

## Analysis of Students' Mathematical Problem-Solving Ability Reviewed from Systematic and Intuitive Cognitive Styles

Neng Yulianti, Linda Herawati , Yeni Heryani 

**How to cite:** Yulianti, N., Herawati, L., & Heryani, Y. (2026). Analysis of Students' Mathematical Problem-Solving Ability Reviewed from Systematic and Intuitive Cognitive Styles. *Kognitif: Jurnal Riset HOTS Pendidikan Matematika*, 6(2), 682–703. <https://doi.org/10.51574/kognitif.v6i2.5043>

To link to this article: <https://doi.org/10.51574/kognitif.v6i2.5043>



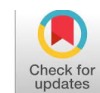
Opened Access Article



Published Online on 04 June 2026



Submit your paper to this journal



## Analysis of Students' Mathematical Problem-Solving Ability Reviewed from Systematic and Intuitive Cognitive Styles

Neng Yulianti<sup>1</sup>, Linda Herawati<sup>1\*</sup> , Yeni Heryani<sup>1</sup> 

<sup>1</sup>Mathematics Education Study Program, Faculty of Teacher Training and Education, Universitas Siliwangi

### Article Info

#### Article history:

Received Apr 29, 2026

Accepted May 29, 2026

Published Online Jun 04, 2026

#### Keywords:

Cognitive Style  
Mathematical Problem-Solving Ability  
Systematic and Intuitive

### ABSTRACT

This study aims to describe students' mathematical problem-solving abilities based on systematic and intuitive cognitive styles using a qualitative descriptive approach. The participants consisted of four seventh-grade students of Class VIIB at SMP Negeri 21 Tasikmalaya, including two students with a systematic cognitive style and two students with an intuitive cognitive style, selected through purposive sampling based on the results of the Cognitive Style Inventory (CSI) questionnaire. Data were collected through questionnaires, mathematical problem-solving tests based on Polya's stages, and interviews, then analyzed through data reduction, data display, and conclusion drawing. The findings showed that students with a systematic cognitive style tended to solve problems in a structured, sequential, and careful manner, whereas students with an intuitive cognitive style tended to solve problems more quickly and spontaneously by relying on direct understanding and prior experience in determining solution strategies. These findings indicate that cognitive style plays an important role in shaping how students interpret problems, select strategies, and evaluate solutions in mathematical problem-solving.



This is an open access under the CC-BY-SA licence



### Corresponding Author:

Linda Herawati,  
Mathematics Education Study Program,  
Faculty of Teacher Training and Education,  
Universitas Siliwangi,  
Cihideung Village 1, RT/RW 001/001, Budiarsih Subdistrict, Sindangkasih District, Ciamis Regency,  
Indonesia  
✉ [lindaHerawati@unsil.ac.id](mailto:lindaHerawati@unsil.ac.id)

## Introduction

Mathematical problem-solving ability is an individual's skill in searching for and finding the right way to solve a problem when there is no solution that can be used directly (Suryani et al., 2020). Students must possess this ability. This demonstrates that students' problem-solving abilities are crucial to the mathematics learning process (Siswanto & Meiliasari, 2024). Through problem solving, students learn to connect mathematical concepts with the situations they face so that learning becomes more meaningful. In addition, problem solving helps students develop

logical, critical, systematic, and reflective thinking skills that are essential both in academic learning and everyday life (Siswanto et al., 2024). Therefore, problem solving is the core of mathematics learning because through this process students not only obtain the final result, but also build an understanding of the concepts and strategies used in solving mathematical problems (Ardhianti & Sulistyono, 2026).

In practice, students' mathematical problem-solving abilities often face challenges, especially at the verification stage. Many students experience difficulty rechecking their answers using different methods or alternative strategies. This is in line with the findings Pratiwi & Hidayati (2022) Several students focus only on obtaining final answers without evaluating the correctness of their solutions through other approaches, this indicates that students' understanding of the "looking back" stage in Polya's problem-solving process is still limited. Based on the results of an interview with a mathematics teacher at SMPN 21 Tasikmalaya, it shows that there are still students who experience difficulties in solving mathematics problems, especially those related to problem solving. In the learning process, the teacher has provided questions with varying levels of difficulty, including routine and non-routine problems. At that school, teachers have also guided students to solve mathematics problems using the problem-solving steps according to Polya. However, not all students are able to apply all four of Polya's steps; there are still some students who are not yet able to carry out each stage completely. Problem-solving ability at SMPN 21 Tasikmalaya still shows that some students experience difficulties in solving mathematics problems. A person's ability to solve problems is influenced by various factors, including individual differences, level of ability, and intelligence. One of the individual difference factors that affects how students receive and process information in solving problems is cognitive style. Prayoga et al. (2024) emphasize that cognitive style is a significant factor in mathematics education, since mastering mathematics involves the ability to think creatively, reason logically, and analyze problems effectively, whether they are standard exercises or more complex, unfamiliar tasks.

Cognitive style can be used as an important lens for understanding differences in students' ways of thinking during mathematics learning These findings are in line with the study conducted Aries et al. (2024) which explains that each student demonstrates different ways of thinking and varying abilities in solving mathematical problems. Each student processes information differently, including how they interpret problems, select solution strategies, organize procedures, and verify the answers they obtain. These differences influence the way students approach mathematical problem-solving tasks and demonstrate their reasoning processes (Lestari et al., 2025). Therefore, examining cognitive style is important because it provides deeper insight into the variations in students' thinking patterns and problem-solving processes in mathematics learning. Maidiyah et al. (2025) show that identifies several categories of cognitive styles, including those related to how individuals assess situations and make decisions in planning solutions, such as field dependent–field independent, impulsive–reflective, perceptual–receptive, and systematic–intuitive. In this study, the emphasis is placed on systematic and intuitive cognitive styles to examine mathematical problem-solving skills through these two perspectives. A systematic cognitive style is characterized by orderly and logical procedures, while an intuitive cognitive style tends to rely on a more comprehensive and flexible way of understanding problems.

Previous research conducted by Pangastuti et al. (2022) primarily examined the characteristics of eleventh-grade student's mathematical reasoning when dealing with word problems, viewed through systematic and intuitive cognitive styles, but did not explicitly address mathematical problem-solving as a distinct focus. In comparison, the present research integrates the investigation of students' problem-solving abilities in mathematics with their cognitive styles, particularly systematic and intuitive. The novelty of this study lies in the use of

systematic and intuitive cognitive styles as the basis for analyzing students' mathematical problem-solving abilities through Polya's stages. This study does not only focus on the final answer produced by students, but also examines and describes the solution processes carried out at each stage of mathematical problem-solving. Therefore, only a small number of studies have directly examined the relationship between systematic and intuitive cognitive styles and mathematical problem-solving. This gap provides ample opportunity for further investigation, particularly research that highlights students' individual ways of thinking. Based on the previously identified problems, this study aims to describe students' mathematical problem-solving abilities at SMP Negeri 21 Tasikmalaya by examining systematic and intuitive cognitive styles through Polya's problem-solving stages.

## Method

### Type of Research

This research adopts a qualitative approach with a descriptive design. As explained by Creswell (2018), qualitative research involves an investigative process that emphasizes the understanding of social phenomena and human-related issues. It allows researchers to study subjects in natural contexts while uncovering in-depth meanings, leading to findings that are both rich and contextually grounded. In this approach, the data collected are descriptive, consisting of written or spoken expressions as well as observable behaviors. The main objective of this study is to explore students' mathematical problem-solving abilities by considering their systematic and intuitive cognitive styles.

### Subjects

The subjects of this study were seventh-grade students (Class VIIB) at SMPN 21 Tasikmalaya, who represented both systematic and intuitive cognitive styles. They were selected based on their ability to carry out all stages of problem-solving in accordance with Polya's framework, without considering the correctness of their final answers, and their ability to communicate clearly, which facilitated the data collection process. Students who could not complete the full sequence of problem-solving stages were excluded from the study. Of the 29 students in class VII-B, four key participants were selected: two students representing the systematic cognitive style and two students representing the intuitive cognitive style. These participants were selected because they provided the most relevant and informative data for investigating how different cognitive styles are related to students' approaches to solving mathematical problems.

### Instrument

This study employs three main instruments, namely a cognitive style questionnaire, a mathematical problem-solving test, and interviews. The questionnaire is based on the *Cognitive Style Inventory* (CSI) adapted from Martin (1998b), which includes 40 items developed in accordance with the variables of the study. The instrument was administered to identify and classify students into systematic and intuitive cognitive style groups. The questionnaire was adopted from a previous study that had translated the instrument into Indonesian, and it was subsequently reviewed with the research supervisor to ensure that the language was suitable and easily understood by junior high school students. The selection of research participants was not based on questionnaire scores, but rather on students' ability to demonstrate Polya's stages

of problem-solving and communicate their reasoning clearly so that more in-depth information could be obtained during the interviews. In addition, the reliability of the instrument had previously been examined through a small-scale pilot test. The questionnaire items used in this study are presented below.

**Table 1. Cognitive style statement table**

Statements
<p><b>Systematic</b></p> <ol style="list-style-type: none"> <li>1. The most efficient and effective way to answer questions is logically and rationally.</li> <li>2. All questions have an absolute way of answering them, all you have to do is choose the best possible way to answer the question given.</li> <li>3. I am comfortable using the usual way of answering questions, rather than using a new way that is not necessarily better.</li> <li>4. All questions do not have a definite way of answering, so there are many possible ways to answer them.</li> <li>5. When working on questions, I will collect and organize data in a structured manner about what is in the question (for example, what is known and what is asked) to provide an overview in answering it.</li> <li>6. I answered the questions step by step, sequentially and neatly.</li> <li>7. When trying to answer a question, I will complete each step in sequence.</li> <li>8. Before answering the questions carefully, I sort, combine or organize all the data or information in them to produce the correct answer.</li> <li>9. I answered the question by looking at it as a whole, then paying attention to the details of the data in it.</li> <li>10. Before answering the question, I will carefully read the question thoroughly, in order to determine the relationship of the data or information in the question to answer it.</li> <li>11. I will try to understand the question to determine the facts/data contained in it (which ones can be used or which ones are not needed) to answer them.</li> <li>12. I will refer to the existing facts and data to answer the question.</li> <li>13. When reading a question, I will immediately focus on the important information in the question.</li> <li>14. When reading questions, I often look for additional information/data in the question sequentially, and am careful in writing it to minimize writing errors that result in wrong answers.</li> <li>15. When working on a complicated problem, I usually select the data/information obtained (such as grouping or separating it) to make it clearer in determining what method to use.</li> <li>16. I can easily create and decide to discard various alternative answers quickly.</li> <li>17. It took me quite a long time to answer the questions, because I had to be structured, thorough, and detailed in completing them.</li> <li>18. I often estimate the difficulty of a question as an illustration of how to answer it later.</li> <li>19. When working on a question, I re-check the data/information that I have obtained from the question to get ideas for answering it.</li> <li>20. I read the questions over and over again, and each time I read them I always get a different understanding or information (i.e., there's a possibility that I misread them or missed data/information the first time around).</li> </ol> <p><b>Intuitive</b></p> <ol style="list-style-type: none"> <li>21. I will write or just imagine a chart about what data is known in the question to make it easier to answer it.</li> <li>22. I need to make notes in the form of diagrams, sketches, or tables when answering questions.</li> <li>23. When I read a question, I often have a broad perspective on the question (often thinking that there are several possibilities about what the question actually means).</li> <li>24. I have strong confidence/intuition when looking at a question, or try to guess first before I answer it.</li> <li>25. I store data with various entries (such as computer folders) in my memory so that it is easy to remember.</li> <li>26. I store data in my brain's memory with images or shapes of objects, so that when I remember again, I will imagine the image/object. Likewise, I will imagine the data I get when reading the questions and then store them in my brain.</li> </ol>

27. At the beginning of the problem-solving process, I will first define the problem. (For example, if the problem is about sequences and series, then I will think of ways to solve the problem about sequences and series).
28. I rely on the beliefs or intuition that I have to answer the questions.
29. The most efficient and effective way to answer questions is to follow your gut feeling or intuition.
30. Every time I work on a problem, I read it out loud and talk to myself.
31. I have a lot of ideas and want a high level of knowledge.
32. I am the type of person who tends to choose to avoid problems.
33. I have talent and good memory in mathematics.
34. I feel okay and even comfortable with uncertainty and ambiguity.
35. I (and people who know me) would describe myself as predictable and reliable.
36. Before answering a question, I often think about various possible ways to answer it.
37. I often have various alternatives and choices of ways to answer questions.
38. I can answer questions quickly and effectively, so it often doesn't take long to complete them.
39. I (and people who know me) would describe myself as a risk taker.
40. When trying to answer questions, I often jump from one stage to another, and often return to previous stages.

The second instrument is a mathematical problem-solving test comprising a single question on the topic of social Arithmetic. This test has undergone validation by a mathematics education expert, ensuring its content validity and alignment with the intended indicators. The problem-solving task used in this study is presented as follows.

**Table 2. Mathematical Problem Solving Ability Test Question Grid**

Learning Outcomes (CP)	Competency Achievement Indicator (IPK)	Measured Aspects	Question
Students are able to solve mathematical problems by calculating profits and losses by applying arithmetic operations on real numbers.	Solving mathematical problems related to solving social arithmetic	<ol style="list-style-type: none"> <li>1. Problem understanding</li> <li>2. Devising a plan</li> <li>3. Carrying out the plan</li> <li>4. Looking back</li> </ol>	<p>Mr. Amir, an electronics trader, bought 10 calculators at a price of Rp120,000 each, 15 fans at a price of Rp85,000 each, and 20 study lamps at a price of Rp40,000 each. All calculators were sold out with a percentage profit of the purchase price, for 15 fans, 12 were sold at a loss of 10%, and the rest were unsold. Then 18 study lamps were successfully sold at a price of Rp52,000 each. After all transactions, the trader earned a net profit of Rp1,020,000. Mr. Amir wanted to calculate the percentage profit from the calculators, but was confused.</p> <p>Calculate the total capital of the trader, determine the equation for the calculator's profit, and determine the percentage profit on the calculator's sales!</p>

The third instrument is the interview, which is used to obtain deeper insights that cannot be fully captured through the analysis of student' written responses. This study applies unstructured interviews, allowing the researcher to pose questions in a flexible manner based

on the direction of the discussion, thereby enabling the collection of more detailed and comprehensive information.

**Table 3. Interview Questions**

No	Interview Questions
1.	What do you know or understand from the questions you read earlier?
2.	After writing down the information in the question, what strategy or formula will be used to solve the question?
3.	What do you do first after knowing this formula? What do you calculate first?
4.	After checking again, is the answer correct?

To guarantee the trustworthiness of the data collected through the three instruments, careful attention was given to instrument validation. The cognitive style questionnaire (CSI) adapted from [Martin \(1998a\)](#), along with the mathematical problem-solving test, was evaluated through expert judgment by a lecturer in Mathematics Education at Universitas Siliwangi to establish content validity. This process ensures that the instruments accurately reflect the constructs being measured. By meeting both validity and reliability criteria, the study is expected to yield precise and scientifically credible findings.

### Data Collection

Data collection is a crucial stage in this study because the main objective of research is to obtain valid and reliable information. As noted by [Sugiyono \(2023\)](#), a clear understanding of data collection techniques is essential to ensure that the information gathered is consistent with the research objectives and meets established standards. In this study, data were collected in three stages. First, a cognitive style questionnaire was administered to classify students into systematic and intuitive cognitive style groups. Second, students completed a written mathematical problem-solving task designed to reveal their problem-solving processes. Third, semi-structured interviews were conducted to gain deeper insights into students' thinking processes and to clarify findings from the written responses. The interview protocol included probing questions that explored how students interpreted the problem, selected solution strategies, carried out calculations, verified their answers, and demonstrated characteristics associated with their cognitive styles. This combination of questionnaires, written tests, and interviews enabled the researcher to obtain comprehensive and credible data regarding students' mathematical problem-solving abilities.

### Data Analysis

This study applies a qualitative approach to data analysis. In the context, qualitative analysis involves systematically organizing and examining data obtained from observations, interviews, and other relevant sources to deepen the researcher's understanding of the investigated case and to present the results as meaningful findings. The process aims to simplify complex data so that it can be more easily interpreted and used to uncover the underlying meaning of the studied phenomenon. The analytical procedure follows the framework proposed by Miles and Huberman, which consists of three key stages reducing the data, presenting the data, and drawing conclusions ([Rijali, 2018](#)).

Students' written responses and interview transcripts were coded based on the four stages of Polya's problem-solving framework: understanding the problem, devising a plan, carrying out the plan, and looking back. At each stage, the researcher identified indicators that reflected

characteristics of systematic and intuitive cognitive styles, such as the degree of detail, sequence of steps, spontaneity, and use of alternative strategies. The coded data were then compared across participants to identify similarities and differences in the problem-solving patterns of student with systematic and intuitive cognitive style. To enhance the trustworthiness of the findings, The trustworthiness of the data in this study was established through technique triangulation by comparing and confirming information obtained from there instrument. The Cognitive Style Inventory (CSI) questionnaire results were used to identify students' cognitive styles as either systematic or intuitive. The written test responses were analyzed to examine students' mathematical problem-solving abilities based on Polya's stages, while the interviews were conducted to clarify and deepen the interpretation of students' reasoning and solution strategies. By comparing the consistency of findings across these three data collection techniques, the researcher was able to enhance the credibility of the study results.

## Research Findings

Based on the results of the cognitive style classification, out of 29 students, 16 were categorized as having a systematic cognitive style, while 13 demonstrated an intuitive cognitive style. Following this grouping, a mathematical problem-solving test was conducted with selected student from both categories, particularly those who also exhibited good communication skills, to further explore their problem-solving processes.

**Table 4** research subject

No	subject	cognitive style	score
1	S20	Systematic	79
2	S23	Systematic	87
3	S14	intuitive	74
4	S22	intuitive	81

## Description of Students' Ability in Solving Mathematical Problems Reviewed from a Systematic Cognitive Style at the Problem Understanding Stage

### Subjects with Systematic Cognitive Style

The findings from the mathematical problem-solving test indicate that the participant with a systematic cognitive style successfully completed each stage of the problem-solving process. During the problem comprehension stage, the student carefully examined the question and identified key information along with the required elements. This suggests that the systematic subject prioritized a clear understanding of the problem before moving forward to the solution phase.

Dik: Pedagang 10 kalkulator Rp 120.000  
 15 kipas angin Rp 85.000 (12 terjual rugi 10%)  
 20 lembar belajar Rp 40.000 (18 terjual Rp 52.000)  
 Keuntungan bersih seluruh transaksi Rp 1.020.000.  
 Yang dicari adalah persentase keuntungan kalkulator, modal, dan Persamaan kalkulator

**Figure 1.** S20 Systematic Subject

Dik : pedagang membeli tiga jenis barang  
 kalkulator : 10 buah, harga beli 120.000/buah (persentase untung belum diketahui)  
 Kipas angin : 15 buah, 12 terjual dengan rugi 10%  
 Lampu belajar : 20 buah, 18 terjual Rp. 52.000/buah.  
 Keuntungan bersih seluruh penjualan Rp. 1.020.000.  
 Dit: Yang dicari Hitung total modal, persamaan untuk keuntungan kalkulator, Persentase Keuntungan pada Kalkulator

Figure 2. S23 Systematic Subject

In the problem comprehension phase, the subject demonstrated a strong understanding of the task provided. This finding aligns with Pangestu et al. (2024), who found that students generally show solid initial skills in interpreting problems. The subject was able to extract key information in a clear and organized way and rephrase it using their own language. This suggests that the subject had already grasped the context of the problem before moving on to the solution process, enabling a more focused and systematic approach to solving it. Based on the interview conducted with the participant who exhibited a systematic cognitive style during the problem comprehension phase, it was found that the subject could present the problem in a way that aligned with the researcher's objectives. This is illustrated in the following interview excerpt.

P : "What do you know or understand from the questions you read earlier?"

S23 : "A trader bought 3 types of goods."

P : "Can you explain in more detail."

S23 : "Yes, you can. 10 calculators, the profit percentage is unknown. 15 fans, 12 sold at a 10% loss. 20 study lamps, 18 sold at Rp52,000 each. The net profit is Rp1,020,000."

P : "What is being asked in the question?"

S23 : "Calculate the total capital of the trader, determine the equation for the calculator profit and determine the percentage profit on the calculator."

The results of a short interview show that the participant with a systematic cognitive style was capable of recognizing essential information in the problem effectively. This understanding was reflected in the written responses, which aligned well with the important elements of the task. The agreement between the verbal explanation and the written answer suggests that the subject had a clear and accurate comprehension of the problem and was able to express it coherently.

### Description of Students' Ability in Solving Mathematical Problems Reviewed from a Systematic Cognitive Style at the Strategic Planning Stage

During the planning stage, the participant with a systematic cognitive style identified and recorded appropriate mathematical formulas to address the given problem. The formulas were chosen based on the information contained in the question and served as a foundation for the subsequent solution process. This behavior reflects a structured and organized approach, showing that the subject preferred to prepare a clear strategy before performing the calculations.

Pendapatan = modal + keuntungan Bersih  
 menentukan nilai  $x$ . lalu mencari Persentase keuntungan.

**Figure 3.** S20 Systematic Subject

The solution produced by S20 in the figure shows that the subject applied an income-related formula and employed a variable symbolized by  $x$  to represent unknown information in the problem. The introduction of this variable reflects an effort to model the problem mathematically and make the calculation process more systematic. This suggests that S20 approached the problem using an organized and logical problem-solving strategy.

Penyelesaian :  
 Rumus yang digunakan :  
 untung/rugi = Harga jual - harga beli  
 Persentase untung =  $(\text{untung} \div \text{Harga beli}) \times 100\%$

**Figure 4.** S23 Systematic Subject

The solution shown in S23's work indicates that the subject applied both the profit formula and the percentage of profit formula in solving the given mathematical problem. This demonstrates that S23 selected formulas that were relevant to the context of the problem in order to obtain the correct solution.

The work shown in the figure demonstrates that the participants with a systematic cognitive style were capable of formulating solutions strategies by selecting mathematical formulas that varied across subjects. Although the approaches differed, each subject chose formulas that suited the requirements of the problem. This suggests that they were able to plan their solutions in an organized and reasoned manner before carrying out the calculations. The consistency of this finding is also illustrated in the following interview excerpt.

*P* : "After writing down the information in the question, what strategy or formula will be used to solve the question?"

*S20* : "The income formula is the same as the example."

*P* : "What's the formula?"

*S20* : "Income = capital + net profit "

*P* : "Well, then what is this ( $x$ ) for as an example?"

*S20* : " Example for profit percentage "

The result of the short interview indicate that the participant with a systematic cognitive style could determine the appropriate mathematical formulas needed to solve the given problem. The subject also demonstrated a clear understanding of the relationship between the formulas and the problem context, reflecting an organized and well-planned approach before carrying out the solution process.

### Description of Students' Ability in Solving Mathematical Problems Reviewed from a Systematic Cognitive Style at the Planning Stage

At the stage of carrying out the plan, participants with a systematic cognitive style completed the calculations by following the strategies and formulas selected in the planning phase. Although each subject used a different sequence of steps in solving the problem, their approaches remained organized and coherent. Despite the variation in procedures, the solutions

obtained were systematic and led to correct results, demonstrating that the subjects were able to apply their planned strategies effectively throughout the problem-solving process.

$$\begin{aligned} \text{modal } & 10(120.000) + 15(85.000) + 20(40.000) = 3.275.000 \\ \text{Pendapatan} & = 3.275.000 + 1.020.000 \\ & = 4.295.000 \\ \text{keuntungan} & = 12(0,9 \times 85.000) = 918.000 \\ \text{Lampu belajar} & = 18 \times 52.000 = 936.000 \\ \text{Total} & : 1.854.000 \\ \text{Misal harga jual kalkulator} & : x \\ 10x + 1.854.000 & = 4.295.000 \\ 10x & = 2.441.000 \\ x & = 244.100 \\ \text{Untung Kalkulator} & : \\ 244.100 - 120.000 & = 124.100 \\ \frac{124.100}{120.000} \times 100\% & = 103,42\% \end{aligned}$$

Figure 5. S20 Systematic Subject

Based on the figure, indicates that S20 successfully solved the problem by dividing it into smaller and more manageable parts. The subject first determined the total capital, then continued the calculations systematically by forming the necessary equations until arriving at the correct percentage of profit for the calculator. This demonstrates that S20 applied a structured and logical approach throughout the solution process.

The handwritten solution for S23 is as follows:

$$\begin{aligned} \text{Total modal} & : \\ \text{kalkulator} & = 10 \times 120.000 + 1.200.000 \\ \text{kipas angin} & = 15 \times 85.000 + 1.275.000 \\ \text{lampu belajar} & = 20 \times 40.000 + 800.000 \\ \text{Total modal} & : \text{Rp } 3.275.000 \\ \text{Rugi dan untung yang diketahui} & : \\ \text{Rugi kipas angin} & : \\ 10\% \times 85.000 & = 8.500 \\ \text{Total rugi} & : \\ = 12 \times 8.500 & = 102.000 \\ \text{Untung lampu belajar} & : \\ = 52.000 - 40.000 & = 12.000 \\ \text{Total untung lampu} & : \\ = 18 \times 12.000 & = 216.000 \\ \text{Menentukan untung kalkulator} & : \\ \text{keuntungan total berasal dari} & : \\ \text{keuntungan total} & = \text{untung kalkulator} + \text{untung lampu} - \text{Rugi kipas} \\ \text{untung kalkulator} & : \\ 3080.000 - 216.000 - 102.000 & \\ U_k & = 1.200.000 - 216.000 + 102.000 \\ U_k & = 1.086.000 \\ \text{persentase untung kalkulator} & : \\ \text{untung per kalkulator} & : \\ > 1.241.000 - 120 & = 124.100 \\ \text{Persentase untung} & : \\ \frac{124.100}{120.000} & = 103,42\% \end{aligned}$$

Figure 6. S23 Systematic Subject

The solution shown in the figure demonstrates that S23 solved the problem in a structured and organized manner. The subject successfully calculated the total capital, applied the appropriate equations, and determined the calculator's profit percentage accurately, resulting in a correct final answer.

P : "Then, what do you do first after knowing this formula, what do you calculate first?"

S23 : "Calculate the total capital first"

P : "How to calculate the total capital?"

S23 : "Substitute from the question and then operate with the multiplication of the price of each item"

P : "Then what is the next step?"

S23 : "Calculate your profit and loss from each item, and use your profit percentage calculator."

P : "Okay, so do you understand the meaning of the question I gave earlier?"

S23 : "I understand"

Based on the students' written work and interview results, subjects with a systematic cognitive style were able to implement the solution plan in a structured and sequential manner. Although each subject applied different procedures in solving the problem, both were able to arrive at the same final answer through logical and organized steps. This is in line with the study conducted by [Isman & Prawitha \(2022\)](#), which showed that students with a systematic cognitive style apply solution strategies according to planned procedures and perform calculations carefully throughout the problem-solving process. Similarly, the study conducted by [Priyono & Susanah \(2020\)](#) also showed that students with a systematic cognitive style generally solve mathematical problems through structured and orderly stages by following sequential solution procedures.

### Description of Students' Ability in Solving Mathematical Problems Reviewed from a Systematic Cognitive Style at the Looking Back Stage

At the stage of checking the solution, there were differences between the two subjects with a systematic cognitive style. One subject only recalculated the solution to ensure that the answer was consistent with the previous steps, while the other subject was able to solve the problem using a different formula, namely the ratio formula, and obtained the same final answer as in the previous solution process.

$$(10 \times 244.100) + 918.000 + 936.000 = 4.295.000$$

$$4.295.000 - 3.275.000 = 1.020.000$$

Figure 7. S20 Systematic Subject

Based on the image of S20's work results, the subject was only able to solve the problem by recalculating the answer results that had been done in the previous stage, not using a different method. S20 did not use a different method because S20 did not understand how to solve the problem at that stage.

Gunakan perbandingan harga jual dan harga beli :

$$\frac{244.100}{120.000} = 2,0342$$

Karena 2,0342 = 203,42%, maka keuntungan  
 $= 203,42\% - 100\% = 103,42\%$   
 Jadi hasil 103,42 %

Kesimpulan :

Total modal : Rp. 3.275.000  
 Persamaan keuntungan kalkulator = 1.020.000 = untung kalkulator + 216.000 - 102.000  
 persentase keuntungan kalkulator = 103,42 %

Figure 8. S23 Systematic Subject

Based on the image, S23 can solve the problem using a different method from the previous method, by using a comparison of the selling price and the buying price but still getting the same final answer. Based on the figure above, subjects with a systematic cognitive style demonstrated differences in carrying out the looking back stage of problem-solving. One subject showed limited understanding during this stage by only rechecking the previous calculations that had already been completed, while the other subject demonstrated a deeper

understanding by verifying the solution using a different formula or strategy. This difference indicates that the ability to review, evaluate, and validate mathematical solutions may vary among students even when they share the same cognitive style. These findings are in line with the study conducted by [Biliyan et al. \(2022\)](#), which explained that students within the same cognitive style group can still demonstrate different levels of ability in the verification and validation stages of mathematical problem-solving. Therefore, these findings can be further clarified through the following interview excerpt.

P : "So, what is this final step for?"  
 S20 : "Menghitung ulang bu"  
 P : "Mirip kaya yang tadi nya inimah"  
 S20 : " Yes, it's a little different"  
 P : "Why not use a different approach?"  
 S20 : "Do not understand"

The following explanation refers to subject 23. The findings related to the subject's problem-solving process are further clarified through the following interview excerpt, which provides additional information regarding the strategies and reasoning used by the subject during the solution process.

P : "Then what's the next step?"  
 S23 : "Using a different method"  
 P : " How is that, using what formula?"  
 S23 : "Using the comparison of selling price and buying price"  
 P : "So what's the next step?"  
 S23 : "Operated"  
 P : "Hasilnya sama nya 103,42% Cuma beda cara nya saja"  
 S23 : " Iya sama bu"

Based on the interview results, the two systematic subject showed differences at the looking back stage. One subject indicated that they still did not understand how to use a different method in solving the problem and only recalculated the correctness of the answer obtained in the previous stage. Meanwhile, the other subject demonstrated that they were not limited to a single solution method, but were able to try another strategy that was considered easier to understand. The different approaches used by the subjects did not affect the final result, indicating that the subject understood the concepts involved in the problem given by the researcher.

## **Description of Students' Ability in Solving Mathematical Problems Reviewed from Intuitive Cognitive Style based on the stages of understanding the problem.**

### **Subjects with an intuitive cognitive style**

At the stage of understanding the problem, the subject with an intuitive cognitive style was able to obtain information related to the given problem. After that, the subject wrote down the important information in the question, namely what was known and what was being asked. From the solution process, the student understood the problem presented in the question before proceeding to the next step.

Dik : Keuntungan total Rp. 1.020.000.  
Dit : Persentase keuntungan kalkulator.

Figure 9. S14 Intuitive Subject

Based on the figure, S14 was able to write down the information contained in the problem correctly, although the response appeared simple and reflected spontaneous thinking. Nevertheless, S14 had made an effort to understand the problem presented in the question.

Dik : Pak Amir seorang pedagang elektronik membeli 10 kalkulator dengan harga Rp. 120.000 Perbuah, 15 kipas angin dengan harga Rp 85.000 Perbuah 20 lampu belajar dengan harga Rp 40.000 Perbuah.  
Dit : - keuntungan kalkulator

Figure 10. S22 Intuitive Subject

Based on the results shown in the figure, S22 was able to understand the problem by writing down the known and asked information in the question. The figure above shows that participants with an intuitive cognitive style were capable of grasping the problem given in the task. Although their written explanations tended to be brief and produced spontaneously rather than in a detailed manner, they still demonstrated a sufficient understanding of the problem during the initial stage of problem-solving. This is in accordance with the researcher's interview with the following subject.

P : "What do you understand from the questions you read earlier?"  
S22 : "An electronics trader bought 10 calculators, 15 fans, and 20 study lamps."  
P : "So that's what you understand in the question, then what is being asked in the question?"  
S22 : "Profit Calculator"

Based on the results of a brief interview, the subject was able to identify important information in the problem well, and the explanation provided was consistent with the written answers, although they were written spontaneously and not in detail. This indicates that the student understood the steps carried out in solving the problem.

### Description of Students' Ability to Solve Mathematical Problems Reviewed from an Intuitive Cognitive Style Based on the Stages of Planning a Strategy

At the strategy-planning stage, the subject began determining the method of solution by writing down formulas considered appropriate for solving the problem. The subject selected formulas that were relevant to the information provided in the question and used them as a guide for the next calculation steps. This action indicates that the subject was able to connect the information in the problem with the mathematical concepts required to obtain the solution.

•  $\text{Keuntungan} = \text{Pendapatan} - \text{modal}$   
•  $\text{Persentase untung} = (\text{Untung} / \text{Harga beli}) \times 100\%$

Figure 11. S14 Intuitive Subject

Based on the figure showing S14's work, the subject had already written down a strategy to solve the problem by using the profit formula and the profit percentage formula. The selected formulas were applied according to the information provided in the question and served as a

guide in carrying out the calculations. This demonstrates that S14 attempted to relate the problem to the appropriate mathematical concepts before continuing to the solution stage.

$$\text{Total} = \text{Untung kalkulator} + \text{untung lampu} - \text{Rugi kipas}$$

Figure 12. S22 Intuitive Subject

Based on the figure showing S22's work, the subject used mathematical formulas to solve the problem presented in the question. The formulas applied were related to the concepts needed in the problem and were used to support the calculation process until the final answer was obtained. This indicates that S22 attempted to apply appropriate mathematical concepts in solving the given problem. Based on the figure above, the subjects with an intuitive cognitive style were able to write down the strategies or formulas that would be used to solve the problem, although each subject applied different formulas according to their own approach. The selected strategies reflected the subjects' understanding of the mathematical concepts needed to answer the question. Even though the approaches varied, the subjects were still able to use formulas that were relevant to the problem context. This finding is further supported by the following interview excerpt.

P : "What is the next step to solve this problem using what formula?"

S14 : "use the profit formula and profit percentage."

Based on the interview results, subject could identify and formulate a suitable strategy for solving the problem through the use of relevant mathematical formulas. The explanations provided by the subject showed an understanding of the relationship between the formulas and the problem context. This suggests that the participant with an intuitive cognitive style was capable of recognizing the appropriate approach needed to continue the solution process in the following stages.

### Description of Students' Ability in Solving Mathematical Problems Reviewed from the Intuitive Cognitive Style Based on the Carrying Out the Plan Stage

At the stage of carrying out the plan, the subjects with an intuitive cognitive style were able to implement the strategies and formulas that had been determined in the second stage. The subjects performed the calculations according to the information and requirements presented in the problem given by the researcher. This shows that the subjects were able to apply the selected formulas to continue the solution process and obtain the expected results.

$$\begin{aligned} & \text{Pendapatan kalkulator} \\ & = 4.296.000 * - 1.057.000 \\ & = 2.991.000 \\ & \text{Harga jual kalkulator} \\ & = 2991.000 \div 10 = 299.100 \\ & \text{untung} = 299.100 - 120.000 = 129.100 \\ & \text{Persentase untung} \\ & = \frac{129.100}{120.000} \times 100\% \\ & = 103,42\% \end{aligned}$$

Figure 13. S14 Intuitive Subject

Based on the figure, demonstrates that S14 successfully implemented the strategy established in the planning stage by using the selected formulas appropriately. The subject systematically calculated the total capital, applied the required equations, and determined the calculator's profit percentage correctly. This indicates tha S14 followed the selected strategy consistently throughout the solution process.

$$\begin{aligned}
 & - \text{Rugi kipas} \\
 & 12 \times 8.500 = 102.000 \\
 & - \text{Untung lampu} \\
 & 18 \times 12.000 = 216.000 \\
 & - \text{Untung kalkulator} \\
 & = 1.020.000 - 216.000 + 102.000 \\
 & = 1.241.000 \\
 & - \frac{1.241.000}{1.200.000} \times 100\% = 103,42\%
 \end{aligned}$$

Figure 14. S22 Intuitive Subject

Based on the figure, S22 was able to solve the problem correctly by calculating the total capital, forming the equations, and determining the percentage of profit from the calculator. However, S22 did not calculate the total capital in detail and only wrote the final calculation result in order to complete the work more quickly. Based on the figure, both subjects with an intuitive cognitive style were able to carry out the solution plan correctly. Although the stages and procedures used by each subject were different, both were still able to obtain the correct answer. One subject appeared to focus more on the calculation process step by step, while the other relied more on prior experience and spontaneous reasoning in solving the problem. These differences indicate that an intuitive cognitive style provides flexibility in solving mathematical problems while still leading to accurate results. This finding is in line with the study conducted by Saleh & Nur (2023), which stated that students with an intuitive cognitive style tend to use direct understanding, prior experience, and spontaneous thinking processes in solving mathematical problems without always following highly structured procedures. This statement is further explained in the following interview excerpt.

P : "then what other steps do you want to take?"

S22 : "Calculate capital first."

P : "Why calculate the total capital directly, not write it down one by one?"

S22 : "Because I wanted to do it faster, but I calculated it first, but I didn't write it down in more detail."

P : "In a quick way, can you confirm that your answer is correct?"

S22 : "I immediately saw the final result, ma'am, when the capital was calculated, I thought it was correct."

P : "Why not write it in detail on the answer sheet?"

S22 : "Because I often do that, ma'am, working on answers to problems."

Based on the interview above, the subjects with an intuitive cognitive style were able to carry out the solution plan properly by applying the formulas determined in the previous stage. Although the solution process was not written in a detailed or highly structured manner, the subjects were still able to complete the calculations correctly according to the problem requirements. This indicates that the subjects understood the problem presented in the question and were able to apply appropriate mathematical concepts to obtain the solution.

## Description of Students' Ability in Solving Mathematical Problems Reviewed from the Intuitive Cognitive Style Based on the Looking Back Stage

At the stage of checking the solution, the subjects with an intuitive cognitive style showed differences in their approaches. One subject only rechecked the answer by recalculating it using the same formula applied in the previous stage. Meanwhile, another subject was able to verify the solution by applying a different formula. These differences indicate that not all subjects fully understood the verification process at the looking back stage, particularly in terms of using alternative strategies to confirm the correctness of their answers.

Pendapat modal = 1.020.000 ✓ sesuai soal

Figure 15. S14 Intuitive Subject

Based on the figure, S14 recalculated the solution using the formula that had been applied in the previous calculations to check whether the answer obtained was consistent with the result from the earlier stage.

- jika 100% dari modal = 1.200.000  
 $1.241.000 - 1.200.000 = 41.000$   
 Persentase tambahan :  $41.000 \div 1.200.000 = 3,42\%$   
 Jadi :  
 $100\% \div 3,42\% = 103,42\%$   
 Kesimpulan :  
 Modal = 3.275.000  
 Persamaan =  $1020.000 - 216.000 + 102.000$   
 Persentase keuntungan kalkulator = 103,42%

Figure 16. S22 Intuitive Subject

Based on the figure of S22's work, the subject was able to solve the problem using a different method from the previous one while still obtaining the same final answer. Based on the figure above, the two subjects with an intuitive cognitive style showed differences in the way they carried out the looking back stage. One subject only reviewed the previous calculations to ensure the correctness of the answer, while the other subject attempted to verify the solution using a different method. These differences indicate that each subject had a different level of understanding and strategy in rechecking the solution process. This finding is further supported by the following interview excerpt.

- P : "At this stage, what method do you use?"  
 S14 : "The formula for income minus capital is like the previous formula."  
 P : "Why not use a different approach?"  
 S14 : "I just made sure that my answer was correct."  
 P : "Oh yes, after checking again, is the answer correct?"  
 S14 : "Yes, that's appropriate"

The following explanation refers to S22. The findings related to the subject's problem-solving process are further explained through the following interview excerpt, which provides additional information regarding the strategies and reasoning used by the subject during the problem-solving process.

- P : "So, what do you do next?"  
 S22 : "Doing it in a different way."  
 P : "So is the answer to the first method the same as this?"  
 S22 : "Yes, same."

Based on the results of the brief interview with the subjects above, the two subjects with an intuitive cognitive style still showed differences in completing the looking back. Although there were differences, the subjects had attempted to follow the stages of problem-solving properly. Thus, the results also suggest that some subjects had not yet fully mastered the looking back stage, particularly in understanding how to verify solutions effectively.

## Discussion

Students with a systematic cognitive style demonstrated strong abilities in understanding mathematical problems in a detailed, logical, and organized manner. They tended to identify important information carefully before proceeding to the next stage of problem-solving. In addition, they were able to restate the problem using their own understanding and showed clear comprehension of the problem context. These findings are consistent with [Pangestu et al. \(2024\)](#), who explained that students with systematic thinking patterns generally demonstrate good initial abilities in interpreting mathematical problems before determining a solution strategy. In the planning stage, student was able to determine an appropriate strategy by selecting relevant formulas and arranging the solution steps logically and sequentially, which aligns with the findings of [Faidah et al. \(2024\)](#) regarding students' ability to design systematic strategies in problem-solving. During the implementation stage, student solved the problem in an organized manner by following the selected formulas and calculation procedures carefully. This is in line with [Al Aziz \(2022\)](#) findings which show that students in the problem-solving process tend to follow previously planned steps systematically, including the use of formulas and calculation procedures at the implementation stage. Furthermore, at the verification stage, student reviewed the solution by recalculating the previous steps to ensure the correctness of the answer, although the checking process was limited to confirming consistency with earlier calculations rather than applying an alternative method. This finding supports [Wibowo et al. \(2025\)](#), who explained that students often verify their answers through repeated calculations without using different strategies or presenting explicit conclusions. Overall, these results indicate that student, as a subject with a systematic cognitive style, demonstrated carefulness, consistency, and a structured approach in mathematical problem-solving.

The subject with a systematic cognitive style (S23) demonstrated an initial ability to understand the information in the problem logically and systematically by accurately identifying the known and required data. In the strategy-planning stage, student wrote down formulas to obtain the solution to the problem. During the implementation stage, student showed high accuracy in performing calculations and followed the planned steps systematically and logically. This finding is consistent with [Saleh & Nur \(2023\)](#), who stated that students with a systematic cognitive style are able to solve problems in a structured manner through clear and sequential steps. Therefore, student reflects a mature thinking process in which each step is considered logically and systematically. The solution process was carried out through well-organized stages with clear step-by-step procedures rather than through random attempts, as each step was based on logical and interconnected reasoning. This finding is consistent with the study conducted [Priyono & Susanah \(2020\)](#), which indicated that students with a systematic cognitive style tend to solve mathematical problems in a logical, organized, and sequential manner through interconnected solution steps. At the verification stage, student rechecked the solution using a ratio method and obtained the same result. This finding is in line with [Malikah \(2023\)](#), who explained that systematic and structured approaches in problem-solving through clear stages and Polya's steps help students think more logically and purposefully when solving complex problems. This indicates that the student did not rely on only one method, but also demonstrated a good understanding and accuracy in solving mathematical problems.

Furthermore, S14, with an intuitive cognitive style, completed the calculations quickly by relying on direct understanding without going through structured stages. This finding is in line with [Kristanto & Manoy \(2020\)](#), who stated that the speed of information processing that cannot be explained through step-by-step procedures reflects spontaneous and intuitive thinking processes. Student was able to understand the problem and determine a solution quickly without following clear stages. This indicates that information processing can occur implicitly and is not always structured. In the solution process, student did not write the calculation steps in detail when determining the total capital, but only recorded the final result of the calculations that had been carried out. This finding is in line with the study conducted [Aini & Susannah \(2024\)](#), which revealed that students with an intuitive cognitive style tend to present their solutions briefly and in a less systematic manner, while relying more on direct understanding and selecting solution alternatives that they perceive as the most appropriate in solving mathematical problems. As a result, the thinking process tended to be spontaneous and directly oriented toward obtaining the final answer rather than emphasizing detailed procedures. The subject appeared to process information quickly by relying on immediate understanding and intuition when determining the solution. This finding is consistent with the study conducted [Syuhriyah & Sa \(2021\)](#), which explained that students with an intuitive cognitive style tend to use convergent thinking processes that lead them directly to answers without following clear and systematic stages. Such characteristics indicate that intuitive thinkers often prioritize efficiency and rapid decision-making in solving mathematical problems. Furthermore, during the verification stage, student rechecked the solution only to confirm the correctness of the previous calculations because the subject had not yet understood how to apply a different method. This indicates that an intuitive cognitive style tends to prioritize speed over accuracy in the problem-solving process.

S22, as a subject with an intuitive cognitive style, demonstrated the ability to understand the problem and determine a solution strategy spontaneously ([Hilya et al., 2025](#)). The subject tended to solve the problem quickly and relied more on prior experience than on structured procedures. In line with [Muniri \(2018\)](#) research findings, students with an intuitive thinking style tend to rely on ideas that emerge spontaneously when solving problems. They also do not require a long time even when using an analytical approach to determine solution strategies, because the decision-making process takes place more quickly and flexibly. During the implementation stage, student did not describe the calculation process in detail, particularly when determining the total capital, and instead focused only on the final result to complete the task more efficiently. This finding supports [Munairoh & Hastari \(2023\)](#), who explained that students with intuitive thinking patterns often respond briefly and do not follow detailed problem-solving stages. Consequently, the solution process appeared less organized and more direct. Nevertheless, at the verification stage, student was able to recheck the solution using a different calculation method to confirm the correctness of the answer. In line with [Sabila & Aulya \(2026\)](#), this reflects the tendency of intuitive thinkers to rely on rapid and heuristic-based reasoning rather than detailed verification processes. Overall, these findings show that student was still able to follow Polya's problem-solving stages, although the approach used was faster, less structured, and not explained comprehensively.

## Conclusion

The results of the study show that students who exhibit a systematic cognitive style tend to approach mathematical problem-solving in an orderly, step-by-step manner that aligns with Polya's framework. They can identify essential information, selecting appropriate formulas to develop a solution plan, and executing the solution in a logical and well-structured way. During

the verification phase, some students limited their checking process to confirming the correctness of their calculations without applying alternative strategies, however, other students were able to verify their solutions using different methods. Overall, these findings suggest that a systematic cognitive style supports precision, consistency, and thoroughness in solving mathematical problems. This shows that although a systematic cognitive style encourages organized problem-solving, students may demonstrate different levels of understanding and flexibility in verifying mathematical solutions. Students who exhibit an intuitive cognitive style tend to approach mathematical problem-solving in a more spontaneous manner. When interpreting the problem, they often do not record all relevant information in detail, and their strategy selection is guided by familiar formulas and prior experience rather than careful planning. The solution process is typically focused on immediate execution, without strictly adhering to a sequential structure. During the verification phase, student simply review their answers using the same procedures applied earlier, rather than exploring alternative methods. However, there are student demonstrates the ability to reassess the solution through a different approach to confirm its accuracy. These findings suggest that an intuitive cognitive style prioritizes efficiency and speed, although it still reflects the general stages of problem-solving. Therefore, mathematics learning should provide opportunities for both systematic and intuitive students to develop verification strategies, reflective thinking, and alternative solution methods to strengthen their mathematical problem-solving abilities.

### Conflict of Interest

The authors declare that there is no conflict of interest.

### Auhor Contributions

N.Y. understood the research ideas presented and collected the data. Meanwhile, L.H. and Y.H. contributed significantly to the development of the theoretical framework and methodology, as well as to data organization, analysis, discussion of findings, and final approval of the manuscript. All authors confirm that they have reviewed and agreed upon the final version of the paper. The distribution of contributions to the conceptualization, writing, and revision of this study is as follows: N.Y.: 60%, L.H.: 20%, and Y.H.: 20%.

### Data Availability Statement

The authors declare that the data supporting the findings of this study will be made available by the corresponding author, [L.H.], upon reasonable request.

### References

- Aini, A. Q., & Susanah, S. (2024). Berpikir Reflektif Siswa SMP dalam Menyelesaikan Soal AKM Numerasi Ditinjau dari Gaya Kognitif Sistematis-Intuitif. *MATHEdunesa*, 13(1), 283–299. <https://doi.org/10.26740/mathedunesa.v13n1.p283-299>
- Al Aziz, S. (2022). Analisis keterampilan berpikir siswa dalam menyelesaikan masalah matematika berbasis langkah pemecahan masalah menurut polya. 9(2), 110–129. <https://doi.org/10.33603/e.v9i2.8484>
- Ardhianti, K., & Sulistyono, B. A. (2026). Efektivitas Model Realistic Mathemacs Education (RME) Dengan Strategi Scaffolding Dalam Meningkatkan Kemampuan Pemecahan Masalah Matematis. 5(1), 93–106. <https://doi.org/10.57094/afore.v5i1.4407>



- Aries, N. S., Monoarfa, F., & Ismail, R. P. (2024). *Teori Belajar Van Hiele dalam Penyajian Materi Geometri Terhadap Kemampuan Berpikir Matematis Siswa Sekolah Dasar Ditinjau dari Gaya Kognitif*. 7(1). <https://doi.org/10.30605/cjpe.7.2.2024.4841>
- Biliyan, I., Triyanto, & Kuswardi, Y. (2022). *Analisis Kemampuan Pemecahan Masalah Pada Materi Penerapan Integral Tentu Ditinjau Dari Gaya Kognitif Siswa Keas XII MA Al-Mukmin Sukoharjo Tahun Ajaran 2021/2022*. 5, 170–179. <https://doi.org/10.20961/jpmm.solusi.v6i5.67332>
- Creswell, J. (2018). *Qualitative, Quantitative, and Mixed Methods Approaches* (kelima). Department of Family Medicine University of Michigan.
- Faidah, N., Yogyakarta, U. N., & Interaktif, V. (2024). *Peningkatkan Kemampuan Peme-.* 3(02), 70–79. <https://doi.org/10.56741/bei.v3i02.546>
- Hilya, A., Puspitasari, S., & Hajizah, N. (2025). *Literature Kemampuan Pemecahan Masalah Dengan Tipe Kepribadian Introvert dan Extrovert*. 5(5). <https://doi.org/10.58432/relevan.v5i5.1661>
- Isman, M. N., & Prawitha Sari, D. (2022). *Penalaran Proporsional Siswa SMP dalam Menyelesaikan Masalah Missing Value dan Comparison Berdasarkan Gaya Kognitif Sistematis*. 8(November), 467–482. <https://doi.org/10.5281/zenodo.7302157>
- Kristanto, H. Y. W., & Manoy, J. T. (2020). Representasi Matematis Siswa SMA dalam Menyelesaikan Masalah Matematika Ditinjau dari Gaya Kognitif Sistematis dan Intuitif. *Penelitian Pendidikan Matematika Dan Sains*, 4(2). <https://doi.org/10.26740/jppms.v4n2.p50-60>
- Lestari, R. D., Koesharyanti, N. D., & Hidayah, N. (2025). *Profil Berpikir Kritis Matematis Siswa SMP Ditinjau dari Gaya Kognitif*. 19(2), 451–459. <http://dx.doi.org/10.26877/mpp.v19i2.26041>
- Maidiyah, E., Putri, T. I., Fadhiliani, D., Matematika, P., Syiah, U., & Aceh, K. B. (2025). *Kemampuan penalaran proporsional ditinjau dari gaya kognitif sistematis dan intuitif siswa mtsn 2 banda aceh*. 11(1), 1–12. <https://dx.doi.org/10.24853/fbc.11.1.1-12>
- Malikah, S. (2023). *Analisis kemampuan pemecahan masalah matematis Siswa pada barisan dan deret aritmetika berdasarkan teori Polya*. 12(2), 89–98. <https://doi.org/10.30872/primatika.v12i2.2579>
- Martin, L. P. (1998a). *Inventarisasi gaya kognitif*. 8(1962).
- Martin, L. P. (1998b). The Cognitive-Style Inventory. *The Pfeiffer Library*, 8(1), 1–18.
- Munairoh, I. R., & Hastari, R. C. (2023). *Berpikir intuitif siswa kelas VIII dalam memecahkan masalah statistika ditinjau dari kecemasan matematika*. 1263–1271. <https://doi.org/10.55681/armada.v1i10.947>
- Muniri. (2018). *Peran Berpikir Intuitif dan Analitis dalam Memecahkan Masalah Matematika*. 1(1), 9–22. <https://doi.org/10.21274/jtm.2018.1.1.9-22>
- Pangastuti, D. A., Nugroho, A. A., & Muhtarom, M. (2022). Profil Kemampuan Penalaran Matematis Siswa Kelas XI dalam Menyelesaikan Soal Cerita Ditinjau dari Gaya Kognitif Sistematis dan Intuitif. *Imajiner: Jurnal Matematika Dan Pendidikan Matematika*, 4(5), 386–392. <https://doi.org/10.26877/imajiner.v4i5.10949>
- Pangestu, F., Setiani, A., & Imswatama, A. (2024). *Analisis Kemampuan Pemecahan Masalah Matematis Ditinjau Dari Motivasi Belajar Siswa*. 10(4), 1110–1116. <https://doi.org/10.31949/educatio.vxix.xxxxxx> ISSN
- Pratiwi, R., & Hidayati, N. (2022). *Kemampuan Pemecahan Masalah Matematis Siswa Kelas XI SMK Berdasarkan Tahapan Polya*. 8(1), 256–263. <https://doi.org/10.31949/educatio.v8i1.1978>
- Prayoga, S. A., Sofakhiroh, I., Puspitaningayu, T., & Mustika Sari, N. H. (2024). Pengaruh Gaya Kognitif Terhadap Hasil Belajar Siswa Pada Mata Pelajaran Matematika. *Fraktal:*

- Jurnal Matematika Dan Pendidikan Matematika*, 5(1), 64–72.  
<https://doi.org/10.35508/fractal.v5i1.16094>
- Priyono, P. M., & Susanah, S. (2020). Profil Berpikir Analitik Siswa Smp Dalam Memecahkan Masalah Matematika Berdasarkan Gaya Kognitif Sistematis Dan Intuitif. *MATHEdunesa*, 9(2), 430–441. <https://doi.org/10.26740/mathedunesa.v9n2.p430-441>
- Rijali, A. (2018). *Analisis Data Kualitatif Ahmad Rijali UIN Antasari Banjarmasin*. 17(33), 81–95. <https://doi.org/10.18592/alhadharah.v17i33.2374>
- Sabila, A. G., & Aulya, I. (2026). *Kesalahan Intuitif Mahasiswa Dalam Memilih Metode Numerik*. 1–4. <https://doi.org/10.31004/journey.v1i2.7>
- Saleh, R. R. M., & Nur, I. M. (2023). *Proses Berpikir Siswa SMP Berdasarkan Gaya Kognitif Intuitif dan Sistematis dalam Menyelesaikan Masalah Invers Proporsi Ditinjau dari Teori Pemrosesan Informasi*. 13(September), 751–762. <https://doi.org/10.37630/jpm.v13i3.1163>
- Siswanto, E., Aziz, T. A., & Hakim, L. El. (2024). *Meningkatkan Kemampuan Berpikir Kritis Dalam Pemecahan Masalah Matematika: Perspektif Filsafat dan Adversity Quotient*. 10(1), 17–27. <https://doi.org/10.29100/jp2m.v10i1.5210>
- Siswanto, E., & Meiliasari, M. (2024). Kemampuan Pemecahan Masalah pada Pembelajaran Matematika: Systematic Literature Review. *Jurnal Riset Pembelajaran Matematika Sekolah*, 8(1), 45–59. <https://doi.org/10.21009/jrpms.081.06>
- Sugiyono. (2023). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D* (Edisi pert). ALFABETA.
- Suryani, M., Jufri, L. H., & Putri, T. A. (2020). Analisis Kemampuan Pemecahan Masalah Siswa Berdasarkan Kemampuan Awal Matematika. *Mosharafa: Jurnal Pendidikan Matematika*, 9(1), 119–130. <https://doi.org/10.31980/mosharafa.v9i1.605>
- Syuhriyah, K., & Sa, C. (2021). *Proses Berpikir Siswa Perempuan Bergaya Kognitif Intuitif Dalam Menyelesaikan Masalah Matematika*. 6(4), 593–599. <https://doi.org/10.17977/jptpp.v6i4.14721>
- Wibowo, A. M., Isnazuharoh, M. N., & Arfinanti, N. (2025). *Analisis Kemampuan Pemecahan Masalah Matematis Siswa Kelas VIII Pada Materi SPLDV Ditinjau dari Metakognisi Siswa*. 8(1). <https://doi.org/10.36277/deferat.v8i1.2284>

### Authors Biography



**Neng Yulianti**, is a student in the department of mathematics education, faculty of teacher training and education, Siliwangi University, Tasikmalaya, West Java, Indonesia.  
✉ [nengyuli099@gmail.com](mailto:nengyuli099@gmail.com)

 A portrait of Linda Herawati, a woman wearing a grey hijab and a light blue FKIP (Faculty of Teacher Training and Education) uniform. The letters 'FKIP' are visible on her chest.	<p><b>Linda Herawati</b>, is a lecturer in the Mathematics Education Study Program, Faculty of Teacher Training and Education, Siliwangi University. His teaching focuses on Discrete Mathematics, Real Analysis, Numerical Methods, Complex Analysis, and Entrepreneurship.</p> <p>✉ <a href="mailto:lindaherawati@unsil.ac.id">lindaherawati@unsil.ac.id</a></p>
 A portrait of Yeni Heryani, a woman wearing a grey hijab and a light blue FKIP (Faculty of Teacher Training and Education) uniform. Her name tag reads 'HERYANI' and 'UPA' is visible on her chest.	<p><b>Yeni Heryani</b>, is a lecturer in the Mathematics Education Study Program, Faculty of Teacher Training and Education, Siliwangi University. Her teaching focuses on Microlearning, Mathematics Curriculum Review, Mathematics Learning Methodology, Plane Analytical Geometry, Mathematics Education Problem Studies, Linear Programming, Vector Analysis, and Information Technology Literacy.</p> <p>✉ <a href="mailto:yeniheryani@unsil.ac.id">yeniheryani@unsil.ac.id</a></p>