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Teachers' perspectives on the challenges of teaching mathematics in South Africa

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Abstract

This study addresses the persistent challenges encountered by South African teachers in mathematics instruction at the intermediate phase level. It specifically explores teachers' perceptions of the factors that hinder effective mathematics teaching in intermediate-phase schools within the Chris Hani District. The primary objective of the study was to examine teachers' perspectives and the contextual conditions influencing instructional practices, with the aim of informing targeted interventions. A qualitative research approach was employed, utilizing a phenomenological design to explore the lived experiences of the participants within their cultural and social contexts. Purposive sampling was used to select eight participants with substantial experience in teaching at the intermediate phase level. Data were collected through semi-structured interviews, which provided a balance between flexibility and depth, allowing for the exploration of participants' insights. Thematic analysis was conducted to identify recurring themes and patterns within the data. One of the key findings was that teachers struggled to meet the individual learning needs of students. Participants also expressed concerns about the unrealistic demands of the curriculum and emphasized the urgent need for curriculum reform. These challenges highlight the necessity of implementing strategies to enhance the quality of mathematics teaching. The study recommends increased investment in professional development programs focused on mathematics education and calls for curriculum reform initiatives led by educational authorities to address teachers' concerns, particularly regarding workload. In addition to improving instructional practices, these reforms should address broader systemic issues that impede effective mathematics instruction. Overall, this study contributes to the growing body of knowledge on the challenges facing mathematics education in South Africa and underscores the need for contextually responsive policy interventions.

Keywords
challenges, curriculum reforms, intermediate phase, mathematics and teacher, South Africa

Introduction

This study investigates the perceptions and experiences of intermediate-phase mathematics teachers in South African schools, with a particular focus on the Chris Hani East District. It aims to examine the personal and contextual factors that hinder effective mathematics instruction and to propose strategic interventions to enhance educational outcomes. According to Ngwenya and Chaba (2024), only 37% of students in the intermediate phase meet the minimum passing grade in mathematics, highlighting critical concerns regarding both student performance and instructional practices.

The challenges identified in the Chris Hani East District include the rural environment and a shortage of qualified teachers. Of the 2,700 teachers employed in the district, only 1,000 possess the minimum qualifications required to teach mathematics at the intermediate level. This shortage significantly impedes the delivery of quality mathematics education. Moreover, language remains a substantial barrier. As noted by Mabena, Mokgosi, and Ramapela (2021), the language of instruction English poses difficulties for many teachers, who often lack proficiency. Although code-switching between English and native languages is used as a compensatory strategy, it presents limitations. While this method can aid student understanding, Solomon and Blessings (2021) argue that it underscores the inadequacies of the existing language policy. Similarly, Makonye (2014) observes that linguistic barriers prevent students from fully grasping mathematical concepts. Nguyen et al. (2022) further report that low English proficiency compels teachers to frequently revert to their mother tongue, potentially leading to student confusion and reduced comprehension.

Basitere et al. (2023) emphasize that teachers in rural intermediate-phase schools face significant challenges in addressing the diverse needs of learners, primarily due to limited access to teaching and learning resources. The lack of appropriate materials obstructs students' transition from abstract to concrete reasoning in mathematics. Furthermore, the COVID-19 pandemic necessitated a rapid shift to online instruction. As Upadhyay et al. (2022) point out, subjects like mathematics and science were particularly affected due to their inherent complexity. The inadequacy of online teaching platforms exacerbated challenges related to student motivation, digital literacy, and psychological well-being. Upadhyay et al. (2022) advocate for comprehensive strategies to strengthen mathematics teaching in light of these disruptions.

A critical concern in mathematics education pertains to pedagogical practices. Ling and Mahmud (2023) note that many teachers struggle to impart problem-solving skills, especially in interpreting sentence-based problems. Overemphasis on teaching methods without adequate content delivery has resulted in superficial learning, with students often relying on rote memorization. This approach inhibits the development of a deeper conceptual understanding of mathematics. Although extensive research has been conducted globally on mathematics instruction, there remains a notable gap concerning the challenges faced by intermediate-phase teachers in South Africa. Addressing this gap, the present study seeks to explore the lived

experiences and perceptions of teachers regarding instructional challenges, thereby contributing to the development of effective pedagogical strategies.

An evaluation of the Chris Hani East District by Isaacs (2020) revealed that a significant number of foundation-phase teachers were underqualified or inadequately prepared for mathematics instruction. Of the 2,700 mathematics teachers employed, only approximately 1,000 met the minimum qualifications for teaching in the intermediate phase. Isaacs's findings also highlight the rural nature of the district, which contributes to systemic under-resourcing and limits the capacity for effective mathematics teaching. These conditions not only hinder instructional efficacy but also negatively impact student performance and overall educational quality in the district.

In response to these findings, a university in the Eastern Cape initiated a mathematics intervention project aimed at capacitating intermediate-phase mathematics teachers. The project's primary objective was to identify challenges that influence mathematics instruction and to propose sustainable solutions to enhance educational delivery in the Chris Hani District. As one of the most impoverished regions in the Eastern Cape, the Chris Hani East District encompasses rural communities and townships such as Inxuba Yethemba Local Municipality (Cradock and Middleburg), Enoch Mgijima LM (Komani, Whittlesea, Tarkastad, and Hofmeyr), Emalahleni LM (Cacadu, Dordrecht, and Indwe), Intsika Yethu LM (Cofimvaba and Tsomo), Sakhisizwe LM (Cala and Ekhowa), and Dr AB Xuma LM (Engcobo). The geographical boundaries of the district are illustrated in Figure 1.

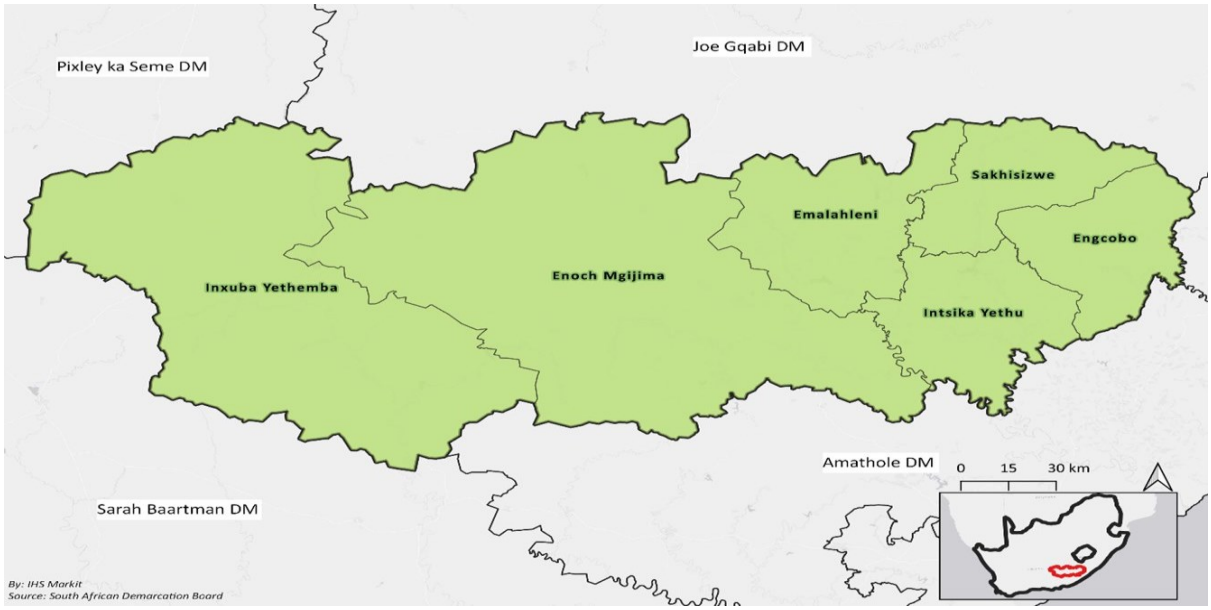

Figure 1. Chris Hani district municipal boundaries

The socioeconomic conditions and rural character of the district pose significant challenges in attracting and retaining qualified teachers. Jojo (2023) identifies that most schools in the region lack critical teaching and learning resources, thereby constraining the effectiveness of mathematics instruction. These structural and contextual factors contribute to substandard educational experiences for both teachers and students. Addressing these challenges requires a

multifaceted approach that supports both educators and learners and promotes innovative and contextually relevant pedagogical strategies for mathematics teaching.

Research Question

To guide this study, the following research question was posed, "what are the challenges affecting effective mathematics learning in the intermediate phase of South African schools, and what strategies can be implemented to address these challenges and improve student outcomes?"

Theoretical Framework

This study is grounded in Albert Bandura's Social Cognitive Theory (SCT), which emphasizes the role of self-efficacy in professional development. According to Bandura (2001a), self-efficacy defined as the belief in one's ability to succeed is shaped by several key factors, including mastery experiences, verbal persuasion, vicarious experiences, and physiological states. These components influence teachers' instructional practices and enhance student learning, particularly in critical subjects such as mathematics (Bandura et al, 2001b).

SCT is pertinent to this research because it highlights how teachers' self-efficacy impacts their willingness to adopt innovative teaching practices (Bandura et al., 2001b). The theory serves as a valuable framework for understanding how teachers can engage students in subjects like mathematics and science. In alignment with this view, Ofem et al. (2020) assert that self-efficacy is essential for addressing challenges such as teacher shortages and job dissatisfaction, ultimately improving mathematics teachers' morale. Other influential components of SCT including observational learning, reciprocal determinism, and the effects of reinforcement and punishment also contribute to enhancing mathematics instruction (Otaye-Ebede et al., 2020; Bandura et al., 2001b; Ryan & Hendry, 2022).

Despite its relevance, SCT has received criticism for certain limitations. Smith (2019), for example, argues that the theory oversimplifies concepts such as individual agency and fails to account for systemic barriers. These barriers include limited educational resources and institutional policies that hinder the implementation of innovative teaching methods. Nevertheless, SCT remains a valuable theoretical lens for understanding how mathematics teachers can adopt effective instructional strategies. In the context of intermediate phase mathematics education, the theory offers practical insights for enhancing teaching efficacy and student achievement.

Literature Review

To investigate mathematics teachers' perceptions of the challenges influencing mathematics instruction, this literature review addresses the following areas:

1. The importance of mathematics in the intermediate phase
2. Challenges encountered by intermediate-phase mathematics teachers
3. Strategies for improving mathematics instruction in the intermediate phase

The Importance of Mathematics in the Intermediate Phase

Effective mathematics instruction at the intermediate-phase level is fundamental to learners' cognitive development. A strong foundation in mathematics fosters future academic success by enhancing problem-solving abilities and shaping positive attitudes toward the subject (Szabo et al., 2020). Hendriks (2024) similarly contends that this phase encompassing Grades 4 to 6 is crucial for developing core mathematical competencies that students rely on throughout their academic journey. Iqbal (2023) further notes that during this phase, learners transition from concrete operational thinking to more abstract reasoning capabilities.

According to Mohamed et al. (2023), this stage of mental development is pivotal in influencing learners' mathematical comprehension and problem-solving skills. Sibanda and Rambuda (2021) emphasize that assessment practices play a critical role in facilitating effective mathematics instruction, as formal assessments offer valuable insights into student understanding. However, for such assessments to be meaningful, educators must implement practices that promote conceptual learning (Solomon & Blessing, 2021).

Potgieter and Walt (2022) argue that students' perceptions of their mathematical ability are significantly influenced by the quality of instruction they receive. Yet, many intermediate-phase educators lack adequate conceptual understanding of mathematics, undermining their effectiveness (Potgieter & Walt, 2022). To address this issue, Iqbal (2023) advocates for comprehensive teacher training programs to enhance both content knowledge and pedagogical skills. Similarly, Mohamed et al. (2023) underscore the importance of applying appropriate instructional strategies tailored to students' needs. Co-teaching models have also been identified as beneficial for student understanding (Iqbal, 2023). Nevertheless, Solomon and Blessing (2021) highlight that the development of problem-solving competencies in mathematics remains a persistent challenge.

Challenges Faced by Mathematics Teachers

Mathematics educators encounter a variety of obstacles that impede effective instruction. Nahole and Haimbodi (2022) categorize these challenges into four domains: language barriers, resource constraints, insufficient teacher preparation, and complex classroom dynamics. Language diversity in multilingual classrooms poses a significant hurdle, as many teachers struggle to facilitate learners' English proficiency, which is essential for understanding mathematical concepts. The inability to effectively communicate across different mother tongues further complicates teaching and learning (Solomon & Blessing, 2021).

Dicdiquin et al. (2023) also identify a lack of relevant instructional materials and textbooks in local languages as a major obstacle. Consequently, many teachers resort to code-switching as a coping strategy (Ling & Mahmud, 2023), which can confuse learners and hinder comprehension. Resource limitations further exacerbate instructional challenges. While Fonseca and Petersen (2016) propose the use of Open Educational Resources (OER) as a potential solution, Assiri and Alnatheer (2019) found that teachers often lack the skills to effectively utilize these resources. Baran and Baran (2021) and Drijvers et al. (2021) highlight how the COVID-19 pandemic exposed difficulties in leveraging OER and virtual platforms for

teaching mathematics, as many educators struggled to maintain student engagement and deliver content effectively.

The issue of inadequate teacher preparation also remains a pressing concern. Dicdiquin et al. (2023) and Fonseca and Petersen (2016) note that many teachers enter the profession with insufficient content knowledge and pedagogical training. This lack of preparation negatively affects their instructional efficacy. Aseeri (2019) argues that without continuous professional development, educators are ill-equipped to address the diverse learning needs of their students. As a result, enhanced teacher training programs are essential to improve mathematics instruction.

Strategies to Improve Mathematics Teaching in the Intermediate Phase

Enhancing mathematics instruction at the intermediate level is crucial for the foundational development of students' knowledge. Abosalem (2015) identifies several strategies for improving instruction in basic education, including the integration of innovative pedagogical approaches. Sabgini and Wiraatmaja (2023) advocate for the incorporation of multimedia and Indigenous games into teaching materials to increase student engagement and facilitate comprehension of complex concepts. However, they also stress that multimedia must be complemented by audiovisual aids to enhance instructional effectiveness.

Moloi et al. (2021) emphasize that these strategies help contextualize mathematics learning by connecting it to students' daily experiences. In contrast, Sunzume et al. (2023) and Mwazi (2023) argue that student-centered approaches such as collaborative and inquiry-based learning are more effective in promoting active engagement. Offen (2020) supports this view, noting that such strategies foster inclusivity, cooperation, and adaptability within the classroom. Active student participation in mathematics fosters a sense of belonging and cultivates a positive learning environment.

Effective assessment practices are also essential for enhancing learning outcomes. Connor et al. (2018) assert that formative assessments enable teachers to identify learner needs and tailor instruction accordingly. Mahlambi (2023) highlights that differentiated instruction supports individualized learning and facilitates ongoing monitoring of student progress. Tools such as student reflections and classroom observations provide educators with insights into learners' reasoning processes, thereby informing instructional decisions (Ozturk, Akkan & Kaplan, 2020).

Professional development remains a cornerstone of effective mathematics teaching. Dicdiquin et al. (2023) suggest that training programs focused on innovative pedagogy and subject knowledge are vital for fostering effective instructional practices. Mwazi (2023) concludes that collaborative professional learning communities can promote best practices among mathematics teachers. Similarly, Abosalem (2015) maintains that creating a supportive classroom climate encourages risk-taking and reduces learners' fear of making mistakes. By modeling positive attitudes, educators can instill a growth mindset and cultivate an appreciation for mathematics (Mahlambi, 2023).

Methods

This study aimed to investigate the perspectives of mathematics teachers regarding the challenges they encounter when teaching mathematics in the intermediate phase. Given the qualitative nature of the research, a qualitative approach was adopted to explore this phenomenon in depth. This approach facilitated a comprehensive and contextually grounded understanding of the challenges faced by mathematics teachers in school settings. As noted by Monahan and Fisher (2010), the qualitative approach is appropriate for examining individuals' experiences, social interactions, and cultural contexts dimensions that are often difficult to quantify.

The study employed a phenomenological design, which focuses on understanding the lived experiences of mathematics teachers in the intermediate phase, particularly those teaching in rural schools. Through the use of interviews, the study sought to explore the specific challenges these teachers encounter in their daily classroom practices (Thapa & Paudel, 2021). The study population comprised all mathematics teachers teaching at the intermediate phase level in the Chris Hani District. A purposive sampling technique was employed to select eight mathematics teachers from this district in the Eastern Cape Province of South Africa. The selected participants were teachers with substantial teaching experience, ranging from five to ten years. Most of the participants were permanent residents employed in remote and under-resourced schools within the province.

Data were collected through semi-structured interviews, a method well-suited for combining the flexibility of open-ended questions with the structured format necessary for systematic data collection (Flick, 2018). Furthermore, Flick (2018) emphasizes that semi-structured interviews enable researchers to explore specific topics while also allowing participants to articulate their personal experiences. To ensure the validity of the interview instrument, a pilot study was conducted with two participants to identify and refine potential sources of bias. Each interview question was meticulously aligned with the study's research aim and focus.

Data analysis was conducted using thematic analysis, which enabled the identification and interpretation of themes and patterns emerging from the collected data. This method is particularly advantageous for developing a nuanced understanding of complex phenomena, such as the challenges associated with mathematics instruction (Güler & Taş, 2020). The study adhered to all ethical research standards, ensuring that participants were fully informed of their rights and the study's ethical guidelines. Key ethical considerations included obtaining informed consent, ensuring confidentiality, securing voluntary participation, and minimizing potential harm to participants.

Results and Discussions

Based on the research question: "What are the challenges that affect effective mathematics learning in the intermediate phase of South African schools, and what are the strategies that can be adopted to address these challenges and improve student outcomes?" four major themes were identified and interpreted, such as Teacher Challenges and Support Needs, Curriculum and Assessment, Language and Learning, and School Environment and Teacher Support.

Theme 1: Teacher Challenges and Support Needs

A key challenge identified in the study was teachers' inability to meet the individual learning needs of students. Participant ED1 indicated that the low proficiency in English among students impedes teaching:

ED1: "The biggest challenge I encounter in my school is how to address the learning needs of my students. Some of them find it difficult to speak English, while others struggle to understand mathematical concepts."

In contrast, Participant ED6 emphasized the need for professional development in digital pedagogy:

ED6: "I think that we, as teachers, need to be provided with the necessary training to use technology to teach mathematics. This would help me teach my students more effectively."

Participant ED2 highlighted the scarcity of teaching resources:

ED2: "The main challenge in my school is the limited availability of digital and online tools for teaching mathematics. We have to use outdated materials and textbooks, which makes it difficult to engage students and offer practical learning experiences."

These responses underscore the multifaceted challenges teachers face, including learner diversity, language barriers, and inadequate teaching resources. To address these challenges, school leadership must provide structured support and digital training. This aligns with the findings of Mohamed et al. (2023), who emphasized the significance of integrating technology and pedagogically sound practices in mathematics instruction.

Theme 2: Curriculum and Assessment

Several participants expressed concerns about the curriculum's intensity and its implications for workload and learner support. Participant ED1 stated:

ED1: "I think the mathematics curriculum in South African schools is comprehensive and demanding, and it makes us feel overwhelmed. There are too many topics to cover in the intermediate phase within a single year."

Meanwhile, Participant ED4 discussed assessment practices:

ED4: "I try my best to employ a mix of summative and formative assessments to strengthen students' understanding of mathematics. However, it's not always easy to ensure fairness and accuracy."

ED4 further explained efforts to accommodate learner diversity:

ED4: "I design assessment tasks to address the diverse language needs and abilities of students in mathematics. Still, it is very difficult to consistently meet all students' different needs."

The participants' views highlight challenges associated with curriculum overload and the difficulty of differentiated assessment. As Connor et al. (2018) suggest, effective formative assessment can help identify learners' needs, while Mahlambi (2023) advocates for differentiated instruction to improve learning. These insights point to the need for curriculum reforms and inclusive, culturally responsive assessment practices.

Theme 3: Language and Learning

Language emerged as a central factor influencing learners' success in mathematics. Participants noted that teaching in English a second language for most learners posed significant challenges.

ED3: "In our school, we are required to teach mathematics in English, which is the second language for our students. I've noticed that this limits learners' understanding. We need to use the mother tongue to support struggling students."

ED7: "Many of my students struggle with learning mathematics in English, which affects their comprehension. Most of them come from rural, disadvantaged areas, making it even more difficult."

In contrast, ED8 shared a proactive strategy:

ED8: "I encourage my students to collaborate in group discussions and help each other improve their English. This has enhanced their understanding of mathematics."

These findings reveal the detrimental impact of language barriers on students' mathematical understanding. Nahole and Haimbodi (2022) found similar challenges in multilingual classrooms, while Solomon and Blessing (2021) linked limited teacher fluency in English to instructional challenges. Encouraging peer interaction in English may help mitigate these language obstacles.

Theme 4: School Environment and Teacher Support

The significance of a supportive school climate in enhancing mathematics instruction was highlighted. Participant ED3 stated:

ED3: "For me, mathematics can be taught effectively when the right atmosphere for teaching and learning is created. However, lack of administrative support and poor school culture demotivate teachers and students and hinder the adoption of best practices."

ED5: "Teaching and learning mathematics becomes easier when school leaders provide the necessary support. Unfortunately, such support is often lacking."

ED8: "At our school, we prioritize creating a learning environment that supports mathematics teaching. For example, we provide extra and after-hours tutorials for struggling students."

Participants emphasized that supportive leadership and a positive school climate play vital roles in effective teaching and learning. These findings are consistent with Aboasalem (2015), who argued that an encouraging school environment enhances student motivation. Conversely, Offen (2020) emphasized the importance of adopting a student-centred approach to foster engagement.

Mathematics teachers in South African intermediate schools encounter several challenges that hinder their ability to effectively address the diverse learning needs of their students. A significant challenge lies in students' limited proficiency in English, the language of instruction. This language barrier, compounded by inadequate resources and outdated learning materials, further complicates the teaching process. Addressing these challenges necessitates equipping teachers with effective strategies to overcome language barriers, improve resource availability, and modernize instructional materials to enhance students' comprehension.

Connor et al. (2018) assert that strong leadership support is essential for enhancing mathematics instruction and improving student learning experiences. Such institutional support empowers teachers to identify student needs and implement tailored pedagogical solutions. Similarly, Dicdiquem et al. (2023) emphasize the importance of continuous professional development in equipping teachers with the necessary competencies and skills to improve mathematics instruction. According to Absolem (2015), fostering a supportive learning environment contributes significantly to improved mathematics learning outcomes. However, while such support is beneficial, Mahlambi (2023) argues that it may not adequately address the underlying causes of teacher under preparedness in mathematics education.

The findings of this study indicate that many teachers are concerned about the extensive demands of the mathematics curriculum, which contribute to increased workload and impose a high cognitive load on students. This increased burden limits teachers' capacity to cover essential topics thoroughly and hinders their ability to provide meaningful, individualized feedback. These concerns underscore the urgent need for curriculum review and reform efforts that prioritize pedagogical efficacy and student-centered learning. Supporting this view, Mohamed et al. (2023) advocate for curriculum and pedagogical reforms to strengthen teachers' instructional capacities and enhance mathematics learning outcomes. This study affirms that the implementation of effective pedagogical strategies is crucial for addressing students' diverse learning needs.

Conversely, Iqbal (2023) proposes the adoption of co-teaching models as a means of supporting teachers and enhancing students' understanding of mathematical concepts. In alignment with this perspective, Potgieter and Walt (2022) contend that the mathematics curriculum should be deliberately structured to facilitate improved teaching practices and promote deeper student comprehension. These findings collectively suggest that high-quality mathematics instruction plays a vital role in laying a solid foundation for student success in the subject.

Language use in mathematics instruction is particularly critical at the intermediate phase, especially for students who speak English as a second language. Limited English proficiency

can obstruct students' understanding of key mathematical terminology and concepts. Addressing language-related challenges is thus essential for effective instruction and the achievement of meaningful learning outcomes. Haimbodi (2023) identifies language barriers as a significant impediment in multilingual classrooms, noting that they obstruct both comprehension and engagement in mathematics. Furthermore, some teachers struggle to develop students' English proficiency due to their own linguistic limitations, thereby impeding students' conceptual understanding (Solomon & Blessing, 2021). These authors highlight that the inability of teachers to convey mathematical concepts in students' mother tongues further exacerbates this issue. As a result, students often struggle to participate in classroom discussions. Dicdiquem et al. (2023) attribute students limited English proficiency, in part, to the absence of appropriate teaching and learning materials in indigenous languages. Consequently, code-switching becomes a necessary instructional strategy (Ling & Mahmud, 2023).

Creating a positive teaching and learning environment, underpinned by effective instructional practices, significantly enhances mathematics education. The findings of this study indicate that effective mathematics instruction is contingent upon providing teachers with sufficient support, instructional resources, and motivation. Offering individualized support to students fosters a culture of learning, enhances their understanding of mathematics, and contributes to improved academic outcomes. In agreement, Mahlambi (2023) asserts that differentiated instructional approaches are instrumental in supporting diverse student learning needs. Implementing such approaches enables teachers to monitor students' grasp of mathematical concepts effectively. Ozturk et al. (2020) advocate for the use of varied assessment strategies such as observational methods and student reflections to gauge students' reasoning abilities and create a collaborative classroom environment. Additionally, Mwazi (2023) argues that academic programs promoting collaboration between students and teachers contribute to the dissemination of best practices and deeper conceptual understanding. These insights suggest that sustained professional development and consistent provision of instructional resources are critical to the successful implementation of these strategies.

Conclusions

The findings of this study reveal multiple challenges that hinder the effectiveness of mathematics teachers in intermediate-phase schools in South Africa. These challenges include diverse student learning preferences, language barriers, insufficient teaching and learning resources, curriculum overload, and inadequate institutional support for mathematics educators. To address these obstacles, school leadership should prioritize sustained professional development initiatives aimed at enhancing teachers' pedagogical content knowledge and instructional competencies in mathematics. Strengthening teachers' professional capacity is essential to fostering students' interest and engagement in mathematics.

Moreover, educators must adapt their instructional approaches to meet students' diverse learning needs. This can be accomplished through differentiated instruction, the integration of digital technologies, and the provision of targeted language support. Additionally, educational authorities should pursue curriculum reforms that emphasize responsive assessment and

feedback mechanisms. Effective assessment practices are crucial for enhancing students' conceptual understanding of mathematics and guiding instructional improvements.

A supportive teaching and learning environment characterized by skilled educators, adequate resources, and collaborative practices is vital for creating enriching mathematical learning experiences. The findings of this study directly address the research question by highlighting key factors that influence mathematics instruction in intermediate-phase settings. Consequently, schools are encouraged to adopt evidence-based strategies and interventions to mitigate these challenges.

Furthermore, the results of this study are aligned with Albert Bandura's Social Cognitive Theory (SCT), which serves as the theoretical framework underpinning the research. SCT emphasizes the role of self-efficacy in shaping human behavior and educational outcomes. In this context, the findings underscore the importance of teacher self-efficacy, institutional support, and professional development in cultivating a positive learning environment and improving student achievement in mathematics.

Recommendations and Interventions

To enhance mathematics instruction in intermediate-phase schools, the following recommendations are proposed:

1. Continuous Professional Development in Mathematics Education:
   Schools should invest in ongoing professional development programs that build teachers' capacity in mathematics instruction. These initiatives should focus on improving both subject knowledge and pedagogical skills.
2. Curriculum Reform and Workload Reduction:
   The national curriculum should be reviewed to reduce the burden of content coverage, ensuring a stronger alignment between instructional content and desired learning outcomes. Streamlined curricula will enable teachers to focus on depth over breadth in mathematical concepts.
3. Language Support for Educators and Learners:
   Targeted language support programs should be provided to both teachers and students to enhance proficiency in English, the primary language of instruction. Such programs should incorporate the strategic use of learners' mother tongue as a complementary instructional tool.
4. Provision of Teaching and Learning Resources:
   Schools should allocate adequate resources such as textbooks, manipulatives, and technological tools to support effective mathematics instruction. Resource investment is essential for creating engaging and high-quality learning environments.
5. Implementation of Effective Assessment Practices:
   Schools should adopt diverse and inclusive assessment strategies that accommodate learners' individual needs. Formative assessments, observational techniques, and student reflections can be used to gauge understanding and inform instruction.
6. Enhancement of the School and Classroom Environment:

Efforts should be made to cultivate safe, inclusive, and stimulating school environments that promote student well-being and academic achievement. Classroom design, teacher-student relationships, and peer collaboration play critical roles in fostering a positive learning atmosphere.

Implementing these recommendations will assist schools in planning and executing effective mathematics instruction strategies in intermediate-phase education in South Africa.

Limitations of the Study

One notable limitation of this study is the small sample size of eight participants, which restricts the generalizability of the findings. A larger and more diverse sample could have yielded deeper insights into the systemic challenges faced by mathematics educators in intermediate-phase schools.

Suggestions for Future Research

Future research should consider employing a larger sample size to enhance the representativeness and reliability of findings. Additionally, adopting a mixed-methods approach combining qualitative and quantitative techniques would provide a more comprehensive understanding of the multifaceted challenges influencing mathematics instruction in intermediate-phase schools.

Contribution

This study contributes to mathematics education by offering insights into the challenges that affect mathematics instruction in South Africa. It also suggests varied strategies that can enhance mathematics teaching in intermediate-phase schools. The findings of this study help inform educational policies, teacher development programs, and instructional practices in schools.

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Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

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