences the student's Mathematical Literacy Test (TLM).

The coefficient of determination (R Square or R^2) is used to quantify the extent of the influence of the independent variable (X) on the dependent variable (Y) in simple linear regression analysis. This value is typically included in SPSS output. The detailed calculation results from SPSS are presented in Table 11.

Table 10. Effect Test Results

ANOVA [b]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3053.155	1	3053.155	31,302	,000 [a]
	Residual	3121.227	32	97,538		
	Total	6174.382	33			
a. Predictors: (Constant), SELF EFFICACY						
b. Dependent Variable: FINAL VALUE						

Based on the results in Table 10, the test results show the influence of student self-efficacy on the student's Mathematical Literacy Test (TLM). Based on the significance value (Sig), Sig is obtained from the output above. It is 0.000, which is less than 0.05. This means that H_0it is rejected; thus, student self-efficacy is influenced by the student's Mathematical Literacy Test (TLM).

The coefficient of determination (R Square or R^2) is used to quantify the extent of the influence of the independent variable (X) on the dependent variable (Y) in simple linear regression analysis. This value is typically included in SPSS output. The detailed calculation results from SPSS are presented in Table 11.

Table 11. Determination Coefficient Test Results

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.703 [a]	0.494	0.479	9,876

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a. Predictors: (Constant), SELF EFFICACY
b. Dependent Variable: FINAL VALUE

Table 11 above explains the correlation/relationship value (R) magnitude of 0.703. From this output, a coefficient of determination (R Square) of 0.494 is obtained, which means that the influence of the independent variable (Trust), namely Self-efficacy, on the dependent variable (Participation), namely the student's final TLM value, is 49.4%.

Discussion

The Creative Problem Solving (CPS) learning process, assisted by Google Classroom, was assessed for quality by observing the implementation of the learning process and evaluating student response questionnaires. Implementation observations measured the alignment of the classroom activities with the pre-prepared lesson plans (RPP). Student response questionnaires were administered to gauge students' reactions and feedback regarding the learning process.

The learning implementation took place over four sessions, with an average implementation score of 80.90%, categorized as good based on observation results. The learning activities adhered closely to the RPP, encompassing three stages: preliminary activities, core activities, and closing activities.

The average implementation scores indicated an increasing trend in student engagement with CPS learning assisted by Google Classroom. During the first, second, and fourth meetings, students were very enthusiastic about learning, as evidenced by all students bringing their smartphones. However, there was a slight decline during the third meeting due to some students forgetting to bring their smartphones and having to share with their peers. According to Ambara (2020), e-learning enhances the intensity of communication among students and organizes learning materials in a structured manner within a single medium, such as Google Classroom. Google Classroom is noted for its comprehensive features and ease of use (Sudarman et al., 2021), and its positive impact on education is evident through its integration as an e-learning medium (Su'uga et al., 2020).

Student activities became more controlled with the CPS learning model supported by Google Classroom, which followed the CPS learning syntax. This structure was instrumental in helping students solve problems and master mathematical literacy components. The CPS model requires students to be more active and creative in solving mathematical problems, which is particularly important during the Covid-19 pandemic (Feriansyah et al., 2021). The CPS learning model enhances students' cognitive abilities in solving mathematical problems, as confirmed by Widodo & Kartikasari (2017), who found that CPS fosters higher levels of problem-solving skills compared to conventional learning methods. Studies have shown an increase in mathematical literacy among students using e-learning-based mathematics learning (Murni & Juandi, 2023; Nasution & Ramadhani, 2023; Nurhayati, 2022). Additionally, effective e-learning implementation can enhance students' mathematical literacy (Angreanisita et al., 2021).

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The quality of the learning process was further evaluated through student response questionnaires, aimed at understanding students' reactions to CPS learning with Google Classroom assistance. The results indicated a high average score, placing it in the very good category, suggesting that most students responded positively to the CPS learning method facilitated by Google Classroom. From these observations and responses, it can be concluded that the CPS learning process assisted by Google Classroom is of high quality.

Quantitative assessments of the learning quality were conducted using TLM (Test of Learning Materials) and self-efficacy evaluations. These assessments were administered to both the control class, which used Discovery Learning, and the experimental class, which used CPS learning assisted by Google Classroom.

Results showed that 85.29% of students in the CPS-assisted Google Classroom learning group scored above the Actual Complete Limit of 40. In contrast, 44.11% of students in the Discovery Learning group exceeded the Actual Complete Limit. The average scores for the CPS group were 54.55, compared to 37.61 for the Discovery Learning group.

The data analysis indicated that the CPS-assisted Google Classroom group achieved classical completeness, with more than 70% of students meeting the proficiency threshold. This demonstrates that learning using Google Classroom significantly improves student outcomes. E-learning facilitates the learning process through electronic networks, enhancing learning efficiency and effectiveness Su'uga et al (2020). This aligns with Wardono (2015), who noted that internet utilization in mathematics learning fosters a meaningful and enjoyable learning environment.

Furthermore, the study found that student self-efficacy accounted for 49.4% of the variance in student mathematical literacy, indicating a positive influence. However, 50.6% of the variance in mathematical literacy was influenced by factors other than student self-efficacy.

D. Conclusion

Based on the results and discussion, it was found that in Learning Process Planning, the learning tools and research instruments prepared by the researchers were rated very highly by expert validators. In the Implementation of the Learning Process, the use of Creative Problem Solving learning facilitated by Google Classroom was rated as good. This indicates that the learning was conducted in accordance with the RPP (lesson plan). Student feedback on the learning process was very positive. In terms of Learning Outcomes Assessment, the Creative Problem Solving learning outcomes facilitated by Google Classroom were deemed to be of high quality. This is evidenced by several factors: the average mathematical literacy of students in the experimental class, who received Creative Problem Solving learning with Google Classroom, was higher than that of students in the control class, who received Discovery Learning. The increase in mathematical literacy was greater for the experimental class than for the control class, and self-efficacy positively affected the mathematical literacy of students in the experimental class.

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This research provides a reference for a new learning method that can effectively enhance students' self-efficacy and mathematical literacy in schools. It supports the learning process by maximizing the teacher's role, improving students' self-efficacy and mathematical literacy, and addressing learning challenges in rectangular material. It also emphasizes the beneficial use of the internet as a learning medium rather than merely for entertainment.

Each student has different levels of self-efficacy and mathematical literacy abilities. This study offers valuable insights and suggestions for future researchers to explore the impact of Creative Problem Solving learning assisted by Google Classroom, particularly in relation to students' self-efficacy, compared to traditional learning methods that have been used for a long time.

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