



Innovative approaches for learning: Strengthening numeracy literacy with creative problem solving

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Abstract

Numeracy literacy is one of the essential skills students must possess to use numbers and mathematical symbols to solve everyday problems, present information in various forms such as tables, graphs, or charts, and interpret analysis results as a basis for decision-making. However, students' numeracy literacy skills still need to be strengthened through the application of innovative, problem-solving-centered learning models. Therefore, this study aims to describe students' numeracy skills by applying the Creative Problem Solving (CPS) model to the topic of Systems of Linear Equations with Two Variables (SLETV). This study employed a descriptive method involving 33 ninth-grade students. Learning activities were designed by integrating the CPS model's stages into the SLETV problem-solving process. Data was collected through a test developed based on numeracy literacy indicators, then analyzed and categorized into five categories: very good, good, sufficient, insufficient, and very insufficient. The results indicate that the CPS model positively impacts students' numeracy literacy skills, particularly in representing, interpreting, and applying mathematical information in real-life contexts. Based on these findings, this study recommends using innovative approaches, such as CPS, in mathematics instruction to strengthen students' numeracy skills when studying the System of Linear Equations with Two Variables.

Keywords: creative problem solving; innovative learning; mathematics education; numeracy; SLETV

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I. Introduction

Numeracy refers to the ability to apply numbers and basic mathematical symbols to solve real-life problems, represent information in various forms such as graphs, tables, and charts, and interpret analytical results to support decision-making (Iswara, Ahmadi, & Ary, 2022). In the current information era, numeracy literacy has become increasingly important because it enables students to understand data-driven information and apply it effectively across various

real-world contexts (Aini, Hidayat, Kusnadi, Williams, & Hadibarata, 2024).

The junior high school mathematics curriculum explicitly identifies algebra as one of the key foundations for developing students' numeracy skills. The four main perspectives in algebra instruction are: algebra as a meaningful activity, a personal activity, a cognitive activity, and a general human activity (Arofa, 2022).

Algebra-related numeracy literacy requires students to understand and apply



concepts involving equations, inequalities, relations, functions, number patterns, ratios, and proportional reasoning (*Pusat Asesmen dan Pembelajaran*, 2020).

Research shows that algebra content, particularly the topic of Systems of Linear Equations in Two Variables (SLETV), plays a crucial role in developing junior high school students' numeracy skills, as students with high numeracy skills tend to demonstrate critical thinking abilities when solving SLETV problems (Aini et al., 2024). Within the context of SLV, numeracy literacy is generally assessed through word problems, which foster students' logical reasoning and critical thinking abilities (Wahyuni, Septiati, & Octaria, 2024). This research statement is supported by evidence indicating that symbolic understanding and procedural approaches are interdependent components of algebraic proficiency and that teachers must attend to both (Hurrell, 2021). Thus, SLETV serves as an essential foundation that students must master to understand subsequent mathematical concepts.

Nevertheless, students' numeracy skills remain relatively low and therefore require greater attention in the teaching and learning process (Sanvi & Diana, 2022). The low numeracy proficiency of junior high school students is evidenced by the PISA test results. Based on the 2022 PISA results, Indonesia did see an improvement in its ranking compared to 2018 (Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, 2023). However, the average score for mathematical literacy actually declined, from 487 in 2018 to 366 in 2022 (OECD, 2023). This low level of numeracy literacy is attributed to a lack of sensitivity to numbers, an inability to analyze information in tables, and difficulty communicating the information presented (Winata, Widiyanti, & Sri Cacik, 2021). Consequently, students struggle with SLETV questions related to numeracy literacy (Setyaningsih & Mukodimah, 2022). These difficulties stem from students' limited understanding of numeracy-based SLETV

material (Hurrell, 2021). Most students lack an understanding of structure and rely more on procedural strategies than on structural comprehension strategies when solving equations (Jupri, Sispiyati, & Chin, 2021).

One approach to improving students' numeracy skills is to implement a relevant and promising learning model, namely, Creative Problem Solving (CPS) (Takaria, Wahyudin, Sabandar, & Dahlan, 2020). The Creative Problem Solving (CPS) learning model is an instructional approach that prioritizes developing problem-solving competencies and cultivating creativity (Nurrijal, Setyosari, Kuswandi, & Ulfa, 2023). Creative thinking in mathematics reflects the ability to innovate in finding new and different solutions to mathematical problems (Wulandari, 2023). The CPS learning model provides opportunities to solve problems using creative strategies. This learning model gives students the freedom to express their ideas—which are then selected as solutions—through structured steps that encourage the emergence of creative ideas in problem-solving (Christina, Nindiasari, Sultan, & Tirtayasa, 2022).

Research on mathematical literacy skills in algebra has been conducted by several researchers, focusing on various subtopics. This study examines students' mathematical literacy skills in arithmetic, a component of the algebra curriculum. Most students are reported to have difficulty conceptually understanding arithmetic operations and applying this understanding to real-life applications. This study emphasizes the importance of contextual learning to improve students' numeracy literacy (Fauzi, Melyana, Rahmawati, Yasmin, & Nurrahmah, 2021). Furthermore, a previous study examined numeracy literacy skills in the topic of quadratic equations (Rachmawati, Lestari, Oktavianingtyas, Trapsilasiwi, & Murtikusuma, 2024). The results of this study indicate the need for a learning approach that emphasizes the interconnections among different representations. Findings from studies on numeracy skills in sequences and series indicate that many students

struggle to recognize patterns accurately, interpret symbolic meanings, and apply formulas effectively in word-problem contexts (Arofa, 2022). These three studies confirm that, although they fall within the same scope of algebraic content, they remain challenges that require attention in the classroom learning process; thus, adaptive and contextual learning strategies are necessary.

Additionally, research conducted by Meryansumayeka et al. suggests that the Problem-Based Learning (PBL) method is effective in promoting student engagement, strengthening conceptual understanding, and enhancing problem-solving skills in the topics of Systems of Linear Equations with Two Variables (SLETV) and Systems of Linear Inequalities with Two Variables. A similar study by Lihawa, Zakaria, & Kobandaha (2025) the results of this study indicate that improving students' mathematical numeracy skills through the Problem-Based Learning (PBL) approach among 10th-grade vocational high school students

Research in Thailand indicates that CPS comprises five main components—problem identification, solution generation, insight, methods, and creativity—that are interrelated in supporting the problem-solving process. These findings reinforce the idea that learning with CPS provides students with the opportunity to develop systematic thinking skills for problem solving (Charoenthom, Kantathanawat, Pimdee, & Apisuksakul, 2025). Additionally, research by Ersoy & Kara (2026) indicates that the Creative Problem Solving (CPS) approach encourages students to generate multiple alternative solutions, develop flexible thinking, and enhance originality in the problem-solving process.

Previous research on numeracy skills has been conducted. A study by Hamid, Octavianti, & Nagha (2025) showed that implementing the Creative Problem Solving (CPS) model significantly improved the mathematical reasoning skills of eighth-grade students in the topic of Systems of Linear Equations with Two Variables (SLETV). Learning with CPS

encourages students to identify problems, develop solution strategies, discuss, and evaluate solutions systematically, resulting in better mathematical reasoning abilities than conventional instructional methods. Another study by Zulfayani, Ariawan, Nufus, Nurdin, & Fitriani (2024) was also conducted. This study discusses the development of HOTS questions on the topic of SLETV and their pilot testing with students. The overall research results received a moderate rating.

The use of the Creative Problem Solving (CPS) model in mathematics instruction has attracted considerable attention from researchers. A study by Shahira, Sumaji, & Ulya (2024) on the application of the CPS learning model, aided by the PermathApps media, found that it improved students' mathematical numeracy skills. A similar study was conducted by Wulandari (2023), whose findings indicated that Design Thinking-based Creative Problem Solving (CPS) learning using Higher-Order Thinking Skills (HOTS) questions can be recommended as an effective alternative strategy in mathematics instruction and is relevant to curriculum requirements. Overall, the evidence from these studies indicates that the Creative Problem Solving (CPS) model has the potential to serve as an effective alternative instructional strategy for enhancing numeracy literacy.

Another study was conducted by Lubis, Ahmad, & Rahmani (2018) titled "Improving Students' Mathematical Problem-Solving Skills Using the Creative Problem-Solving Learning Model in SLETV Material for Eighth-Grade Students at SMP Negeri 2 Takengon." The results of this study indicate an improvement in students' mathematical problem-solving skills at Takengon State Junior High School 2 through the Creative Problem-Solving learning model.

Several previous studies have focused on algebraic content (Arofa, 2022; Fauzi et al., 2021; Rachmawati et al., 2024). However, these studies did not cover SLETV material or implement the CPS model, as they only highlighted numeracy skills within other algebraic content areas. Previous research (Hamid et al., 2025; Zulfayani et al., 2024) focused solely on students' numeracy

skills and the SLETV material without using the CPS model.

Research on the CPS model has been conducted not only in Indonesia but also internationally. One such study was carried out by Charoentham et al. (2025) and Ersoy & Kara (2026).

Meanwhile, other studies have applied the CPS model in mathematics instruction and demonstrated improvements in students' numeracy skills; however, their focus was not on the SLETV material but rather on other topics such as ratios and plane figures (Shahira et al., 2024; Wulandari, 2023).

Thus, the novelty of this study lies in applying the CPS model specifically to algebraic content—in this case, the SLV subject matter—to analyze students' numeracy literacy skills. The present study seeks to examine the numeracy literacy skills of junior high school students during SLETV learning following the implementation of the CPS learning model. It is expected that this study will contribute to a deeper understanding of the CPS model's effectiveness in fostering students' numeracy literacy skills.

II. Research Method

This is descriptive research, namely research that describes research results (Ramdhan, 2021). The focus of the research is to explain students' mathematical numeracy literacy skills through the Creative Problem Solving (CPS) learning model of SLETV material. The subjects in this study are 33 grade IX students of SMP 8 Palembang in the odd semester of the 2025/2026 school year. Samples were selected based on the recommendations of the mathematics subject teacher and the suitability of the learning schedule for the implementation of the research. These considerations are undertaken to support the smooth application of the Creative Problem Solving (CPS) model throughout the research process.

Learning is designed using the Creative Problem Solving (CPS) model in the Two-

Variable Linear Equation System (SLETV) material. The research activities consisted of two learning meetings using the Creative Problem-Solving learning model, a numeracy literacy ability test, and one interview with selected subjects to obtain more in-depth information about students' numeracy literacy skills.

Learning is carried out through numeracy and literacy exercises integrated into each learning stage using contextual, problem-based LKPD. Students are trained to identify information, develop mathematical models, solve SLETV problems, interpret solution results in context, and communicate the reasons for their answers.

Before being used in the research, the teaching module, LKPD, numeracy literacy ability test, and interview guidelines were validated by two Mathematics Education lecturers and one mathematics teacher. Validation includes aspects of content, construction, language, and conformity with numeracy literacy indicators. The device and instrument are then revised based on validator input until they are declared suitable for use.

This study uses 3 indicators as shown in the following table:

Table 1. Numeracy literacy indicators
No. Numeracy Literacy Ability Indicators

1.	Use a wide variety of numbers and symbols related to basic mathematics to solve problems in a variety of everyday life contexts
2.	Analyze information displayed in various forms (graphs, tables, charts, diagrams, etc)
3.	As well as interpreting the results of the analysis to predict and make decisions

Source: (Winata et al., 2021)

The data collection methods consisted of a written test comprising three essay questions and follow-up interviews. The test items were constructed in accordance with the indicators of numeracy literacy skills. The test questions used in this study are presented below.

Table 2. Numeracy literacy test questions

Questions

1. Nanad dan Reskii sedang mengerjakan tugas kewirausahaan di sekolah. Mereka diminta untuk berwirausaha dengan bahan dasar ikan dan daging ayam. Perhatikan gambar berikut yang menyajikan belanja Nanad dan Reskii pada hari Senin.

Nanad

Reskii

Rp 235.000

Rp 145.000

1 kg

1 kg

Namun, bahan yang dibeli Reskii ternyata belum cukup. Keesokan harinya, Reskii membeli lagi 2 kg ikan dan 1 kg ayam di pasar dengan harga sama seperti sebelumnya.

Berapa uang yang harus Reskii bayarkan pada hari kedua?

2. Nanad menjual tas dan topi hasil kerajinan tangannya, dengan data penjualan pada minggu ke-1 selama dua hari berikut.

Minggu ke-1	Tas	Topi	Total Pemasukan
Hari			
Jumat	5	4	260.000
Sabtu	6	3	267.000

Jika pada Jumat minggu ke-2 Nanad memproduksi 10 produk, ia memiliki dua opsi rencana produksi. Opsi pertama adalah 6 tas dan 4 topi, sedangkan opsi kedua adalah 5 tas dan 5 topi. Bandingkan, kombinasi penjualan mana yang menghasilkan pemasukan lebih besar?

3. Koperasi sekolah mencatat penjualan dua jenis barang selama dua hari terakhir. Total penjualan pada hari Senin dan Selasa berturut turut adalah Rp 404.000 dan Rp 462.000. Perhatikan grafik berikut ini.

PENJUALAN KOPERASI SEKOLAH

■ Buku Tulis ■ Pena

SENIN

SELASA

Untuk persiapan bazar sekolah minggu depan, koperasi membuat Paket Ceria berisi 2 pena dan 3 buku tulis seharga Rp24.000. Jika terjual 20 paket, tentukan paket mana yang memberikan keuntungan lebih besar bagi koperasi antara Paket Ceria dan Paket Normal. Paket mana yang sebaiknya dipilih koperasi pada minggu ketiga untuk memperoleh keuntungan maksimal? Jelaskan alasanmu.

Question Indicator

Given contextual problems related to the sale of fish and chicken meat, basic ingredients. Students can analyze information on fish and chicken prices on the second day.

Given contextual problems related to the sale of handcrafted bags and hats. Students can compare combinations that result in greater income

Given contextual problems related to the cooperative's sales strategy. Students can decide which package the cooperative should choose to get maximum profits.

The test result data will be analyzed based on assessment guidelines with the scoring criteria for each question below:

Table 3. Scoring criteria

Scoring criteria	Score
No answer	0
Able to use a wide variety of numbers or symbols related to basic mathematics in a problem, but still incorrect	1
Using different numbers or symbols related to SLETV in a problem partially correctly	2
Correctly use various relevant numbers or symbols related to SLETV in the problem completely and correctly	3

The total score obtained by each student is then converted into a score on a scale of 0–100 using the formula:

$$\text{Test scores} = \frac{\text{total score obtained}}{\text{Skor Maksimum}} \times 100$$

After conducting the assessment, the value of the numeracy literacy test can be categorized based on the following intervals (Prasetyani et al., 2016).

Table 4. Grade categories

Value Interval	Category	Qualitative interpretation
$x > 80$	Excellent	Able to meet almost all numeracy literacy indicators
$60 < x \leq 80$	Good	Able to meet most of the numeracy literacy indicators
$40 < x \leq 60$	Enough	Able to meet some of the indicators of numeracy literacy.
$20 < x \leq 40$	Low	Only able to meet a few numeracy literacy indicators
$0 < x \leq 20$	Very Low	Not able to meet most of the numeracy literacy indicators

Description: student's test result score x

After the test results were categorized, five interview subjects were selected, each representing one category of numeracy literacy ability, namely very low, low, adequate, good, and extraordinary. The interview was conducted to obtain more in-depth information about the students' thinking processes during the

completion of the numeracy literacy test across each ability category. After the interview is conducted, the results of the conversation are transcribed into written form. Furthermore, transcripts were analyzed by matching students' answers to the numeracy literacy ability indicators, which were designed to complement and clarify information not visible in the written test results. Thus, this research can provide a more comprehensive picture of how students process and apply numeracy literacy to solve problems.

III. Results and Discussion

Learning

Learning was carried out in 2 meetings. At the first meeting, learning activities were conducted to introduce the SLETV concept. The researcher provides insight and asks the learner questions related to the PLDV material. The teacher continues by providing advanced learner questions that direct students to the SLETV material. After students read the teaching materials, the teacher explains the LKPD instructions and allows students to ask questions about the instructions that are unclear for working on the LKPD. Students work on LKPD based on the directions given with their respective groups, which have been divided

Unlike the first meeting, which only discussed the concept of SLETV and still relied on trial and error to solve the problem, the second meeting focused on solving it using substitution, elimination, and mixing methods. In the second meeting, the CPS learning model was used with the same stages as in meeting 1.



Figure 1. Problems with LKPD 1

Unlike the first meeting only discussed the concept of SLETV and to solve the problem still used trial-error, the second meeting discussed how to solve it using substitution, elimination, and mixing methods. In the second meeting, the CPS learning model was used with the same stages as in meeting 1. The problem used is as shown in the picture below.



Figure 2. Problems with LKPD 2

There are 6 stages of CPS in learning, which are described as follows:

In the Objective Finding stage, based on the results of group work, students write down the final goal of the problem contained in the LKPD. This shows that students have understood the problems to be solved.

In the Fact-Finding stage, the researcher asks students to reread the problem text and record the important facts. Students summarize important information in full in a table, according to the given context. This indicates that students can identify important information about problems in the LKPD.

Furthermore, at the problem-finding stage, the researcher directs students to formulate the main questions of the problems under study. Students break down the pre-made final goal into important questions that must be solved before reaching it. This shows that students have understood the given problem and can break it down into several important questions.

At the idea-finding stage, the researcher directs students to look for alternative ideas or reasoning that can help construct a mathematical model of the problem. Based on the results of the group's work, students first developed a mathematical model, then solved it using three methods: substitution, elimination, and mixing. Across the three methods, the x and y values remain the same. This shows that the students' answers are correct, have been tested using various methods, and that students can use different approaches to solve SLETV problems.

Furthermore, at the Solution Finding stage, students choose the method they consider easiest to use for the problem at hand. The student group chose a mixed-methods approach to address the final identified problem. The students' calculations are correct. They were also able to compare the larger shopping costs between Amara and Bila over two days. Thus, students can demonstrate that the chosen idea yields an answer appropriate to the problem's conditions.

In the stage of implementing solutions (Acceptance Finding), based on the results of the LKPD, students make concise, systematic conclusions showing that they have gone through all stages of CPS and have received the learning well.

Test Results

In the third meeting, a numeracy literacy test was administered. The research instrument consisted of three items on SLETV, which were developed according to the indicators of numeracy literacy skills and validated before data collection. Furthermore, interviews were conducted with five selected subjects who represented the categories of excellent, good, moderately good, less and very poor. Based on the test results, the average score for students' mathematical numeracy literacy was categorized as adequate (57.9). The findings of the students' numeracy literacy assessment are summarized in the table below.

Table 5. Average score of numeracy literacy ability

Interval	Frequency	Percentage (%)	Category
81-100	6	18,2	Excellent
61-80	11	33,3	Good
41-60	7	21,2	Enough
21-40	7	21,2	Less
0-20	2	6,1	Very less
Quantity	33	100	

Excellent Category Numeracy Literacy Proficiency (DYP)

Based on the analysis of the answers and interview results, DYP demonstrated mastery of the three indicators of numeracy literacy across the three questions. However, in question 3, DYP made a small mistake in interpretation and decision-making. The DYP answer to question 1 is shown in the image below.

1. Ikan = x 1 ayam = 1 kg
Daging ayam = y 1 ikan = 1 kg

Belanja pertama:
 $2x + 3y = 2.35.000$
Belanja kedua:
 $x + 2y = 1.45.000$

Jawab:
 $x = 145.000 - 2y$

Substitusi ke Pers (1)
 $2(145.000 - 2y) + 3y = 2.35.000$
 $290.000 - 4y + 3y = 2.35.000$
 $290.000 - y = 2.35.000$
 $-y = -55.000$
 $y = 55.000$

$x = 145.000 - 2(55.000) = 145.000 - 110.000 = 35.000$

Kami kedua Reski! membeli 2 kg ikan dan 1 kg ayam
 $2(35.000) + 1(55.000) = 70.000 + 55.000 = 125.000$

Figure 3. Answer question number 1 from subject DYP

In the first and second questions, DYP showed very good mastery of the three indicators. DYP can identify important data and information from the problem, then use appropriate numbers and mathematical symbols to perform calculations in that context. He demonstrates an understanding of the meanings of the symbols and mathematical operations used, such as addition, subtraction, and comparison, as needed for completion. In the process of information analysis, DYP can connect the data in the table to the context of the real-life situation described in the question. The steps are systematic, the calculations are accurate, and he can logically interpret the meaning of the result. For the third indicator, DYP can also make the correct decision based on the results of its analysis and provide relevant reasons for the decision. Thus, in the first

and second questions, DYP mastered all indicators, and the results showed that numeracy literacy ability in this category was very good.

In the third question, DYP still performed well on the previous two indicators but made a mistake. The picture below is DYP's written answer to question number 3.

3. Senin -> buku tulis = 35 Pena = 28
total = 404.000

Selasa -> Buku tulis = 44 Pena = 22
total = 462.000

Misal: buku = x
Pena = y

$35x + 28y = 404.000$
 $44x + 22y = 462.000$

Pena (2) disederhanakan, di bagi 11
 $4x + 2y = 42.000$:2
 $2x + y = 21.000$
 $y = 21.000 - 2x$

Substitusi ke Pers (1)
 $35x + 28(21.000 - 2x) = 404.000$
 $35x + 588.000 - 56x = 404.000$
 $-21x + 588.000 = 404.000$
 $-21x = -184.000$
 $x = 8.000$

$y = 21.000 - 2(8.000) = 5.000$

Paket cepit: 2 Pena + 3 buku = $2(5.000) + 3(8.000) = 10.000 + 24.000 = 34.000$
Dijual Rp 24.000 -> Rugi 10.000
Paket normal: Tidak rugi

Figure 4. Answer to question number 3 from the subject DYP

With respect to the first indicator, DYP correctly applied mathematical numbers and symbols and performed the required calculations using appropriate procedures. For the second indicator, DYP is also able to analyze the information in the table well, understand the data provided, and connect relevant quantities. However, in the third indicator, DYP misinterprets the context. DYP thought that the price of the cheerful package in question was 34,000. What should be the price of the normal package, since it uses the normal unit price, and the cheerful package is already stated in question at 24,000? As a result, the DYP's conclusion becomes inaccurate, even though the previous calculation is correct. Overall, DYP mastered the first and second indicators very well across all questions, but mastery of the third indicator remained inconsistent due to misinterpretations in the last question. However, DYP's ability to

understand context, perform mathematical analysis, and formulate logical arguments shows that he is in the "excellent" category.

Good Category Numeracy Literacy Ability (CFP):

Based on the analysis of the answers, CFP writes answers to only two test questions. In questions 1 and 2, CFP shows mastery of the three indicators' abilities. CFP can identify important information, construct mathematical models, analyze them, and interpret results to make decisions. However, in question 2, CFP made a calculation error in the second option, resulting in an answer of IDR 300,000, whereas the correct answer was IDR 285,000.

The following image shows the CFP answer to question number 2.

2) dik. Jumlah : 5 tas dan 4 pena dengan total pemasukan 260.000
 Sabtu : 6 tas dan 3 pena dengan total pemasukan 285.000

Indikator 1

Indikator 2

Indikator 3

Figure 5. Answer to question number 3 from the subject CFP

CFP did not write an answer because he felt confused by the information on the graph and time constraints. Therefore, an interview was conducted to find out the CFP's understanding of the problem.

Researcher : What important information is contained in the question?

CFP : It is known that the total sales on Monday were IDR 404,000 and on Tuesday IDR 462,000. On Monday, 33 notebooks and 28 pens were sold, while on Tuesday

44 notebooks and 22 pens were sold. In addition, it is known that the price of the Ceria package is IDR 24,000 to determine the package that provides greater benefits.

Researcher : If you had the time, how would you solve the problem?

CFP : I made two equations first to find the price of one notebook and one pen. It then calculates the benefits of the Ceria package and the Normal package, then compares the results to determine which package provides greater benefits

CFP can identify important information, understand the problem's purpose, and explain the solution strategy. This shows that even if the CFP does not write the answers on the test sheet, the subjects still understand the appropriate steps for completing the test. Thus, the interview results confirmed that CFP's numeracy literacy was not fully reflected in the written test results. Overall, CFP showed excellent mastery of all three indicators of numeracy literacy.

Sufficient Category Numeracy Literacy Ability (FN):

The results of the written test and interviews indicated that FN demonstrated a reasonably good mastery of the three indicators of numeracy literacy.

In questions 1, 2, and 3, FN only wrote the form of the equation without completing the solution steps. Nevertheless, FN can identify important information and compile mathematical models appropriate to the problem's context, so that indicators of the use of basic mathematical numbers and symbols are beginning to appear, even though they are not yet complete.

In the information analysis indicator, FN was able to understand the information in each question and make the correct calculations for questions 1 and 2. However, in question 3, a

calculation error occurred during the elimination process, resulting in an incorrect x-value.

In interpreting the results, FN concluded that they were consistent with the calculations for questions 1 and 2. However, in question number 3, FN still concluded that the normal package provides greater profits, even though the calculation process has not been completed, and the previous results are still wrong

The following image shows the results of FN's written answers to questions.

Figure 6. Answer to question number 2 and number 3 from the subject FN

The researcher conducted interviews with FN subjects to clarify the results of the written test. FN explained that he did not write down the complete set of steps due to time constraints, so he only had time to write the conclusion. These findings show that FN understands the direction for solving the questions and the decisions that must be made but has not been able to fully put them into a procedural form on the answer sheet.

Numeracy Literacy Ability in the Less Category (HR):

The analysis below is based on HR's responses to each item in the written test administered to the students. This analysis was conducted to see the extent to which HR masters the three indicators.

The written test results showed that HR responded only to Question 2. In Question 1, HR's response did not fully demonstrate the first indicator of numeracy literacy, which involves

using numbers and mathematical symbols in basic mathematical problems. Nevertheless, HR can perform well on the second and third indicators, namely, analyzing the information presented and drawing conclusions from the analysis to inform decision-making. In addition, HR can explain the completion process based on the answers provided, thus demonstrating mastery of the three indicators in question number 1.

In question 2, HR provides only answers that reflect the first indicator, without showing the process of information analysis or the interpretation of the results. Meanwhile, question number 3 was not done due to time constraints.

Figure 7. Answer to question number 2 from the subject HR

Accordingly, the researcher carried out interviews to further explore HR's numeracy literacy skills. To assess HR's ability to use numbers and mathematical symbols, the researcher asked questions about how to prepare mathematical models.

Researcher : Can you make mathematical models based on the information you've gathered?

HR : It seems like it can, ma'am. Suppose x = bag and y = hat. So, equation 1 is $5x + 4y = 260,000$ and equation 2 is $6x + 3y = 267,000$. So, there are two known similarities.

Based on these answers, HR can identify variables and develop mathematical models that align with the information in the question. In addition, in question number 3, HR was also able to form mathematical models in the form of $(33x + 28y = 404,000)$ and $(44x + 22y = 462,000)$. This shows that HR masters the first indicator: using a wide variety of numbers and mathematical symbols to solve problems.

Furthermore, to assess HR's ability to analyze information, the researcher asked about the steps taken after obtaining each variable's value.

Researcher : After getting the values (x) and (y), what will you do?
 HR : After knowing the price of the bag and hat, I compare the advantages of the two available options to determine which option provides the greater advantage.

The answer shows that HR can explain the settlement strategy using information obtained from the calculation results. This shows that HR meets the second indicator: analyzing information presented in various forms.

Furthermore, to find out the ability of HR to interpret the results of the analysis, the researcher asked questions about the final step of completion in question number 3.

Researcher : After that, what is done?
 HR : Determine the unit prices of the notebook and pen, then compare the advantages of the Ceria package with those of the normal package.

HR explained that the calculation results were used to determine which package yielded greater profits. This shows that HR meets the third indicator.

Although the written answers to questions 2 and 3 are incomplete due to time constraints, the interview results confirm that HR understands concepts, can compile mathematical models, analyze information, and interpret solution results in the context of the problem.

Numeracy Literacy Ability of the Very Poor (RR) category:

Based on the results of the written test administered to students, the following is an analysis of RR students' responses to each question. This analysis was conducted to see the

extent to which RR mastered three indicators of numeracy literacy ability

Based on the results of the written test, RR only wrote the answer to question number 1. In the first indicator, namely the ability to use a wide range of numbers and basic mathematical symbols to solve problems, RR demonstrated a fairly good level of ability. He can determine variables and develop mathematical models that are relevant to the problems in the problem. However, in the second indicator, namely the ability to analyze the displayed information, RR made calculation errors, resulting in an incorrect result. As a result, the third indicator is also wrong in its conclusions because the basis for the calculation is incorrect. Below is a picture of the answer from the RR subject in number

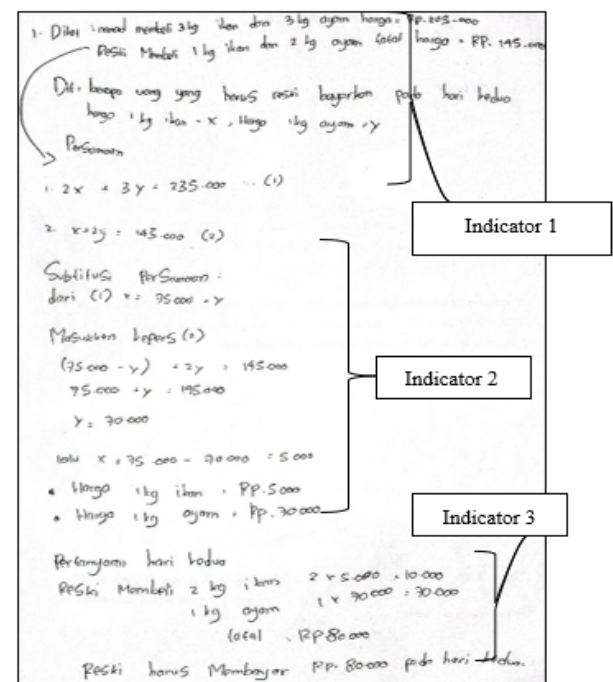


Figure 8. Answer to question number 2 from the subject HR

Given that RR did not complete all test items, follow-up interviews were conducted to investigate further RR's understanding of the questions and underlying mathematical concepts. The interview findings indicated that RR had not fully understood the concept and continued to have difficulty identifying the appropriate steps in the solution. The understanding of the concept of RR has also not been formed independently.

Overall, RR showed numeracy literacy skills in the low category, especially in information analysis and conclusion-making.

The results of this study show that applying the CPS learning model to the SLETV material improves students' numeracy literacy skills in mathematics. During the two learning sessions, students seemed active and demonstrated creative thinking when solving problems in the LKPD. Through this thinking process, students can choose the right solution strategy and apply it independently.

Based on the test results and data analysis, 18.2% of students are in the very good category, and 33.3% are in the good category in numeracy literacy skills. These findings show that most students have successfully improved their numeracy literacy skills. The application of the CPS model provides opportunities for students to think creatively, analyze problems, and find logical and contextual solutions. Students in the very good and good categories, such as DYP and CF, showed mastery of all three indicators of numeracy literacy. This can be seen in their ability, both in writing and in interviews, to understand and analyze information and to make decisions based on the results of the analysis.

Meanwhile, students in the sufficient and lack categories show limited understanding of concepts. For example, HR, classified in a lower category, does not write complete answers to both questions. However, the interview results showed that HR understood the basic concepts and could explain the three indicators of numeracy literacy orally. As for RR, which is classified in the very low category, it can only solve one problem. Based on the interviews, RR has not demonstrated mastery in information analysis and conclusion, even though he has begun to understand the symbols and forms of basic mathematical models.

The results of this study are in line with Creative Problem Solving (CPS), which emphasizes that the problem-solving process focuses not only on the result but also on the creative and analytical thinking involved in generating alternative solutions. The Creative

Problem Solving (CPS) learning model emphasizes the process of critical and creative thinking: divergent thinking to generate ideas and convergent thinking to determine the best solution, thereby encouraging students to identify and develop innovative solutions in learning actively.

In the context of SLETV learning, the application of the CPS model provides space for students to develop their own problem-solving steps, from understanding the information in the problem, analyzing the relationships between variables, to interpreting the calculation results and making decisions. This is in accordance with the opinion that this learning model provides flexibility for students to put forward their ideas, which are then selected as solutions, through structured steps that encourage the emergence of creative ideas in solving problems (Christina et al., 2022).

The study findings suggest that implementing the Creative Problem Solving (CPS) model positively influences students' numeracy literacy skills. Most students are in the good and excellent categories, especially in understanding information, analyzing relationships between variables, and interpreting the results of computations.

These findings are consistent with those of Christina et al. (2022), who reported that integrating the CPS model positively influences students' numeracy skills in mathematics. Similar results were also reported by Rohana, Hartono, & Nugraha (2021), who showed that the use of CPS improves mathematical literacy by encouraging students to be more active in solving given problems.

The improvement in numeracy literacy skills in this study is likely due to each stage of CPS providing opportunities for students to understand problems, identify important information, explore alternative solutions, and evaluate the solutions obtained. The process helps students not only find answers but also understand the reasons behind each step. This is in line with Nurrijal, Setyosari, Kusyandi, & Ulfa (2023), who

state that the application of CPS helps students understand problems, develop creative solutions, and solve problems systematically through discussion and evaluation of solutions.

Differences in numeracy and literacy skills among students are also observed in this study. Students in the higher categories can connect information, construct mathematical models, and draw logical conclusions. In contrast, students in the low category still have difficulty identifying important information and interpreting the calculation results. This condition shows that although CPS can facilitate students' thinking processes, its effectiveness is still influenced by each student's initial ability and understanding of concepts.

The findings are also supported by research by Charoentham et al. (2025), who explain that learning with CPS provides opportunities for students to develop systematic thinking skills when solving problems. Thus, CPS not only helps students obtain answers but also trains the logical, reflective, and creative thinking processes that are an important part of numeracy literacy.

IV. Conclusion

Based on research findings and data analysis, the study concludes that implementing the Creative Problem Solving (CPS) model provides valuable insights into students' numeracy literacy skills regarding Systems of Linear Equations with Two Variables (SLETV). The results showed that 18.2% of students were in the very good category, 33.3% in the good category, 21.2% in the sufficient category, 21.2% in the poor category, and 6.1% in the very poor category. In general, students classified in the very good and good categories demonstrated the ability to use mathematical numbers and symbols, analyze information, and interpret analytical results to support informed decision-making. On the other hand, students in the categories of sufficient, lacking, and very poor still have difficulties with compiling solution steps, performing careful calculations, and interpreting results in the

context of the problem. Therefore, teachers are advised to adjust follow-up learning to students' ability levels, so that students with high abilities receive more complex challenges. In contrast, students who are still having difficulties receive more targeted assistance and practice.

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