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Students' Thinking Process at The Dasalitnum Stage in Learning Numeracy Content

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Abstract: This study explores the thinking processes of Class V students at SDN Buraen 1, South Amarasi District, Kupang Regency, through the 10-step numeracy learning model called Dasalitnum. Using a qualitative approach, the research involved nine students representing the red, yellow, and green zones based on their mastery of mathematical concepts. Data were collected during Mathematics lessons in the odd semester of 2024/2025. The findings indicate that the Dasalitnum approach effectively enhances students' thinking processes in number material. Red zone students progressed from guessing to understanding problems with guidance, yellow zone students began to think independently and select solution strategies, while green zone students demonstrated critical and reflective thinking. Overall, Dasalitnum supports students in contextual problem understanding, identifying key information, evaluating, and revising solutions. This strategy strengthens numerical mindsets and is relevant for schools with low numeracy achievement.

Keywords: Dasalitnum; Numbers; Numeration; Thinking process

Introduction

Mathematics is one of the important subjects that plays an important role in the cognitive development of students, especially at the Elementary School (SD) level. Numeracy skills that include understanding and using numbers and mathematical operations are important components in learning mathematics (Fatmawati et al., 2021; Khairati et al., 2021; Safitri et al., 2024; Usman et al., 2024). Literacy culture in Indonesia is something very interesting to discuss. Given that literacy culture in Indonesia is still low, not yet a culture, and not yet rooted in society.

Numeracy is a person's ability to use numbers to practically solve various everyday problems (Adhelacahya et al., 2023; Andayani, 2020; Pradana et al., 2020). The 2017 National Literacy Movement stated numeracy as the ability to apply number concepts and arithmetic operation skills in everyday life and the ability to interpret quantitative information around us. According to Perdirjen GTK Number 0340 / B / HK.01.03 / 2022, numeracy is the ability to think to use mathematical concepts, procedures, facts, and tools to solve everyday problems in various types of contexts that are relevant to the individual. So numeracy is a person's ability to think and apply mathematical concepts, procedures, facts and tools, especially number concepts and arithmetic operations to solve everyday problems in various types of contexts that are relevant to their needs (Heryani et al., 2023; Oktariya et al., 2023; Sekarwinahyu et al., 2023).

Numeracy skills are developed primarily through mathematics learning. One of the goals of mathematics learning is to equip students to form reasoning for solving mathematical problems which include the ability to understand problems, design mathematical models, solve models or interpret what is obtained (Decree of the Head of SKAP Agency number 032/H/KR/2024). In number learning for grade IV (phase B), for example, students are expected to have mastered the concept of whole numbers and have basic arithmetic operations skills on whole numbers, and be

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able to solve problems related to whole numbers, including problems related to multiples and factors. According to NCTM in 2000 (Fitrianingrum & Murtiyasa, 2023) students in grades 3-5 already understand integers and basic arithmetic operations on integers, understand how to present them and the relationships between numbers in the number system, and are able to calculate and make reasonable estimates.

According to Piaget, the cognitive development of fifth grade elementary school students is in the concrete operations group. At this age, students are able to think logically about concrete events, understand the concept of conversation, organize objects into hierarchical classes (classification) and place objects in an orderly order (Hellstrand et al., 2020; Muliani et al., 2022). According to (Dierkx et al., 2025; Ntalindwa et al., 2022) unstructured problems make students relate abstract mathematical knowledge to everyday life. Thus, they are able to think abstractly, generalize, and structure problems in everyday life. Abstract thinking, generalizing, and structuring problems in everyday life are mathematical abstraction processes. So, students in grades 4 or 5 of elementary school who have completed phase B or part of phase C have mastered the concept of whole numbers and basic arithmetic operations and can apply them in various everyday contexts.

In reality, there are still many students who have difficulty in mastering integers and their implementation. The results of the study as written by (Sapir-Yogev & Ashkenazi, 2025; Zhang et al., 2025) in a journal entitled Analysis of Students' Difficulties in Solving Integer Operation Problems in Elementary Schools in this journal they wrote that the low understanding of students about integer operations causes students to have difficulty in solving integer operation problems related to mathematical concepts and principles. The same thing was also conveyed by (Wei et al., 2025) in a journal entitled Analysis of Conceptual Understanding Ability in Integer Material Reviewed from Gender in Grade VII Students of Smp Negeri 2 Galang that the mastery of male and female students on integer material is still relatively low, one of which is in the topic of addition and subtraction of integers. This can be seen from the results of the evaluation of male and female students on integer material showing that the scores obtained by students are still relatively low, because during learning students are not active during learning, students do not understand the material well that has been taught but do not want to ask the teacher so that when students are given questions, students have difficulty working on the questions (Wei et al., 2025). One of the studies in SD Negeri 1 Sumberurip. Based on the results of the analysis of the difficulties of grade V Elementary School students who have high mathematical abilities, it is known that there are difficulties experienced by students when completing AKM-oriented numeracy content questions. Most students have difficulty understanding the problems presented in the questions because they do not understand the information contained in the questions, which causes students to have difficulty solving the questions. Students with high mathematical abilities also have difficulty solving numeracy content questions that require the ability to understand, apply, and reason about the concept of arithmetic operations of subtraction, division, and the concept of Least Common Multiples (Gashaj et al., 2023; Ho et al., 2025)

This also happened in South Amarasi, especially SDN Buraen 1, students are still very weak in terms of numeracy, this is due to low critical thinking skills and the lack of systematic learning stages from teachers, this is based on the results of the SDN Buraen 1 Education report card in 2023 which is still red and also based on the results of interviews with teachers of classes III, IV and V and interviews with several students. The student numeracy improvement program which is part of the training program implemented at SDN Buraen 1 has used the 10-step numeracy learning stages found to help students achieve better achievements, but it is not yet known which part of the 10-step numeracy learning stages significantly helps students in learning numeracy. This is very necessary to examine the student's thinking process at each stage.

The novelty of this research lies in its focus, which not only measures the final results of the implementation of the Dasalitnum, but also analyzes in detail the students' thinking processes at each stage of numeracy learning. Thus, this study provides a clearer picture of the thinking mechanisms of students from the low (red), medium (yellow), to high (green) ability zones. This study is important because the results can help teachers optimize numeracy learning strategies according to the needs and ability levels of students, especially in schools with low numeracy achievement. Furthermore, this research also makes a new contribution to educational practice by presenting an evaluation framework based on processes, not just results, so that it can serve as a basis for developing more adaptive, contextual, and effective numeracy learning models.

Based on the background that has been described, the author designed a study on the students' thinking process at the 10-step numeracy learning stage of Number content in Grade V Students of Sd Negeri Buraen 1, Amarasi Selatan District, Kupang Regency, East Nusa Tenggara. The results of the study of students' thinking processes at each stage are expected to be able to evaluate the optimization of students' learning at each stage of the 10-step numeracy learning called Dasalitnum.

Method

The approach used in this study is qualitative. Qualitative research is an indispensable strategy in research methodology, exploring complex social realities through human experiences, attitudes, and beliefs. It uses methods such as participant observation, semi-structured interviews, and focus groups to collect and analyze rich and detailed data (Furnham & Cheng, 2025). This research will be conducted during Mathematics learning hours at SDN Buraen 1 class V during the odd semester of the academic year 2024/2025. The subjects of this study were 9 grade 5 students of Elementary School Buraen 1 who represented the abilities of students, namely 3 people representing students who were in the red zone who needed special intervention at this stage students only had limited mathematical knowledge in mastering concepts, 3 people in the yellow zone who represented students with basic abilities at this stage students' abilities had basic mathematical skills and were already able to solve simple problems, and 3 people represented the green zone, namely students who represented the capable category at this stage students who were already able to apply their mathematical knowledge in various contexts. The instrument is designed to measure students' thinking process based on the 10-step numeracy learning stages. Here are the details: Observation sheet with the Purpose: Observing students' thinking process during numeracy learning. Interviews aim to explore students' thinking process and reflection on learning, numeracy test questions to group.

To provide a clearer picture of the research procedure, a research flow chart was prepared. This research flow chart began with problem identification, followed by the selection of research subjects based on student ability zones (red, yellow, green), and then the development of research instruments in the form of observation sheets, interview guidelines, and numeracy tests. The next stage was data collection in the classroom through observations, interviews, and numeracy tests. The collected data were then analyzed using the Miles & Huberman interactive analysis model, which includes data reduction, data presentation, and conclusion drawing. Data validation was then conducted through triangulation and member checking. The culmination of this process was the research findings, which illustrate students' thinking processes at each stage of the 10-step numeracy learning process (Dasalitnum).

The research flow chart is visualized in the following chart (Figure 1).

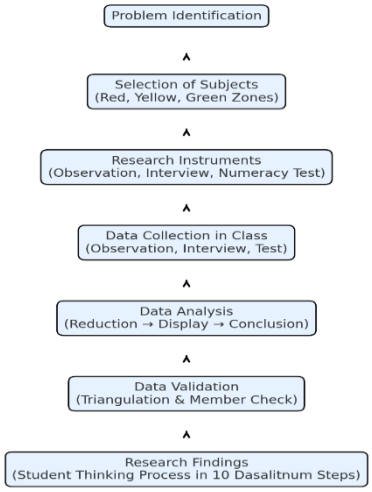

Figure 1. Research Method Flowchart

Qualitative research data analysis techniques include a variety of methods that allow researchers to interpret and derive meaning from non-numerical data. Qualitative research data analysis techniques involve creatively condensing and organizing participants' words or actions to retain their meaning, requiring considerable researcher ingenuity. In qualitative data analysis, namely the Thinking Process. From data sources in the form of observations, interviews, field notes. As well as analyzing student thinking patterns or stages based on observation and interview data. Finally, Coding is Categorizing student answers. Furthermore, qualitative descriptive analysis using data reduction techniques, data presentation, and drawing conclusions.

Table 1. Qualitative descriptive analysis using data reduction, data presentation, and conclusion drawing techniques**.**

Data types	Head	Results/data obtained
Pre-exam	Numerical questions about numbers	Date for uji
Observation	Grouping in thinking skills (observation sheet)	Grouping of thinking skills
interview	Interviews to obtain in-depth data related to pretest and observation results (interview questions, photos and videos)	Interview results
Implementation	Implementing the 10 steps of Dasalitnum	Implementation of 10 steps
Post test	Student posttest results	Post-test data
Student response questionnaire	Student response questionnaire sheet	Student questionnaire results
Teacher Testimonial	Teacher testimonial sheet in paper form and googleform	Teacher testimonial answers

Result and Discussion

This study aims to examine the students' thinking process in solving numeracy problems based on 10 steps of numeracy learning. Research data were obtained through observation, interviews, and initial tests (pretests), the division of subjects was carried out after the pretest was conducted so that students were categorized into several zones according to their abilities. The division of subjects based on zoning is as follows: 1) Red Zone (Low ability requires special intervention): Angelica R Runesi, Aprilia Masneno, Hirodimus Pehe. 2) Yellow Zone (Basic Skills): Adi Gusti Saebani, Carisa Sorenino, Jaiwan Takunama. 3) Green Zone (speak): Marvel Valdi Pehe.

Observation and Interview Results
Red Zone (Low Capability)

The results of the pretest, observation, and interview show that students in the red zone have very low numeracy skills. They have difficulty understanding the text of the questions, identifying important information, and choosing appropriate solution strategies. Students in this category tend to be passive, confused when faced with story problems, and often guess the answers without logical reasoning.
One student said:

"*I'm confused, the question is long and I don't know where to start. I'll try to divide it in two because my friend answered the same way.*"

This statement shows that students do not yet have sufficient metacognitive abilities, such as planning steps, rechecking understanding of questions, or evaluating answers.
During the learning process, the teacher has tried to guide students with probing questions such as:

"*What is the important information from this question?*"
"*Do you know what is being asked?*"

However, red zone students still need more intensive guidance, both individually and in small groups. In-depth interviews revealed that they did not yet have basic metacognitive skills, such as planning and evaluating solution steps. Although teachers have provided guidance through probing questions, students still need intensive and structured learning interventions. The recommended learning approaches include the use of visual media, concrete approaches, and real contexts to build numeracy understanding from an early stage. These findings emphasize the importance of communicative and adaptive learning designs for red zone students.

Yellow Zone (Medium Ability)

Students in the yellow zone demonstrate basic abilities in understanding and processing mathematical information, although they still need teacher guidance in the completion process. Based on the results of the pretest and observations during numeracy learning, students in this category are able to identify important information in the questions and show efforts to understand the context given, especially if the questions are presented in a familiar form or related to everyday experiences. They are able to state what is known and what is asked in the problem (Steps 1–3 in 10-step numeracy), but often experience confusion when it comes to choosing the right strategy (Step 4: Determining a solution strategy). This can be seen from their tendency to try several methods without clear reasons, or copy strategies from friends without understanding the steps taken.

Interview results show that yellow zone students have been able to identify important elements of the question and are beginning to understand the basic types of operations required, such as addition and subtraction. However, they are still often confused when making decisions and tend to rely on their friends' suggestions or simply provide answers because their peers have already responded.
One student said:

"*I don't dare answer according to what I know, I tend to follow my friend's answer.*"

In terms of the stages of thinking in numeracy, yellow zone students are generally able to understand the context, identify important information, and recognize problems. They can also define strategies, implement operations, and adjust results, although this often requires external help. However, their ability to evaluate results, check answers, reflect, and connect their learning to other contexts is still very limited. In most cases, these students are not accustomed to verifying their answers or explaining the reasoning behind the strategies they use.

In learning activities, yellow zone students show a willingness to try and learn from mistakes, which is a very good starting capital in developing numeracy thinking. They are also more open to provocative questions such as:

"*What information do you know about this question?*"
"*How do you know that's the answer?*"

However, they still need scaffolding or gradual support to help them build logical connections between the information they acquire and the solution strategies they choose. Without it, they tend to get stuck in mechanistic, rather than reflective, thinking patterns.
Observation and interview results show that yellow zone students have been able to go through the initial stages of numeracy thinking, such as understanding the context and recognizing problems, but still need help in choosing strategies, evaluating results, and reflecting on answers. They have a good willingness to learn and

positive responses to trigger questions, but need scaffolding or gradual support to build logical connections and increase independence in numeracy thinking. An approach that encourages strategy exploration and reflective discussion is recommended for the development of their abilities (Campbell et al., 2020; Foster et al., 2018).

Green Zone (High Ability)

Students in the green zone demonstrate mature and systematic numeracy thinking skills. They are able to quickly understand the context of the problem, identify important information, and choose relevant solution strategies logically and efficiently. Based on the results of the pretest and observations, students in this category appear confident, proactive in working on problems, and able to convey the reasons behind each step they take. When faced with contextual numeracy problems, green zone students generally follow the stages of thinking sequentially, according to the 10 steps of numeracy learning. They not only solve the problems, but are also able to explain their thinking process orally and in writing.

Interview Results

From the interviews, green zone students were able to:

Re-explain the problem in their own words.

Connecting numeracy problems with real experiences, for example comparing with the experience of traveling with family.

Explaining the reasons for choosing a particular strategy with strong logic.

One of the students said:

> "*I prefer to learn when there are things related to everyday experiences.*"

This statement reflects reflective ability and connection to personal experience, which indicates a good level of metacognitive thinking.

Students in the green zone have good critical and reflective thinking skills. They not only answer questions correctly, but also understand their thinking process, evaluate their work results, and relate them to real experiences. Their ability to follow all stages of numeracy independently and sequentially shows that contextual and meaningful numeracy learning has succeeded in forming a strong mathematical mindset. Open and problem-solving-based learning strategies are very appropriate to continue developing the potential of students in this category.

Analysis of Thinking Process

Based on the results of observations and interviews, the students' thinking process was analyzed by referring to 10 steps of numeracy learning, starting from understanding the problem to evaluating and reflecting on the solution. This analysis resulted in a mapping of the stages of students' thinking based on ability zones.

Discussion

Based on the results of the pretest, analysis of observation data and interviews with fifth grade students of SDN Buraen 1 who have been grouped into three zones based on their thinking skills in solving numeracy problems, namely the red zone, yellow zone, and green zone. This study refers to a qualitative approach and uses a 10-step numeracy learning framework based on 5S (Listen, Absorb, Attitude, Solution, Arrange) as a measuring tool for students' thinking processes.

Red Zone: Low Ability (Special Intervention Required)

Students in the red zone indicate that they are still in the early stages of mathematical thinking development. Based on observations, students appear confused in understanding the context of the problem, even when given an opening sentence (Listen stage), they have not been able to align their perceptions with the learning topic. They are also not yet able to identify important information from the problem, and tend to immediately guess the answer without going through the analysis process. In the Absorption stage, students are not yet able to explain difficult vocabulary, read texts well, or retell the contents of the reading. From the interview, red zone students were also unable to explain the reasons for choosing an answer, and did not show any evaluation or reflection on their own thinking process.

Their thinking ability has not touched the metacognitive aspect, and is still limited to memorization or following instructions mechanically. This shows that intensive support such as remedial approaches, scaffolding, and real context-based numeracy learning need to be applied consistently.

Yellow Zone: Moderate Ability (Needs Directed Guidance)

Students in the yellow zone have shown better development of numeracy thinking skills. Based on observations, they have been able to identify important information in questions and understand some of the learning context. They can also follow the Listen and Absorb stages, although they still need teacher assistance in determining problem-solving strategies.

Interview results show that students can explain basic reasons for choosing mathematical operations (e.g., using addition or multiplication), but are not yet fully able to choose efficient and logical strategies consistently. In the Solution and Arrange stages, students begin to understand the importance of evaluating answers, although their reflections are still

limited to "right or wrong", without in-depth descriptions (Aunio et al., 2021; Azubuike et al., 2024; Lee-Post, 2019).

Yellow zone students are also able to re-convey the contents of the text with their own sentences, but with a structure that is not yet coherent. With directed guidance and trigger questions, they show the potential to develop further towards deep understanding. A contextual problem-based approach and group discussions can strengthen their critical thinking process.

Green Zone: High Ability (Speaking and Independent)

Green zone students display systematic, logical, and reflective numeracy thinking processes. Based on observations, they are able to listen, understand the context, and relate learning topics to everyday life from the early stages (Listen). At the Absorb stage, students read texts well, understand difficult vocabulary, and convey the contents of the reading in a complete and logical manner.

In the Solution stage, they can independently develop problem-solving strategies, choose the right mathematical operations, and explain the reasons behind their choices. They are also able to check and evaluate answers (Arrange stage), and demonstrate reflective understanding that reflects conceptual mastery and metacognitive abilities.

Interviews showed that green zone students were able to relate the material to personal experiences, and demonstrated independence in thinking and openness to self-evaluation. They also tended to seek alternative solutions and were not fixated on just one method.

Implications of Findings for Learning

The results of this study show that each zone group has different learning needs:

The Red Zone requires intensive intervention and a concrete approach, with an emphasis on basic understanding and developing self-confidence.

The Yellow Zone requires gradual guidance to build consistency in thinking strategies and reflective abilities.

Green Zones need to be given higher challenges and explorative tasks to encourage creativity, complex problem solving, and collaboration.

From the results of the pretest, analysis of observation and interview data on fifth grade students of SDN Buraen 1 will be implemented using the 10 Dasalitnum steps.

Implementation of the 10 steps of Dasalitnum

The learning process begins with the alignment of perceptions through opening sentences in the form of trigger questions or contextual stories that are close to the student's experience, such as when helping parents shop for birthday cake ingredients (Lynch et al., 2023; MINTY-WALKER et al., 2025). This strategy is related to aspectsListen, which helps students become more interested and ready to follow the learning. The teacher then reads the topic title and gives students the opportunity to read it again, which helps build students' expectations and initial understanding of the material.

Next, the teacher introduces the context of the story and relates it to the students' daily experiences. This strengthens the relevance of the material, building a bridge between personal experiences and the mathematical concepts to be discussed (Aunio, 2019; Leyva et al., 2022). Students are then asked to read the questions independently in their hearts to train their concentration and independence in understanding information, followed by a group discussion about difficult vocabulary. This stage is in the realm ofAbsorb, which serves to enrich vocabulary and deepen understanding of the text. To strengthen literacy and understanding of the structure of the question, the teacher provides an example of reading with good intonation and invites students to read in turns. After that, students are asked to tell the contents of the text in their own words or through demonstrations, so that students' speaking skills, imagination, and understanding can develop comprehensively. The teacher also directs discussions about moral values in the text, such as fairness or not discriminating against friends, which are included in the domainAttitude. This is an important part of forming students' character through contextual learning.

In stages Solution, students are involved in discussing problem-solving strategies. The teacher guides students to recognize important information and questions asked, so that they are able to select answers logically from several options offered. Finally, students are invited to evaluate the text or questions, including reviewing the answers and considering more appropriate problem-solving strategies. This stage is part of Arrange, which encourages students to reflect, improve accuracy, and correct mistakes.

All of these stages show that the integration of the 5S approach in contextual numeracy learning helps improve students' understanding, forms positive attitudes, and encourages the development of critical and reflective thinking (Napoli et al., 2025; O'Reilly et al., 2020; Ramadhani et al., 2025). Meanwhile, for teachers, this approach makes it easier to build students' learning readiness, assess understanding authentically, and develop more effective teaching materials and learning strategies.

Data Analysis

Pretest Data Analysis

Red Zone (Low Ability):

Students in this zone have fundamental difficulties in understanding contextual mathematical readings. They tend to guess the answer without understanding the content of the question, are unable to explain the reasons for choosing the answer, and have difficulty in recognizing vocabulary and question instructions. This indicates a lack of basic numeracy literacy skills, both in terms of language and mathematical logic.

Yellow Zone (Medium Ability):

Yellow zone students try to understand the content of the reading but are still often confused by long sentences and difficult vocabulary. They begin to show the thought process, but it is not yet stable and still relies on help from teachers or friends. However, they have the potential to develop with proper guidance through scaffolding.

Green Zone (High Ability):

Green zone students have a good understanding of the structure of the questions and the contents of the discourse. They are able to identify questions, but still need to be trained to be more careful in finding important information. They demonstrate good mathematical thinking skills, but need reinforcement in critical reading techniques.

Data Reduction

The data reduction process is carried out by grouping students' answers into certain themes or categories related to the ability to understand texts, recognize difficult words, strategies for solving problems, and obstacles to the thinking process. Data from 9 students are divided into three ability zones: red, yellow, and green.

Table 2. Coding and Categorization Results

Ability Zone	Main Coding Categories	Sub-Category
Red zone	Not understanding the contents of the discourse	-Guess the answer
		- Don't know what the question means
	Weak in understanding the language	- Does not recognize difficult words
		- Don't understand instructions
	Don't have a strategy to solve the problem	- Cannot explain the reason for choosing the answer
Yellow Zone	Efforts to understand the text are not yet stable	- Reading slowly but still confused
		- Need clarification
	Lack of understanding of mathematical terms	- Don't know the meaning of 'comparison'
	Copy the strategy or wait for confirmation	- Not sure about own answer
Green Zone	Understand the contents of the text	- Know the storyline
		- Understand basic questions
	Difficulty selecting important information	- Reads quickly but doesn't mark important numbers
		- difficulty finding important information in text/discourse
	Start having a strategy, need to strengthen reflection	- Can explain simple strategies

Data Presentation

Interview data is presented in the form of descriptive narratives based on ability zones.

Red zone: Students in this category have serious difficulties in understanding texts and question instructions. They tend to guess without thinking logically. Long passages are considered confusing, and they do not realize that there are terms they do not understand.

Yellow Zone: Students in this zone have begun to demonstrate the process of reading and understanding but are not yet fully independent. They are often unsure of their understanding and still rely on help or validation from teachers or friends.

Green Zone: Students in this zone show a better understanding of context, are able to explain the flow of the problem, but are not yet optimal in selecting important numerical information. They show potential for reflection and strategy, but still need metacognitive habits.

Drawing Conclusions

Based on the results of data reduction and presentation, it can be concluded that there are differences in the characteristics of the thinking process in each student ability zone. Students in the red zone show limitations in reading texts, understanding problems, and developing strategies, so they require comprehensive guidance, particularly in basic numeracy

literacy skills. Students in the yellow zone have begun to build understanding and develop thinking strategies, but their abilities are still unstable; therefore, they still need guidance and systematic practice in structured thinking. Meanwhile, students in the green zone demonstrate the ability to understand texts and think logically, yet they require reinforcement in analyzing important information and reflecting more deeply on the strategies they use.

Implications:
This analysis reinforces the importance of gradual, contextual, and systematic numeracy learning as offered in this approach10 Steps of the Ten Commandments. Students' thinking process must be facilitated according to their ability zones so that numeracy learning does not only focus on the final result, but also on the cognitive process that occurs during solving problems.

Analysis of Learning Process Observations
Observations were conducted during the implementation process of learning with the 10-step Dasalitnum approach. The results of the observations showed the dynamics of the student's thinking process according to zoning:
Red zone studentsappear passive and often confused when faced with story problems. They have difficulty connecting the information in the problem to everyday experiences. They need intensive guidance and prompting questions from the teacher to begin processing the information.
Yellow zone studentsbegins to show independence in understanding questions and trying to choose a solution strategy, but still often needs clarification and assistance from the teacher, especially in evaluating the results of the answers.
Green zone studentsappear confident, actively participate in discussions, and are able to explain the reasons for the strategies they use. They demonstrate the ability to reflect on their thinking processes and relate them to personal experiences.

Open Question Analysis
Analysis of students' answers to open-ended questions showed a positive response to the contextual learning approach.
Question 11 (Liked part):
The majority of students liked the story reading and discussion part because the story felt close to everyday life and the discussion atmosphere made them comfortable. This shows the effectiveness of a communicative and real-context-based approach.
Question 12 (Less favorite part):
Students expressed difficulties when faced with difficult words and when asked to rewrite the contents of the text. This is an important note that certain stages of literacy are still a challenge, not a form of rejection of learning.
Question 13 (Learning suggestions):
Students suggested that learning be made more fun with funny stories, out-of-class activities, and the use of pictures or videos. This indicates the need to develop a more creative, visual, and varied approach to numeracy activities.

Conclusion of Questionnaire Analysis
The results of the questionnaire showed that learning with the 10-step Dasalitnum approach was very well received by students. They felt that learning became more meaningful, easy to understand, and relevant to everyday life. Activities such as reading together, discussions, and explaining the contents of the text in their own words were the most preferred aspects.
Although there were some challenges such as understanding difficult vocabulary and rewriting activities, overall the students' responses were very positive and showed high emotional and cognitive engagement in learning.

Teacher Testimonials
Teachers who implement the approach10 steps of Dasalitnumconvey positive testimonials regarding the clarity of the structure and its impact on the learning process. They feel helped because they can guide students more systematically, especially in developing students' way of thinking from just guessing to being able to analyze the contents of the questions. Teachers also stated that this approach makes it easier for them to prepare materials and evaluate learning outcomes, because the framework provides clear direction. The effectiveness of Dasalitnum can also be seen from the improvement in school quality, from being in the red zone to the green zone, which means the category "very good".

The Dasalitnum approach actually supports developmentnumeracy literacy And students' critical thinking process, especially in learning numbers in class V SDN Buraen 1. Based on post-test data, observations, questionnaires, and student interviews, this approach is able to guide students gradually, starting from initial understanding to reflection and evaluation of questions. Each stage in Dasalitnum is designed to facilitate a tiered thinking process, in accordance with the cognitive development theory of Piaget Indonesian:Dewey, And Vygotsky's Language.

In the red zone, students initially tend to guess the answer without understanding the context. However, after following the Dasalitnum steps, they begin to show awareness to understand the contents of the questions and choose the appropriate arithmetic operations. The

yellow zone shows progress in evaluating strategies although it still needs clarification, while the green zone is able to reflect the thinking process critically and logically. These findings reinforce that the use of systematic thinking approaches such as Dasalitnum is very important in the numeracy process.

Furthermore, this approach is effective in improvingnumeracy literacy skills, including: understanding information in the text, identifying keywords, choosing a solution strategy, and evaluating and improving answers. This directly answers the main problem formulation in the study, namely how students' thinking processes develop through each stage in numeracy learning. The success of this approach also confirms that improving numeracy cannot be separated from the integration of literacy skills, logical reasoning, and clear learning systems.

This finding is reinforced by the theory of numeracy literacy from (Anders et al., 2012; Chen et al., 2019; Vrochidou et al., 2018) which emphasizes the importance of reading, understanding, and critical thinking skills in the context of mathematics. In addition, Dewey and Ennis' theory also shows that reflective and systematic thinking is the core of problem solving, which has not been optimally developed in red zone students before the Dasalitnum intervention. The application of the Dasalitnum is also in line with the thinkingSternberg And Vygotsky's Language, which emphasizes the importance of thinking stages and socio-cultural intelligence in the learning process. Yellow and green zone students demonstrate reflective abilities and independence in choosing strategies according to context, indicating that their cognitive processes develop through contextual learning.

Finally, teacher testimonials and student questionnaire results show that in addition to improving conceptual understanding, Dasalitnum also buildsmotivation and emotional involvementstudents. Activities such as shared reading, discussion, and reflection are considered enjoyable and useful. The success of this approach has been proven to encourageimproving school qualitycomprehensively and shows great potential to be replicated in other schools with low numeracy reach.

The results of this study indicate that the Dasalitnum approach is able to support the development of numeracy literacy and critical thinking processes in fifth-grade students at SDN Buraen 1, particularly in learning about numbers. Each stage in the Dasalitnum approach encourages students to think systematically, from understanding the context of the problem and identifying important information to evaluation and reflection. These findings align with Piaget's cognitive development theory, Dewey's reflective theory, and Vygotsky's view of the importance of social and language support in learning.

In the red zone, students who initially only guessed the answer without understanding the context of the problem gradually began to demonstrate awareness of reading the text carefully, recognizing difficult words, and selecting appropriate arithmetic operations through teacher guidance. These findings support research by (Dole & Geiger, 2020; Miller, 2018) which emphasizes the importance of reading and understanding text in basic numeracy literacy. Similar results were also reported by Yuniarti (2019), who showed that students with low abilities require explicit intervention in the form of teacher guidance to understand simple mathematical problems.

Students in the yellow zone demonstrate increasingly independent thinking processes, particularly in selecting problem-solving strategies. However, their ability to evaluate their results remains limited, often requiring teacher clarification. This aligns with research by (Andriani et al., 2025) which found that students with average abilities tend to be able to select strategies but are less accustomed to reflecting on their answers. Meanwhile, the results of this study also reinforce the findings of (Anam et al., 2020) who emphasized the importance of practicing systematic thinking through contextual problems to strengthen the stability of students' thinking processes.

The green zone indicates more mature critical and reflective thinking skills. Students are able to identify important information, explain the strategies used, and confidently reflect on errors. These findings align with research by (Duan et al., 2021) on critical thinking in mathematics and research by (Sakurai & Goos, 2023), which emphasized the importance of reflective strategies in problem-solving. In Indonesia, these results corroborate research by (Apriliawan & Parmiti, 2021), which found that students with high abilities demonstrate a tendency to think logically and critically when faced with context-based numeracy problems.

More broadly, this study is consistent with previous research emphasizing the link between literacy, numeracy, and contextual learning. Among these studies, research by (Astuti et al., 2024; Douglas et al., 2021; Grotlüschen et al., 2020; Rahmah et al., 2023) demonstrated that problem-based learning strategies can improve numeracy skills in elementary schools. Furthermore, research by (Chinn, 2020; Pal & Baral, 2021) also confirmed that integrating reading literacy with numeracy contributes significantly to improving understanding of mathematical concepts. Other research by (Gusman et al., 2023)emphasized the importance of systematic thinking stages in helping students connect mathematical knowledge with everyday experiences.

These research findings also overlap with research by (Oktariya et al., 2023) who found that thinking stage-based interventions improve numeracy learning outcomes for students in low-achieving schools. Research by (Fitrianingrum & Murtiyasa, 2023; Muliani et al., 2022) also confirmed that structured numeracy learning strategies can increase students' motivation, emotional engagement, and self-confidence in learning mathematics. Thus, this research further strengthens empirical evidence that a structured approach like Dasalitnum can be a solution for elementary schools in areas with low numeracy achievement.

Practically, the implication of this research is that Dasalitnum can be implemented as an effective numeracy learning model for students of various ability levels. In addition to improving understanding of number concepts, this approach also fosters motivation, engagement, and a strong numeracy mindset. With the success demonstrated at SDN Buraen 1, this strategy has the potential to be replicated in other schools, particularly those facing the challenge of low numeracy achievement.

Conclusion

This study concludes that the Dasalitnum approach has a positive effect on improving the thinking processes of fifth-grade students at SDN Buraen 1 in solving numeracy problems. The findings show that students in different ability zones demonstrate distinct characteristics: red zone students, who initially relied on guessing, gradually developed basic understanding and problem recognition with intensive guidance; yellow zone students showed emerging independence in selecting strategies and evaluating answers, though they still needed clarification; and green zone students demonstrated more advanced critical thinking, being able to explain solution strategies and reflect on mistakes.

More broadly, the results indicate that the Dasalitnum stages systematically train students to think logically, critically, and reflectively while connecting mathematical concepts to real-life contexts. This suggests that the approach not only supports mastery of number material but also strengthens students' overall numeracy mindset. Practically, the findings imply that Dasalitnum can serve as an effective instructional strategy for schools, particularly those struggling with low numeracy achievement, by providing structured guidance that can be adapted to different levels of student ability.

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Author Contributions

YM: was responsible for planning and conducting the research, collecting and analysing data, and writing the first draft of the article.

HL: directed the research process, provided methodological input, and reviewed the content and structure of the manuscript.

WH: guided the development of the conceptual framework, provided input on data analysis, and assisted in the final editing of the manuscript. All authors have read and approved the final version of this article and are responsible for the overall content of this paper.

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Conflicts of Interest

The authors declare no conflict of interest.

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