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Analysis of Scaffolding Implementation in Overcoming Mathematical Problem-Solving Difficulties of Students in Inclusive Classrooms

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Abstract

Mathematical problem solving is a fundamental competency in education; however, students with special needs in inclusive classrooms often encounter challenges that extend beyond cognitive understanding. This study aims to analyze the implementation of scaffolding in overcoming mathematical problem-solving difficulties experienced by a student with special needs in an inclusive classroom. A qualitative approach was employed to capture an in-depth understanding of the interaction between teacher support and student learning processes. The study was conducted at Almadinah Islamic School Makassar, involving a fifth-grade student with speech delay and emotional regulation difficulties, as well as the classroom teacher as a key informant. Data were collected through classroom observations, in-depth interviews, and documentation, and analyzed using data reduction, categorization, and interpretation techniques. The findings reveal that the student's difficulties were not primarily conceptual, but were related to challenges in verbal expression, emotional control, and maintaining structured problem-solving procedures. The teacher implemented various scaffolding strategies, including guiding questions, step-by-step structuring, verbal and non-verbal cues, emotional support, and reinforcement. These supports enabled the student to engage more effectively in problem-solving activities, reduce emotional disruptions, and gradually develop independence. The study highlights that scaffolding functions not only as cognitive support but also as a mechanism for regulating emotional and communicative aspects of learning. This research contributes to the understanding of scaffolding in inclusive mathematics education by emphasizing the importance of adaptive, responsive, and holistic instructional strategies. It suggests that effective scaffolding can bridge the gap between students' potential abilities and their actual performance while fostering meaningful and self-

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directed learning.

Keywords: Scaffolding; Mathematical Problem Solving; Inclusive Education

INTRODUCTION

Mathematics education plays a crucial role in developing students' logical reasoning, critical thinking, and problem-solving abilities (Nasir & Liani, 2025; Rahman & Jumriani, 2023; Stern & Hertel, 2022). In the context of 21st-century learning, mathematics is no longer viewed merely as a collection of formulas and procedures, but as a means to cultivate higher-order thinking skills that enable students to analyze, interpret, and solve complex problems (Michalsky, 2024; Wu et al., 2024). Therefore, the success of mathematics learning should not only be measured by students' ability to produce correct answers but also by their capacity to understand problems deeply, construct appropriate strategies, and reflect on their thinking processes. This perspective emphasizes the importance of examining how students engage in problem-solving activities rather than focusing solely on learning outcomes (He et al., 2023; Lambert & Sugita, 2016; Sumirattana et al., 2017).

Problem-solving ability is widely recognized as a central goal of mathematics education. It involves a series of cognitive and metacognitive processes, including understanding the problem, planning a solution, executing strategies, and evaluating the results. These processes require students to actively monitor their thinking, regulate their actions, and adapt strategies when encountering difficulties (Amalina & Vidákovich, 2023; Kolar & Hodnik, 2021; Vessonen et al., 2025). However, in classroom practice, many students struggle to engage effectively in problem solving, particularly when faced with non-routine or contextual problems that require flexible thinking. These challenges become more complex in inclusive classrooms, where students come from diverse backgrounds with varying cognitive, emotional, and behavioral characteristics.

Inclusive education aims to provide equitable learning opportunities for all students, including those with special needs, by integrating them into regular classroom environments. This approach reflects a commitment to educational equity and social inclusion, ensuring that every student has access to meaningful learning experiences (Esengulova et al., 2025; Mullick et al., 2025; Obrovská et al., 2025). However, the implementation of inclusive education in mathematics classrooms presents significant challenges, particularly in addressing the diverse needs of students. Students with special needs often experience difficulties in communication, emotional regulation, and social interaction, which can affect their participation in learning activities. These

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challenges may hinder their ability to express mathematical ideas, follow problem-solving steps, and sustain attention during instruction. Interestingly, not all students with special needs exhibit limitations in cognitive abilities. Some students demonstrate strong potential in specific domains, including mathematics, despite facing challenges in communication and behavior (Al-Gerafi et al., 2024; Mullick et al., 2025; Yi et al., 2025). For example, students who experience speech delays and emotional regulation difficulties, such as frequent tantrums, may still possess strong logical reasoning and numerical skills. This discrepancy between cognitive ability and behavioral expression highlights the complexity of learning processes in inclusive classrooms. It suggests that students' difficulties in mathematics are not always rooted in conceptual understanding but may be related to how they process, express, and regulate their thinking.

In such contexts, teachers play a critical role in facilitating learning by providing appropriate support that aligns with students' individual characteristics. Traditional instructional approaches that emphasize uniform teaching methods may not be sufficient to address the diverse needs of students in inclusive classrooms. Instead, teachers are required to adopt adaptive and responsive strategies that can accommodate differences in learning styles, abilities, and emotional condition (Liu et al., 2025; Silva et al., 2025)s. One such approach that has been widely discussed in educational research is scaffolding. Scaffolding refers to the temporary support provided by teachers or more knowledgeable individuals to help learners accomplish tasks that they cannot complete independently. This support is gradually reduced as learners develop competence and independence. The concept of scaffolding is grounded in socio-constructivist theory, which emphasizes that learning occurs through interaction, guidance, and collaboration. Through scaffolding, teachers can guide students to bridge the gap between their current level of understanding and the desired learning goals (Dassa et al., 2024; Menekse et al., 2025; Nickl et al., 2024). This process involves providing prompts, cues, questions, explanations, and feedback that are tailored to students' needs.

In mathematics learning, scaffolding plays a significant role in supporting students' problem-solving processes. It enables teachers to guide students through each stage of problem solving, helping them to understand problems, plan strategies, execute solutions, and reflect on their work. Scaffolding also supports the development of metacognitive skills by encouraging students to think about their thinking, monitor their progress, and evaluate their strategies (Dabarera et al., 2014; Deibl et al., 2023; Haataja et al., 2019; Menekse et al., 2025). These skills are essential for independent learning and are particularly important for students who experience difficulties in self-regulation.

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For students with special needs, scaffolding becomes an essential instructional strategy. These students often require structured guidance and continuous support to engage effectively in learning activities. Scaffolding can help them organize their thinking, maintain focus, and manage emotional responses during challenging tasks. For instance, guided questioning can help students articulate their understanding, while step-by-step prompts can assist them in navigating complex problems (Hidayati et al., 2025; Pgri Jombang et al., n.d.; Talib et al., 2024). In addition, emotional support embedded within scaffolding can help students regulate frustration and maintain motivation, which are critical factors in successful problem solving.

Despite its potential benefits, the implementation of scaffolding in inclusive mathematics classrooms is not always straightforward. Teachers must carefully consider the type, level, and timing of support provided to students (Ardenlid et al., 2025; Jitendra & Star, 2011; Xie et al., 2024). Excessive support may lead to dependency, while insufficient support may leave students unable to progress. Therefore, effective scaffolding requires a deep understanding of students' needs, continuous observation, and flexible adjustment of instructional strategies. This becomes particularly challenging when dealing with students who exhibit unique characteristics, such as speech delays and emotional outbursts, as these conditions may affect their responsiveness to instructional support. Previous studies have demonstrated that scaffolding can improve students' mathematical understanding and problem-solving abilities. These studies highlight that scaffolding helps students develop strategies, organize information, and reflect on their learning processes. However, much of the existing research has focused on general student populations or employed quantitative approaches that emphasize measurable outcomes. While these studies provide valuable insights into the effectiveness of scaffolding, they often overlook the complexity of classroom interactions and the dynamic nature of teacher-student relationships (Jitendra & Star, 2011; Mazı, 2026).

There is still a need for in-depth exploration of how scaffolding is implemented in real classroom settings, particularly in inclusive environments involving students with specific learning characteristics. A qualitative approach is essential to capture the richness of classroom interactions, the nuances of instructional practices, and the lived experiences of students. Through qualitative analysis, researchers can examine how scaffolding is enacted, how students respond to it, and how it influences their cognitive and emotional engagement in learning. This study focuses on analyzing the implementation of scaffolding in overcoming mathematical problem-solving difficulties experienced by a student with special needs in an inclusive classroom. The student exhibits characteristics such as speech delay and a tendency toward emotional

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outbursts, yet demonstrates strong mathematical abilities. This unique combination of strengths and challenges provides an opportunity to explore how scaffolding can be adapted to support learning effectively (Questa-Torterolo et al., 2025; Zahid et al., 2023). The study is conducted at Almadinah Islamic School Makassar, an institution that implements inclusive education and provides a relevant context for examining instructional practices in diverse classrooms.

The objectives of this study are to analyze the types of scaffolding provided by the teacher, to examine how these scaffolding strategies support the student in overcoming problem-solving difficulties, and to explore the student's responses during the learning process. By focusing on the interaction between teacher support and student engagement, this study seeks to provide a deeper understanding of how scaffolding functions as a pedagogical tool in inclusive mathematics education (Xu et al., 2026; Zahid et al., 2023; Zheng et al., 2026).

The significance of this research lies in its contribution to both theoretical and practical domains. Theoretically, this study enriches the understanding of scaffolding within the context of inclusive education, particularly in relation to students with unique cognitive and behavioral characteristics. It highlights the importance of integrating cognitive, metacognitive, and emotional aspects in the learning process (Liu et al., 2025; Obrovská et al., 2025). Practically, the findings of this study can inform teachers about effective strategies for implementing scaffolding in inclusive classrooms. It provides insights into how teachers can design supportive learning environments that accommodate diverse learners while promoting independence and problem-solving skills.

The complexity of mathematics learning in inclusive classrooms highlights the need for instructional approaches that are flexible, adaptive, and responsive to students' diverse characteristics. Although scaffolding has been widely recognized as an effective strategy for supporting learning, there is still limited research that explores its implementation in real classroom contexts involving students with specific behavioral and communication challenges. In particular, little is known about how scaffolding is applied to support students who exhibit a combination of strong cognitive abilities and difficulties in emotional regulation and verbal expression. Therefore, this study aims to analyze the implementation of scaffolding in overcoming mathematical problem-solving difficulties experienced by a student with special needs in an inclusive classroom. The study focuses on identifying the types of scaffolding provided by the teacher, examining how these supports facilitate the student's problem-solving processes, and exploring the student's responses during learning activities. By adopting a qualitative approach, this research seeks to provide an in-depth understanding of how scaffolding functions as a dynamic interaction between teacher support and student engagement in inclusive mathematics

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education.

METHOD

This study employed a qualitative approach to explore the implementation of scaffolding in overcoming mathematical problem-solving difficulties in an inclusive classroom. The qualitative design was chosen to obtain an in-depth understanding of the interaction between teacher support and student learning processes, particularly in relation to the characteristics of a student with special needs. The focus of this study was not on measuring outcomes but on examining processes, meanings, and classroom dynamics.

Research Setting and Participants

The research was conducted at Almadinah Islamic School Makassar, which implements inclusive education by integrating students with diverse needs into regular classrooms. The study focused on a fifth-grade student identified as having special needs, characterized by speech delay and emotional regulation difficulties (tantrum behavior), while demonstrating strong mathematical abilities.

The participant was selected purposively based on the following criteria:

- The student is part of an inclusive classroom
- The student shows difficulties in mathematical problem-solving processes
- The student exhibits unique behavioral and communication characteristics
- The student actively participates in mathematics learning

In addition to the focal student, the classroom teacher was involved as a key informant, particularly in providing information related to scaffolding strategies applied during instruction.

Data Collection Techniques

Data were collected using multiple techniques to ensure depth and credibility. The techniques included:

- Classroom Observation : Conducted during mathematics learning to capture real-time scaffolding practices, including teacher support, interaction patterns, and student responses.
- In-depth Interview : Conducted with the teacher to explore instructional strategies, challenges in inclusive teaching, and considerations in providing scaffolding.

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- Documentation : Includes students' written work, problem-solving tasks, and learning records to support analysis of students' thinking processes.

Table 1. Summary of Data Collection Techniques

Technique	Data Source	Focus of Data Collection
Observation	Student & Teacher	Types of scaffolding, interaction patterns, student responses
Interview	Teacher	Instructional strategies, challenges, scaffolding considerations
Documentation	Student work	Problem-solving process, written responses

Data Analysis

Data analysis was conducted iteratively throughout the research process. The analysis followed several stages:

- Data Reduction : Selecting and focusing on relevant data related to scaffolding practices and problem-solving difficulties.
- Data Categorization :Organizing data into themes such as:
  - Types of scaffolding
  - Stages of problem solving
  - Student responses
- Data Display : Presenting findings in descriptive and narrative form to illustrate classroom interactions.
- Interpretation : Interpreting data by linking findings with relevant theories such as scaffolding, metacognition, and inclusive education.

Table 2. Data Analysis Framework

Stage	Description
Data Reduction	Selecting relevant data from observation, interview, and documentation
Categorization	Grouping data into themes (scaffolding, difficulties, responses)
Data Display	Presenting data in narrative form
Interpretation	Linking findings with theoretical frameworks

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Trustworthiness of Data

To ensure the credibility of the findings, several strategies were applied:

- Triangulation : Comparing data from observation, interview, and documentation
- Prolonged Engagement : Conducting repeated observations to understand classroom context
- Member Checking : Confirming findings with the teacher to ensure accuracy

RESULTS

This study aimed to analyze the implementation of scaffolding in overcoming mathematical problem-solving difficulties experienced by a student with special needs in an inclusive classroom. The findings are presented based on classroom observations, in-depth interviews, and documentation, focusing on three main aspects: (1) the nature of the student's difficulties, (2) the types of scaffolding implemented by the teacher, and (3) the student's responses to the scaffolding during the learning process.

Student's Difficulties in Mathematical Problem Solving

The findings indicate that the student's difficulties in mathematical problem solving were not primarily conceptual, but were closely related to communication barriers, emotional regulation, and consistency in following problem-solving procedures. Based on classroom observations, the student was able to identify numerical patterns and demonstrate correct computational reasoning. However, difficulties emerged when the student was required to explain reasoning verbally or organize solutions in a structured manner.

This finding was supported by the teacher's statement:

> *"Actually, the student understands the mathematical concept quite well. When I give numerical problems, he can often find the correct answer. But when I ask him to explain how he got the answer, he struggles and sometimes becomes frustrated."*

This indicates that the student's challenge lies in the externalization of thinking rather than in the thinking process itself. The inability to articulate reasoning created a gap between the student's cognitive potential and observable performance. In addition, emotional factors played a significant role in disrupting the problem-solving process. During tasks involving multiple steps or verbal explanations, the student frequently exhibited signs of frustration, such as withdrawal,

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refusal to continue, or tantrum behavior. These emotional responses often interrupted the flow of problem solving, even when the student initially demonstrated correct understanding.

The student's perspective further illustrates this condition:

> *"I know the answer, but I don't like it when I have to explain it. It makes me confused and sometimes I feel angry."*

This statement suggests that the difficulty was not rooted in a lack of understanding, but rather in cognitive-emotional tension triggered by task demands, particularly those requiring verbal expression and sustained attention.

Types of Scaffolding Implemented by the Teacher

The analysis of classroom interactions revealed that the teacher implemented multiple forms of scaffolding, which were dynamically adjusted based on the student's responses and emotional state. These scaffolding strategies include guiding questions, structured assistance, multimodal cues, emotional support, and reinforcement.

Table 3. Types of Scaffolding and Their Functions in Learning

Type of Scaffolding	Description	Function in Learning Process	Evidence Source
Guiding Questions	Step-by-step prompting	Directing student's thinking	Teacher interview
Step-by-step structuring	Breaking tasks into smaller steps	Reducing cognitive load	Observation
Verbal & non-verbal cues	Gestures, repetition, tone support	Supporting understanding and maintaining focus	Observation
Emotional support	Calming and reassurance	Regulating emotional responses	Teacher interview
Reinforcement	Positive feedback	Increasing motivation and confidence	Interview & observation

Prompting and Guiding Questions

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The teacher frequently used guiding questions to direct the student's thinking process. These questions were simplified and delivered gradually to help the student focus on specific aspects of the problem.

"I usually don't ask him directly to explain everything. I guide him step by step, like asking 'What do you see first?' or 'What should we do next?' so he doesn't feel overwhelmed."

This approach allowed the student to engage in problem solving without experiencing excessive cognitive load.

Step-by-Step Structuring

The teacher consistently broke down complex problems into smaller, manageable steps. This helped the student maintain focus and reduced the likelihood of emotional escalation. Observation data showed that when problems were presented in segmented steps, the student was able to complete tasks more consistently. The teacher explained:

"If the problem is too long, he gets distracted or frustrated. So I divide it into parts, and after finishing one step, we move to the next."

This indicates that structured scaffolding functioned as a cognitive organizer, supporting the student's sequential thinking.

Use of Verbal and Non-Verbal Cues

In addition to verbal instructions, the teacher used gestures, repetition, and tone modulation to reinforce understanding and maintain attention. These cues were particularly important given the student's speech delay.

"Sometimes I just point or repeat the key part of the question. He responds better when I combine words with gestures."

These multimodal supports helped bridge communication gaps and ensured that the student remained engaged in the task.

Emotional Scaffolding

A distinctive finding of this study is the strong emphasis on emotional support as part of scaffolding. The teacher actively monitored the student's emotional state and intervened when signs of frustration appeared.

"When he starts to get upset, I don't force him to continue immediately. I calm him down first, then slowly bring him back to the task."

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This strategy prevented escalation of tantrum behavior and created a more conducive learning environment.

Reinforcement and Feedback

The teacher provided consistent positive reinforcement to maintain motivation and build confidence.

"Even small progress, I appreciate it. That makes him more willing to try again."

This suggests that reinforcement played a role not only in motivation but also in stabilizing the student's emotional responses during learning.

Student's Responses to Scaffolding

The findings demonstrate that scaffolding had a significant impact on the student's engagement, emotional stability, and problem-solving performance. When scaffolding was provided appropriately, the student showed increased focus and reduced behavioral disruptions.

Observation data revealed that the student was more willing to attempt problem-solving tasks when guided through structured steps. The student expressed:

"It's easier when the teacher tells me step by step. I don't feel confused, and I can finish it."

This indicates that scaffolding helped reduce cognitive overload and increased task clarity. Furthermore, scaffolding contributed to the development of confidence and persistence. The student began to show greater willingness to engage with challenging tasks, even after making mistakes.

"If I make a mistake, the teacher helps me fix it, so I want to try again."

This reflects a shift from avoidance behavior to active engagement, suggesting that scaffolding influenced not only cognitive processes but also learning attitudes. Over time, a gradual reduction in dependence on teacher support was observed. The student began to independently identify problem structures and initiate solution steps, although occasional guidance was still required. This progression indicates that scaffolding facilitated the development of partial independence in problem solving.

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DISCUSSION

The findings of this study provide important insights into the implementation of scaffolding in supporting mathematical problem-solving processes for students with special needs in inclusive classrooms. The results reveal that the student's difficulties were not primarily associated with conceptual understanding, but rather with challenges in verbal expression, emotional regulation, and procedural consistency. This indicates that mathematical problem-solving difficulties in inclusive settings cannot be viewed solely from a cognitive perspective, but must also consider affective and communicative dimensions (Liu et al., 2025; Obrovská et al., 2025).

The student's ability to arrive at correct answers, as highlighted in both observation and teacher interviews, suggests that the underlying cognitive structures for mathematical reasoning were already well developed. However, the difficulty in explaining reasoning reflects a gap between internal cognition and external expression. This finding aligns with the perspective that problem solving is not only about generating solutions but also about articulating and structuring thinking processes (He et al., 2023; Luengo-Aravena et al., 2024; Stern & Hertel, 2022). In this case, the student's struggle to verbalize reasoning led to interruptions in the problem-solving process, particularly when tasks required explanation or justification.

The presence of emotional responses, such as frustration and tantrum behavior, further reinforces the interconnectedness between cognitive and affective processes in learning. The student's statement indicating discomfort when asked to explain answers suggests that task demands triggered cognitive-emotional tension. This condition highlights that emotional regulation plays a critical role in sustaining engagement in problem-solving activities. When emotional stability is disrupted, even students with strong cognitive abilities may fail to perform optimally (Almarashdi & Jarrah, 2023; Lestari et al., 2025; Saka & Celik, 2024). Therefore, understanding students' emotional characteristics becomes essential in designing effective instructional strategies in inclusive classrooms. In this context, scaffolding functioned as a mediating mechanism that bridged the gap between the student's potential and actual performance. The use of guiding questions, as identified in the findings, helped externalize the student's thinking by breaking down abstract reasoning into manageable steps. This form of scaffolding allowed the student to gradually construct explanations without feeling overwhelmed. Rather than demanding complete explanations, the teacher's strategy of asking sequential questions supported the development of structured thinking, which is essential in mathematical problem solving (He et al., 2023; Saka & Celik, 2024).

The implementation of step-by-step structuring further demonstrates the importance of

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reducing cognitive load in supporting students with specific learning characteristics. By segmenting complex problems into smaller components, the teacher enabled the student to focus on one aspect at a time, thereby minimizing confusion and preventing emotional escalation (Al-Gerafi et al., 2024; He et al., 2023). This approach reflects the adaptive nature of scaffolding, where instructional support is tailored to the learner's current capacity. It also highlights that effective scaffolding requires not only content knowledge but also an understanding of how students process information.

Another significant finding is the role of multimodal cues, including gestures and repetition, in facilitating understanding. For students with speech delays, verbal explanations alone may not be sufficient to support comprehension. The integration of verbal and non-verbal cues provided alternative pathways for processing information, thereby enhancing engagement and reducing communication barriers. This suggests that scaffolding in inclusive classrooms should incorporate multiple modes of interaction to accommodate diverse learning needs (Liu et al., 2025; Xu et al., 2026).

A distinctive contribution of this study lies in highlighting the importance of emotional scaffolding. Unlike traditional views that emphasize cognitive support, the findings demonstrate that emotional regulation is an integral component of effective scaffolding. The teacher's strategy of calming the student before continuing the task prevented disruptions and allowed the student to re-engage in learning (Esengulova et al., 2025; Yi et al., 2025). This indicates that scaffolding is not limited to guiding thinking processes, but also involves managing emotional conditions that influence learning. The integration of emotional and cognitive support creates a more holistic learning environment, particularly for students with behavioral challenges.

The provision of reinforcement and positive feedback further contributed to the student's motivation and confidence. The findings show that acknowledging small achievements encouraged the student to persist in problem-solving activities. This shift from avoidance to active engagement suggests that scaffolding can influence not only cognitive performance but also learning attitudes. When students perceive support as encouraging rather than demanding, they are more likely to take risks and engage with challenging tasks. Moreover, the gradual reduction of assistance observed in the findings reflects the development of student independence (He et al., 2023; Saka & Celik, 2024; Tîrnovan & Bossé, 2026). As the student became more familiar with structured problem-solving approaches, reliance on teacher support decreased. This progression illustrates the fundamental principle of scaffolding, where support is gradually withdrawn as learners gain competence. The emergence of partial independence indicates that scaffolding

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successfully facilitated the transition from guided participation to self-directed learning.

From a broader perspective, the findings emphasize that scaffolding is a dynamic and context-dependent process. The effectiveness of scaffolding lies not in the strategy itself, but in how it is implemented through continuous interaction between teacher and student. The teacher's ability to adjust support based on the student's cognitive and emotional conditions played a crucial role in the success of the learning process (Obrovská et al., 2025; Xu et al., 2026). This highlights the importance of teacher sensitivity and responsiveness in inclusive education settings. Furthermore, this study contributes to the understanding that mathematical problem solving involves the integration of cognitive, metacognitive, and affective processes. The student's experience demonstrates that difficulties in problem solving may arise not from a lack of understanding, but from challenges in regulating thinking and emotions. Scaffolding, when implemented effectively, can address these challenges by providing structured guidance, promoting reflection, and supporting emotional stability.

Overall, the findings suggest that scaffolding serves as a comprehensive instructional approach that accommodates the complexity of learning in inclusive classrooms. By integrating cognitive support, communication strategies, and emotional regulation, scaffolding enables students with special needs to engage more effectively in mathematical problem solving. These results reinforce the view that effective mathematics instruction should move beyond procedural teaching and focus on supporting the whole learner, including their thinking processes, emotional experiences, and individual characteristics.

CONCLUSION

This study concludes that the implementation of scaffolding plays a significant role in overcoming mathematical problem-solving difficulties for students with special needs in inclusive classrooms. The findings reveal that the student's challenges were not primarily conceptual, but were closely related to difficulties in verbal expression, emotional regulation, and maintaining structured problem-solving processes. Through the provision of adaptive scaffolding such as guiding questions, step-by-step structuring, multimodal cues, emotional support, and reinforcement the teacher was able to bridge the gap between the student's cognitive potential and actual performance. Furthermore, the study highlights that effective scaffolding extends beyond cognitive assistance by integrating emotional and communicative support, which are essential for sustaining student engagement. The gradual development of student independence observed in this study indicates that scaffolding not only facilitates immediate problem-solving

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performance but also promotes long-term self-regulation and learning autonomy. These findings underscore the importance of responsive and individualized instructional strategies in inclusive mathematics education, where understanding the holistic needs of learners is fundamental to achieving meaningful learning outcomes.

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