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Revitalizing Mathematics Learning in Phase C: Teacher Strategies for Conceptual Understanding

Novi Audria[1], Bunga Ayu Wulandari[2], Destrinelli Destrinelli[3]

[1,2,3] Master of Elementary Education, Jambi University, Indonesia

Corresponding author, email: novi01harahap@gmail.com

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Abstract

Background - Mathematics learning at the elementary level, especially at Phase C, requires innovative teaching strategies to enhance students' conceptual understanding and motivation.
Purpose - This study aims to explore and describe the strategies used by elementary school teachers to improve conceptual understanding in Phase C mathematics learning, focusing on their experiences and perceptions in implementing adaptive and innovative instructional approaches.
Method/approach - A qualitative phenomenological method was employed to capture teachers' lived experiences at SD Negeri 001/IV Kota Jambi during the 2024/2025 academic year. Data were collected through interviews, classroom observations, and document analysis involving two teachers, six students, and the principal. Data triangulation and member checking ensured the validity and reliability of the findings.
Findings - The results reveal that teachers employ interactive and dynamic teaching strategies, use diverse teaching aids, implement constructivist approaches, conduct continuous assessments with direct feedback, collaborate in professional learning communities, and engage in comprehensive lesson planning. These strategies collectively enhance students' conceptual understanding, foster active participation, and accommodate individual learning differences.
Conclusions - The study provides empirical insights into effective teaching strategies that support adaptive and responsive mathematics instruction at Phase C in elementary schools. The integrated model of teaching strategies identified can serve as a valuable reference for improving mathematics education quality and innovation.
Novelty/Originality/Value - This study offers a detailed phenomenological perspective on how teachers practically implement and adapt innovative instructional strategies in a real classroom context, bridging the gap between theory and practice in elementary mathematics education.

Keywords: mathematics instruction; conceptual understanding; elementary education

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INTRODUCTION

Quality Elementary education serves as the fundamental foundation for shaping students' character and critical thinking skills (Muliastrini, 2020). Mathematics plays a crucial role as a tool for sharpening logic and problem-solving abilities from an early age. Mastery of mathematical concepts not only supports intellectual development but also enhances students' creativity in facing daily life challenges. Therefore, mathematics education at the elementary level is key to fostering a resilient generation. The role of teachers as facilitators and innovators is vital in delivering mathematics material effectively.

Although mathematics is an essential subject, many students exhibit a lack of interest and hold negative perceptions toward it. This is often due to the belief that mathematics is a difficult, intimidating, and unappealing subject (Siregar et al., 2021. Such disinterest affects student participation in class and reduces learning motivation. This situation highlights the need for creative and adaptive teaching approaches to change students' perspectives. With the right strategies, students are expected to develop an interest and curiosity toward mathematics.

In the learning process, teachers play a key role in designing effective instructional strategies. They are required not only to deliver material but also to create an interactive and enjoyable learning environment. The use of innovative methods can facilitate a deeper understanding of mathematical concepts (Halim & Hadi, 2023). Therefore, teachers should integrate various approaches, ranging from group discussions to the utilization of educational technology. Innovation in teaching strategies serves as a fundamental element in improving the quality of mathematics education.

Mathematics instruction at Phase C presents its own challenges, as it covers more complex arithmetic concepts. At this stage, students are expected to develop number intuition, understand arithmetic operations, and master concepts such as greatest common factor (GCF), least common multiple (LCM), and fractions. The implementation of the *Kurikulum Merdeka* (Independent Curriculum) requires a learning approach that focuses on holistic cognitive development (Cholilah et al., 2023). Teachers must be able to adjust their teaching methods according to students' characteristics and developmental levels. Thus, adaptive teaching strategies are essential to achieving the expected learning outcomes.

The implementation of effective teaching strategies presents challenges for educators. Teachers often struggle to design lesson plans that align with the prescribed learning outcome standards. The diverse abilities and characteristics of students add to the complexity of implementing these strategies. Additionally, limitations in learning media and resources impact teaching effectiveness. Therefore, innovation and adaptation of methods are key to optimizing the teaching and learning process in mathematics (Mumayizah et al., 2023).

Previous studies have emphasized the importance of innovative teaching methods in elementary mathematics to enhance students' interest and understanding (Siregar et al., 2021; Halim & Hadi, 2023). However, most of these studies remain general and have yet to explore in depth how teachers implement these strategies specifically in Phase C mathematics learning, which involves more complex concepts. Based on preliminary observations and interviews at SD Negeri 001/IV Kota Jambi, it was found that although teachers strive to apply various innovations, challenges persist in adapting teaching strategies to the diverse characteristics and abilities of students. This indicates a gap between theoretical innovation in teaching and actual classroom practice. Therefore, this study contributes by phenomenologically examining teachers' experiences in facing these challenges and identifying effective adaptive strategies in Phase C mathematics instruction. Focusing on the concrete context of a leading school in Kota Jambi, this research is expected to provide practical and relevant recommendations for developing a more responsive mathematics teaching model to students' needs

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To address these challenges, innovation in mathematics teaching methods is imperative. Teachers are expected to develop strategies that not only emphasize content mastery but also enhance active student engagement. The use of digital technology and interactive media can create a more dynamic and engaging learning environment. The constructivist approach, which encourages students to learn through discussion, experimentation, and group work, has been proven effective in improving conceptual understanding (South et al., 2022). With innovative strategies, mathematics learning can be revitalized to be more relevant to students' current needs.

This research is based on the conditions observed at SD Negeri 001/IV Kota Jambi, a top-tier school with an A accreditation and a conducive learning environment. Despite students' enthusiasm for learning mathematics, challenges persist in implementing effective teaching strategies. Interviews and observations indicate that teachers at this school strive to apply various innovations to optimize Phase C mathematics instruction. These approaches include careful lesson planning, the use of relevant learning media, and continuous evaluation. These conditions serve as the main motivation for a deeper examination of the teaching strategies employed by educators.

This study aims to explore teachers' strategies in conducting mathematics instruction at Phase C in elementary schools. Using a phenomenological approach, this study uncovers real-life experiences of teachers in addressing various instructional challenges. The research findings are expected to contribute to the development of more innovative and adaptive teaching models. The results will serve as an important reference for educators in designing effective teaching strategies. Thus, this study not only provides insights into the current state of mathematics education but also opens opportunities for future improvements and innovations.

METHODS

This study employed a qualitative approach using a phenomenological method to gain in-depth understanding of teachers' experiences and perceptions in implementing mathematics instruction at Phase C of primary school. The phenomenological design was chosen to allow the researcher to explore the realities of teaching interactions and dynamics without manipulating data (Nartin et al., 2024). This approach enables a comprehensive depiction of the strategies applied by teachers, as well as the factors influencing their effectiveness. Consequently, this qualitative approach is expected to yield rich and contextual findings.

The phenomenological approach was deemed appropriate for this study because it reveals the subjective meanings behind teachers' instructional experiences in mathematics education. In line with the study's aim to uncover how teachers interpret and respond to instructional challenges, this method allows for the depth of experience to emerge, beyond surface-level behaviors (Creswell, 2015). Unlike quantitative methods that focus on measuring variables numerically, phenomenology places human experience at the core of the analysis. Therefore, this study contributes to educational literature by presenting firsthand accounts from educators engaged in real classroom dynamics.

The research was conducted at SD Negeri 001/IV Kota Jambi, a high-performing, accredited primary school with a conducive learning environment. The study took place during the 2024/2025 academic year to capture current conditions related to the implementation of the most recent curriculum. Data were collected from two main sources: primary data through interviews with teachers, students, and the principal, and secondary data such as instructional modules and lesson plans. The school and timeframe were selected due to their relevance to the research focus, thus ensuring that the findings accurately reflect current classroom practices. This context serves as a solid foundation for analyzing teaching strategies in mathematics.

Data collection techniques included structured interviews, direct classroom observations,

and document analysis. In-depth interviews explored teachers' experiences, challenges, and innovations in instructional strategies. Classroom observations were conducted to capture real-time teacher-student interactions and direct application of instructional methods. Additionally, documents such as lesson plans, instructional modules, and teaching reports were gathered to support and validate the findings. This combination of techniques ensured the data collected was valid, rich, and comprehensive across multiple aspects of instructional practice.

Participants in this study were selected purposively based on their direct involvement in teaching Phase C mathematics and their relevance to the study's objectives. A total of nine informants were involved: two classroom teachers (Ms. SY and Mr. YA), six fifth-grade students, and the school principal (Mr. IM). Ms. SY has been teaching at the school since 2007, while Mr. YA joined in 2019. The student participants were chosen with the assistance of teachers, considering a range of academic performance levels (high, moderate, low) to obtain diverse and representative perspectives on classroom instruction.

Data analysis involved four main steps: data reduction, data display, interpretation, and conclusion drawing. Data reduction entailed filtering and categorizing relevant information from interviews, observations, and documentation to identify key themes associated with instructional strategies (Artarini & Putri, 2024). The reduced data were then presented in a systematic narrative format to aid the interpretation of field phenomena.

To ensure data credibility and reliability, this study applied both source and method triangulation. Source triangulation was conducted by comparing data obtained from teachers, students, and the principal, while method triangulation involved cross-verification through interviews, observations, and document analysis. Furthermore, member checking was implemented by presenting interview summaries to the main informants to confirm the accuracy and interpretation of their statements. These validation techniques aimed to ensure that the findings are credible, authentic, and scientifically accountable.

RESULTS AND DISCUSSION

Gain data Based on the data collection and analysis conducted, several strategies have been identified that teachers employ to enhance students' understanding of mathematics at Phase C. The following is a detailed explanation of the findings, accompanied by a discussion supported by various references.

Interactive and Dynamic Teaching Strategies

The interactive approach in mathematics instruction included discussions, Q&A sessions, and group work, actively involving students in the learning process. Teachers implemented this method to create an engaging classroom environment and to foster student participation. Two-way interaction allowed students to clarify concepts directly, enhancing their understanding. As one teacher stated, *"I often ask students to explain their reasoning during discussions so I can identify who really understands the concept."* Observation data showed that interactive classes increased student motivation and confidence.

This approach aligns with Vygotsky's theory that social interaction is crucial for knowledge construction, meaning that discussion and questioning can improve conceptual understanding (Casfian et al., 2024). The teacher did not rely solely on lectures but encouraged students to voice their thoughts and questions. Active participation created a classroom atmosphere conducive to learning.

The collaborative aspect of interactive teaching also supported peer learning through group tasks. As one student noted during the interview, *"I like group work because my friends help explain things I don't understand."* Peer interaction enabled mutual support and idea exchange, deepening

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students' mathematical understanding (Wurdaningrum et al., 2025). Teachers acted as facilitators, guiding discussions and problem-solving. This strategy not only improved conceptual grasp but also developed students' communication and social skills.

The Use of Teaching Aids and Diverse Learning Media

Teachers utilize teaching aids such as physical models, diagrams, and visual illustrations to bridge the gap between abstract mathematical concepts and concrete understanding for students. Diverse learning media cater to various learning styles, enabling each student to grasp the material more effectively (Dewantara et al., 2021). Teaching aids provide tangible representations that reinforce theoretical concepts, improving students' memory retention and comprehension. This visual approach also facilitates deeper discussions and question-and-answer sessions in class. Furthermore, teachers' creativity in selecting instructional media significantly enhances students' interest in learning.

Teaching aids serve as a bridge between abstract concepts and concrete representations, making mathematical concepts more accessible to students. The use of diverse learning media also accommodates different learning styles, creating a more inclusive educational experience (Qondias et al., 2024). Teachers who thoughtfully integrate teaching aids into their lessons observe increased student motivation and participation.

Additionally, the use of visual media fosters two-way interaction between teachers and students. With teaching aids, students can ask specific questions and receive clearer explanations from their teachers. This approach encourages in-depth discussions and minimizes misunderstandings between theoretical concepts and practical applications. The combination of visual media and verbal explanations creates a comprehensive and immersive learning experience (Anirah et al., 2022). As a result, mathematics instruction becomes more engaging and effective, allowing students to internalize concepts more deeply.

Implementation of the Constructivist Approach

Constructivist strategies were employed by encouraging students to actively construct knowledge through exploration and collaboration. Teachers provided open-ended tasks that required critical thinking and problem-solving. As one teacher explained, *"I guide students with questions that help them think critically rather than just telling them the answer."* This method helped students become more independent in their learning and develop reasoning skills.

Classroom observations showed that students often worked in small groups to explore solutions. These group dynamics allowed students to express different viewpoints and build understanding collectively. One student commented, *"Sometimes, my friend's explanation makes more sense than the teacher's. It helps me understand better."* Such peer interactions helped reinforce concepts and increased students' confidence.

These practices align with Mulyati (2016), who found that constructivist learning environments promote active engagement and deeper understanding. Yolanda et al. (2024) also noted that encouraging students to reflect and collaborate fosters higher-order thinking skills. In this study, constructivist methods proved effective in developing student autonomy and critical thinking abilities.

Continuous Assessment and Direct Feedback

Teachers conducted ongoing assessments to monitor progress and guide instruction. These included formative tools such as daily quizzes, group tasks, and informal observations. One teacher noted, *"After each group task, I give immediate feedback to prevent misconceptions from spreading."* This timely feedback allowed students to correct their mistakes quickly and stay on track.

The study found that students responded positively to feedback, as it clarified confusion and reinforced correct strategies. Feedback was not only evaluative but also formative, guiding students toward better performance. In classroom discussions, students referred to previous feedback to improve their explanations. This showed that students were developing self-awareness in their learning journey.

Umalihayati et al. (2024) argue that feedback serves a crucial role in helping students identify strengths and weaknesses. Dinata et al. (2024) further emphasized that continuous assessment allows for differentiated instruction that meets diverse learning needs. The findings of this study support these claims, showing how assessment and feedback can enhance the learning experience.

Teacher Collaboration Through Professional Learning Communities (KKG)

The study revealed that teachers benefited from regular collaboration in professional communities such as KKG (Kelompok Kerja Guru). These forums provided opportunities for teachers to share experiences and discuss effective strategies. One teacher stated, *"KKG is where I learn new ideas from peers to handle diverse student abilities."* This peer support encouraged professional growth and innovation in teaching practices.

During these meetings, teachers reflected on student responses and jointly evaluated instructional outcomes. They exchanged teaching materials and jointly planned lessons that aligned with students' needs. This practice not only fostered a sense of shared responsibility but also contributed to improved classroom performance.

Novelita et al. (2023) found that professional learning communities contribute to teacher competence and instructional quality. The collaborative approach in this study supported these findings, as teachers refined their teaching based on shared insights. These professional discussions helped create a culture of continuous improvement in instructional practices.

Comprehensive Planning and Theory-Practice Integration

Teachers carefully aligned lesson plans with students' real-life experiences to make mathematics more relevant. One teacher noted, *"When designing the lesson, I try to link the topic with real-life examples that students can relate to."* This strategy helped students see the value of mathematical concepts and increased their motivation to learn.

Lesson planning also involved setting clear objectives, selecting appropriate methods, and organizing activities that promoted student participation. Teachers adapted the plans based on students' prior knowledge and learning profiles. Classroom observations confirmed that structured planning resulted in more efficient and focused lessons.

Rahmalia & Sabila (2024) emphasized that integrating theory with practice enhances the feasibility and effectiveness of instructional planning. Nisa et al. (2024) also stressed that context-based planning increases student engagement and understanding. The findings in this study reinforce these views, showing that thoughtful planning supports better learning outcomes.

CONCLUSION

This study demonstrates that a combination of teaching methods—including active interaction, the use of teaching aids, the implementation of a constructivist approach, continuous assessment, teacher collaboration, and systematic lesson planning—significantly enhances students' conceptual understanding of mathematics at Phase C in elementary schools. These strategies create an adaptive and responsive learning environment, allowing teachers to tailor their instructional methods to meet students' individual needs and encourage active participation in the classroom. The synergy between these instructional components leads to optimal academic

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performance and opens opportunities for innovation in the learning process. Thus, this integrated teaching model can serve as a strategic reference for improving the quality of mathematics education at the elementary level.

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