Exploring Teachers' Perspectives on the Relevance of Teaching Mathematics in South Africa

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Abstract

In South Africa, mathematics is still required in schools, and it is widely acknowledged as a discipline that opens doors to socioeconomic engagement, technological advancement, and cognitive growth. Despite its importance, national maths performance is still falling, which raises concerns about its applicability, efficacy as a teaching tool, and compatibility with societal demands. This study looked at the methods teachers use in the classroom as well as their opinions on the value of teaching mathematics in South Africa. The study employed a qualitative phenomenological design, guided by the interpretive paradigm and supported by Bronfenbrenner's Ecological Systems Theory. Eight maths teachers from four Eastern Cape public schools were specifically chosen, and information was gathered through semi-structured interviews and document reviews. The results show that teachers believe mathematics is very important for students' academic, personal, and financial growth; however, systemic obstacles—such as overcrowded classrooms, a lack of resources, an excessive amount of curriculum, learner disengagement, and low parental involvement make teaching difficult. Teachers also disclosed differences in pedagogical approaches; some use learner-centred, technology-enhanced, and problem-solving techniques, while others rely on traditional teacher-centred approaches. According to the study's findings, mathematics is still essential for the advancement of the country, but it needs to be improved in terms of curriculum, teacher support, and integration of practical applications. Strengthening teacher professional development, implementing blended learning strategies, and integrating mathematics instruction with community, technological, and economic realities are among the recommendations.

Keywords: mathematics education, teacher perspectives, relevance, teaching strategies, South Africa, curriculum, phenomenology

1. Introduction and Background

A fundamental part of the South African curriculum, mathematics education is essential to the development of the country's scientific, technological, and economic capabilities. Students who study mathematics acquire the critical thinking, problem-solving, logical reasoning, and quantitative literacy skills necessary to function in contemporary society. The Curriculum and Assessment Policy Statement (CAPS) emphasises that the goal of mathematics is to help students become more adept at recognising patterns, interpreting data, applying procedures, and making well-informed decisions (Department of Basic Education [DBE], 2019). Learner performance in mathematics still poses significant challenges despite these intentions. According to the 2023 Trends in International Mathematics and Science Study (TIMSS) report, South African students continue to perform among the lowest in the world, with persistent socioeconomic group disparities (International Association for the Evaluation of Educational Achievement [IEA], 2023; Reddy et al., 2023)

In South Africa, there are more questions about the value of mathematics. On the one hand, innovation, economic competitiveness, and national development are all thought to depend on mathematics (Amin & Mahabeer, 2021). However, a lot of students think the subject is hard, abstract, and unrelated to their everyday lives (Mzomwe, 2018). Scholars contend that poor learner performance and waning interest are caused by a mismatch between policy intentions and classroom implementation (Cunningham, 2024).

The goal of changing South Africa's curriculum from Outcomes-Based Education (OBE), RNCS, to CAPS was to

increase accessibility, quality, and relevance. However, difficulties still exist. According to research, curriculum pacing, excessive content, a lack of resources, and gaps in teacher preparation are common challenges faced by maths teachers (Mwazi et al., 2022). Effective teaching and learning are further hampered by socioeconomic issues like poverty, restricted digital access, and low parental involvement (DBE, 2020).

Everyday life is closely related to mathematics as well. When budgeting, calculating interest, measuring, cooking, interpreting risks, and navigating technological spaces, people use mathematical reasoning. However, teachers frequently prioritise procedural skills over conceptual understanding, which makes mathematics seem unconnected to practical applications (Mudaly, 2023). This reinforces the idea that mathematics is not a necessary skill for all citizens, but rather an exclusive subject for high achievers.

The current study mirrors the structure and intention of the EMS study in the provided article but focuses explicitly on Mathematics. The purpose is to explore teachers' perspectives regarding the relevance of teaching Mathematics in South Africa and to identify the strategies used to teach the subject effectively in under-resourced school contexts. By foregrounding the experiences of Mathematics teachers, the study contributes to ongoing discussions about curriculum relevance, teacher preparedness, and educational equity.

2. Research Questions

This research addresses the following questions:

1. What strategies do teachers use to teach Mathematics in South Africa?
2. What are teachers' perspectives on the relevance of Mathematics education in contemporary South Africa?

3. Literature Review

This section reviews scholarship related to the strategies used in teaching Mathematics in South Africa and teachers' perspectives on its relevance.

3.1 Strategies Used in the Teaching of Mathematics in Schools

Teaching strategies are instructional techniques that help students comprehend mathematical ideas. With curriculum modifications, new technologies, and a greater focus on learner-centred approaches, teaching strategies have changed in South Africa. Researchers contend that although CAPS offers guidance on instructional expectations, teachers frequently find it difficult to convert policy into effective practice (Makonye, 2020). Particularly in public schools with big class sizes, traditional methods like direct instruction, drill-and-practice, chalkboard demonstrations, and rote learning are still frequently employed. These techniques prioritise procedural fluency over conceptual comprehension. According to research by Mwazi et al (2022), while direct instruction can be useful for introducing fundamental skills, an excessive reliance on teacher-centred methods leads to learner disengagement, passive learning, and memorisation without comprehension. Learner-centred strategies emphasise active participation, which is consistent with modern pedagogy. Important strategies found in recent studies include:

In problem-based learning (PBL), students work together to solve challenging, real-world mathematical problems. PBL fosters critical thinking and encourages the use of mathematics outside of the classroom, according to Mudaly (2023).

• Inquiry-based learning: Students investigate mathematical concepts. According to Cunningham, (2024)., inquiry-based learning fosters a deeper conceptual understanding, particularly in algebra and geometry.

• Collaborative learning: Students can express their ideas and gain knowledge from one another through group projects, peer instruction, and cooperative activities (Mzomwe, 2018).

• Manipulatives and visual aids: Tools that enhance comprehension include counters, geometric solids, number lines, and dynamic geometry software (Du Toit, 2024).

However, structural challenges overcrowding, insufficient time, limited resources, and diverse learner abilities, often constrain teachers' ability to use learner-centred methods effectively (Mwazi et al., 2022). After the COVID-19 pandemic, education underwent a digital transformation that accelerated the use of technology in maths classrooms. Teachers are using learning management systems (Google Classroom, Moodle) and interactive applications (GeoGebra, Desmos) more frequently. Virtual manipulatives, simulations, and videos. Mobile educational resources (mathematics discussion WhatsApp groups).

Technology facilitates visualisation, differentiation, and instantaneous feedback (Saziwa, 2025; Adu,2025). The digital

divide still exists, though. Implementation is hampered by low digital literacy, poor devices, and poor connectivity in rural and township schools (DBE, 2021). According to the reference article, comparable discrepancies were also seen in the EMS setting. Weekly exams, quizzes, exit tickets, peer evaluation, and diagnostic tasks are examples of formative assessment techniques that give teachers information about student misconceptions and guide remediation. It has been demonstrated that timely and constructive feedback from continuous assessment improves learner outcomes (Amin & Mahabeer, 2021). However, teachers may be unable to conduct frequent assessments due to administrative workload and curriculum pacing pressures. Researchers stress how crucial it is to contextualise mathematics in everyday circumstances, particularly in communities with limited resources. Students can see the value of mathematics through activities like budgeting simulations, measurement projects, school marketplaces, and data-handling tasks connected to community issues (Mudaly, 2023). However, without sufficient training, educators might find it difficult to design relevant, practical assignments.

3.2 Constraints Affecting Strategy Implementation

Studies reproduce comparable issues discovered in the other context:

- Lack of Math content knowledge among some educators
- Overcrowded schools
- Limited resources: textbooks, manipulatives, information and communication technology
- Big learner-teacher ratios
- Overloaded curriculum
- Weak learner motivation

These restrictions frequently cause teachers to return to conventional techniques despite their awareness of the worth of learner-centred methods (Adu & Zondo, 2023).

3.3 Teachers' Perspectives on the Relevance of Teaching Mathematics in Schools

The importance of Mathematics in South Africa is recognised in educational policy and academic literature. However, teachers' views show complicated realities shaped by social and economic factors, curriculum demands, and teaching challenges. Teachers often see Mathematics as vital for developing logical reasoning, problem-solving skills, and abstract thinking. These skills are fundamental for academic success in all subjects (Makonye, 2020). Research consistently shows that Mathematics serves as a "gatekeeper subject" affecting learners' access to STEM careers and higher education ((Amin & Mahabeer, 2021). Teachers thus view the subject as essential for students' future opportunities. In a nation dealing with significant unemployment, economic disparity, and technological change, Mathematics is vital in providing students with the skills required for the job market. As noted by Saziwa (2025), educators believe that Mathematics improves students' employment prospects by preparing them to engage effectively in professions related to measurement, data analysis, finance, and technology.

Teachers often stress how useful Mathematics is in everyday life. We rely on it more than we realise, whether we're working out a budget, understanding interest, weighing up risks, or making informed decisions. Yet many learners still struggle to see how Maths connects to their lives. A major reason for this, as Mudaly (2023) notes, is that Maths classrooms often feel disconnected from the real world. Teachers are aware of this gap. Many of them believe that the curriculum needs to shift, placing more focus on practical skills like financial literacy, data literacy, and mathematical modelling. Across recent research, Mathematics is increasingly portrayed not just as a school subject but as a tool for equity, empowerment, and social justice. Gutstein's (2021) global work and the writings of South African scholars highlight how Maths can help learners make sense of issues affecting their own communities, such as inequality, unemployment, and service delivery. Teachers in under-resourced schools express a need for Maths education that feels culturally relevant, grounded in real life, and genuinely empowering, especially for learners in marginalised communities (Adu, 2023).

3.4 Challenges Affecting Perceived Relevance

Teachers also highlight concerns that threaten the perceived relevance of Mathematics:

- Learner anxiety and negative attitudes toward Mathematics
- Curriculum overload leading to rushed instruction
- Limited parental support due to low adult numeracy levels
- Inadequate time allocation, similar to the challenge raised for EMS in the sample article

- Lack of digital resources to enhance contemporary problem-solving skills

Some teachers argue that without reforms, Mathematics risks being viewed as an abstract, elitist subject that does not meet learners' socio-economic needs.

4. Theoretical Framework (Bronfenbrenner's Ecological Systems Theory)

This study is guided by Bronfenbrenner's Ecological Systems Theory, which provides a comprehensive lens for understanding the multiple environmental, social, and institutional factors that shape teachers' experiences and learners' engagement with Mathematics. Like the EMS study in the reference article, the theory assists in positioning Mathematics teaching within interconnected systems that influence educational processes in South Africa.

Bronfenbrenner (1979; 1993) conceptualises human development as occurring within nested structures of influence, each interacting dynamically with the others. These include the microsystem, mesosystem, exosystem, macrosystem, and chronosystem, all which shape learners' mathematical learning and teachers' instructional practices.

The microsystem includes the immediate contexts in which learners engage daily home, school, peers, and the mathematics classroom. For this study, the microsystem encompasses:

- Teachers' instructional practices
- Classroom interactions
- Peer support during mathematical tasks
- School culture and expectations

Teaching strategies, classroom management, teacher qualifications, and learner-teacher relationships directly influence learners' attitudes and performance in Mathematics. Teachers in the foundational EMS article emphasised challenges related to overcrowding and diverse learner needs; similar factors significantly shape Mathematics learning environments, often limiting opportunities for individualised support and interactive learning.

The mesosystem refers to the connections between different microsystems. In Mathematics education, it includes the relationships among:

- Teachers and parents
- Teachers and school leadership
- Teachers and subject committees
- Learners' home and school experiences

Effective mesosystem functioning enhances learner success in Mathematics. Parental involvement, although often limited in South Africa due to socio-economic constraints, can reinforce mathematical skills learned in school (Mzomwe, 2018). Likewise, professional collaboration among Mathematics teachers influences their ability to share best practices, co-plan lessons, and support one another in curriculum implementation.

The exosystem encompasses broader social structures that indirectly influence learners and teachers. In the context of Mathematics:

- Department of Basic Education (DBE) policies
- District-level support and monitoring
- Availability of teaching resources
- School governance decisions
- Community socio-economic conditions

Teachers may not directly control these elements, yet they experience their consequences. For example, limited resources, understaffed schools, and insufficient subject advisors affect the quality of Mathematics instruction. Adu and Zondo's (2023) article on the Economic Management System (EMS) emphasised similar constraints in policy and training that impeded the effectiveness of EMS teachers; these constraints are equally, if not more, pronounced in Mathematics education.

The macrosystem includes cultural values, national ideologies, and societal expectations that shape Mathematics education. In South Africa, Mathematics is widely viewed as a subject that unlocks economic mobility and global competitiveness. However, cultural perceptions such as beliefs that Mathematics is inherently difficult or reserved for

the gifted often discourage learners (Mudaly, 2023).

The South African government positions Mathematics as central to national development and economic transformation. Curriculum reforms, teacher development initiatives, and assessment policies reflect this emphasis. Yet, persistent inequalities and historical disparities continue to affect Mathematics learning across racial and socio-economic groups (Adu, 2024). The chronosystem refers to the dimension of time and how socio-economic events influence educational experiences. Over the past three decades in South Africa, several major shifts have impacted Mathematics teaching:

- The transition from apartheid to democracy
- Curriculum shifts (OBE → RNCS → CAPS)
- The digital transformation following COVID-19
- Rising unemployment and poverty
- Increasing global dependence on STEM skills

Teachers' perspectives on the relevance of Mathematics are shaped by these temporal changes. For example, the acceleration of digital technologies has increased the importance of mathematical and data literacy in the 21st century, prompting teachers to advocate for updated curriculum content.

4.1 Relevance of the Theoretical Framework to the Study

Bronfenbrenner's theory provides a holistic lens that helps this study:

1. Understand how teacher experiences are shaped by multiple systems—classroom, school, community, and policy.
2. Recognise the external factors influencing Mathematics teaching, including socio-economic conditions and technological changes.
3. Examine how learners' challenges in Mathematics cannot be understood in isolation but must be contextualised within broader structures.
4. Position teachers as situated actors navigating multiple constraints and expectations when delivering Mathematics instruction.

The theory is well-suited to reveal how social, political, and economic contexts influence Mathematics education. It underscores that improving Mathematics outcomes requires multi-level interventions rather than classroom-level changes alone.

5. Research Methodology

Research methodology refers to the plan guiding how the study is conducted. This study adopted an interpretivist paradigm, which seeks to understand subjective human experiences within natural settings. The interpretive approach is particularly suitable for exploring teachers' perspectives because it prioritises meaning making, lived realities, and contextual influences on educational practice (Kaushik & Walsh, 2019).

5.1 Research Approach

The opinions of maths teachers regarding the value of teaching maths in South Africa were examined using a qualitative research methodology. Instead of focusing on numerical measurement, qualitative research emphasises rich, descriptive data and aims to comprehend phenomena through participant voices. To examine curriculum relevance and pedagogical practices, qualitative approaches in mathematics education research enable researchers to record teachers' beliefs, interpretations, and instructional experiences.

5.2 Design of Research

The main framework for gathering data was a phenomenological research design. Understanding how people perceive a particular phenomenon in this case, mathematics instruction and its perceived value in South African classrooms is the main goal of phenomenology. Using this method, the researcher was able to obtain detailed information about the feelings, ideas, and difficulties that maths teachers face daily. According to Van Manen (2016), phenomenology is appropriate when the aim is to explore lived experiences, perceptions, and contexts that shape human behaviour. The design, therefore, aligned well with the purpose of the study.

5.3 Sampling and Sampling Techniques

Sampling entails choosing subjects, locations, and occasions that offer rich data pertinent to the research (Adu, 2023).

Participants who were most qualified to provide insightful commentary on the topic under study mathematics teachers presently instructing in the Senior Phase (Grades 7–9) were selected using purposeful sampling.

Four public schools from a district in the Eastern Cape Province were chosen; they were identified by the pseudonyms School A, School B, School C, and School D. These schools were picked because they faced common systemic issues typical of South African mathematics classrooms and represented a variety of socioeconomic contexts. Two maths teachers were chosen from each school, for a total of eight participants in the sample.

Purposive sampling was appropriate because the study required teachers with direct, daily experience teaching Mathematics. The goal was not to generalise findings to the entire population but to generate a detailed, context-specific understanding.

5.4 Tools for Data Collection

Two primary data-collection tools were used: semi-structured interviews and document reviews.

Semi-structured interviews allowed the researcher to explore participants' perspectives while providing flexibility for probing. Interview questions focused on:

- teaching strategies used in Mathematics classrooms,
- teachers' beliefs about the relevance of Mathematics,
- challenges encountered during instruction,
- curricular and systemic factors influencing practice.

Each interview lasted approximately 40–60 minutes and was audio-recorded with participant consent. Semi-structured interviews ensured that key topics were covered while allowing teachers to express their experiences freely.

5.4.1 Document Reviews

To supplement interview data, the researcher reviewed:

- Mathematics lesson plans
- Assessment tasks
- Learner notebooks
- Teachers' professional development logs

Document review helped triangulate data, verify claims made during interviews, and assess how teaching strategies were reflected in actual classroom artefacts.

5.5 Data Analysis

Data were analysed using thematic analysis. Thematic analysis allows researchers to identify recurring patterns, code data, and cluster these into broader themes.

The analysis followed these steps:

1. Familiarisation: Reading and re-reading interview transcripts and documents.
2. Initial Coding: Assigning codes to meaningful segments related to teaching strategies, relevance, challenges, and contextual factors.
3. Generating Categories: Grouping similar codes into categories.
4. Theme Development: Synthesising categories into overarching themes that reflected the core findings.
5. Review and Refinement: Ensuring that themes accurately represented participant experiences.
6. Reporting**:** Presenting themes with supporting quotes and linking them to the literature.

This method provided a systematic way to interpret qualitative data and reveal nuanced insights into Mathematics teaching practices and teachers' beliefs.

5.6 Ethical Considerations

Participants are safeguarded throughout the research process thanks to ethical considerations. Before data collection, ethical approval was obtained from the appropriate district authority and school principals. The following actions were taken:

• Informed consent: After being made aware of the goals and methods of the study, participants willingly consented to

take part.

• Confidentiality: To protect identities, pseudonyms (such as School A and Teacher 1) were employed.

• Right to withdraw: Participants were made aware that they could leave at any time.

• Anonymity: All identifying information was eliminated from documents and transcripts.

• Data security: Documents and audio recordings were kept safe.

These precautions made sure the study complied with ethical guidelines for research involving human subjects.

6. Results

The purpose of this study was to explore teachers' perspectives on the relevance of teaching Mathematics in South African schools and to identify the strategies they use to teach the subject. Findings are presented according to the two main themes derived from the data:

- Strategies used in the teaching of Mathematics
- Teachers' perspectives on the relevance of teaching Mathematics in schools

6.1 Theme 1: Strategies Used in the Teaching of Mathematics in Schools

Mathematics teachers were asked:

What strategies do you use to teach Mathematics in your classroom?

The findings revealed a wide range of instructional strategies across the four schools. Some teachers primarily used traditional methods, while others incorporated more innovative and learner-centred approaches. The major strategies identified include:

Traditional Chalk-and-Talk Instruction. Many participants reported using chalkboard explanations, demonstrations, and step-by-step problem solving. They believed this approach allowed them to cover large amounts of content within limited instructional time.

A teacher at School A remarked:

> *"Mathematics needs clear steps. I explain, demonstrate on the board, and give examples. With large classes, it becomes difficult to use too many activities."*
> *(Teacher 2, School A)*

Document reviews supported this, showing heavy reliance on teacher-written board notes and procedural tasks in learner books.

Question-and-Answer Strategy

Teachers frequently used questioning to check understanding, stimulate thinking, and assess learners' grasp of mathematical concepts.

> *"I constantly ask questions to test whether learners have followed the steps. It helps identify misconceptions immediately." (Teacher 1, School B)*

Practice-Based Activities: Classwork, Homework, and Weekly Tests

All teachers emphasised practice as essential in Mathematics. They assigned regular classwork, homework, and short assessments.

> *"I give practice exercises daily and a test every week. Mathematics is mastered through repetition." (Teacher 2, School C)*

Learner notebooks corroborated this, showing consistent problem sets with corrections and feedback from teachers.

Learner-Centred Strategies

Several participants emphasised the importance of involving learners actively in problem-solving.

Strategies included:

- Group work
- Mathematical games
- Problem-solving competitions

- Scenarios linking Mathematics to real life

A teacher from School B stated:

> *"Learners enjoy solving practical problems, like budgeting or measuring things. When they can relate the problem to their lives, they engage more." (Teacher 1, School B)*

Use of ICT and Visual Tools

Some teachers used visual models, manipulatives, and digital tools to enhance understanding, especially for geometry, algebra, and data handling.

> *"I use GeoGebra and YouTube clips when we have electricity and data… it helps learners visualise graphs and shapes better." (Teacher 2, School D)*

However, while teachers expressed the value of ICT, document review showed limited use of digital tools due to:

- Unreliable electricity
- Lack of devices
- Poor internet connectivity
- Teachers' limited digital skills

Remediation and Peer Support

Remedial strategies included peer tutoring, extra exercises, and after-school classes. Some teachers used peer assessment to help learners identify errors.

> *"Learners mark each other's work sometimes. It builds accountability and helps them learn from one another." (Teacher 2, School C)*

> *"Group discussion, group work, and cooperative learning methods have been found to be effective remediation" (Teacher 1, School B)*

Challenges Constraining Effective Strategies

Teachers consistently reported barriers that limited their use of learner-centred and technology-driven methods:

- Overcrowded classrooms (up to 60 learners per class)
- Short instructional periods
- Curriculum overload
- Pressure to complete the term's work schedule
- Insufficient teaching resources
- Varied learner abilities

One teacher explained:

> *"Sometimes we want to use group work or technologies, but the class size and lack of resources make it impossible." (Teacher 1, School D)*

> *"The resources available are insufficient and some are obsolete to meet the current trend of Mathematics application." (Teacher 2, School A)*

Overall, while teachers recognise the importance of innovative strategies, contextual constraints often force them to rely on teacher-centred instruction.

6.2 Theme 2: Teachers' Perspectives on the Relevance of Teaching Mathematics in Schools

Teachers were then asked:

What are your perspectives on the relevance of teaching Mathematics in South Africa?

Most participants believed that Mathematics remains highly relevant, while others suggested that its relevance depends on how it is taught and contextualised.

Mathematics as a Foundation for Everyday Life

Participants emphasised that Mathematics equips learners with essential life skills, such as budgeting, measurement, statistical interpretation, and logical reasoning.

> *"Mathematics is everywhere. Learners use it when buying groceries, managing money, reading data… it prepares them for life." (Teacher 2, School A)*

Teachers believed that without Mathematics, learners would struggle to navigate economic and technological environments.

Mathematics as a Gateway to Future Careers

Teachers unanimously agreed that Mathematics opens pathways to careers in engineering, medicine, finance, science, technology, and business.

> *"If learners want opportunities in the future, Mathematics is non-negotiable. It determines access to university and many professions." (Teacher 1, School C)*

Several teachers viewed Mathematics as central to South Africa's economic development and global competitiveness.

Need for Curriculum Reform to Increase Relevance

Some teachers argued that while Mathematics is important, the curriculum should be revised to reflect modern societal needs.

> *"The content is too abstract. We need more real-world Mathematics financial maths, data literacy, measurement, things learners can apply immediately." (Teacher 2, School B)*

> *"The content of Mathematics curriculum to me, is very clear and explicit to the recipients, it has practical examples that the learners can easily use" (Teacher 1, School C)*

Teachers believed that outdated examples and limited real-life applications make learners feel disconnected from the subject.

Concerns About Learner Attitudes and Anxiety

Several participants highlighted that learners often perceive Mathematics as difficult, which negatively impacts motivation and performance.

> *"Learners come to class already believing Mathematics is impossible. This mindset reduces its relevance for them." (Teacher 1, School D)*

> *"Learner's attitude has a lot to do with their performance, not to the subject but to their teachers. Whenever a learner has negative attitude to his teacher, obviously, this will affect the learner's performance" (Teacher 2, School B)*

Teachers attributed anxiety to:

- Previous negative experiences
- Fast-paced instruction
- Lack of foundational numeracy
- Limited parental support

Technology and the Digital Shift: Increasing Relevance

Teachers noted that the growing role of technology, coding, and data requires a stronger mathematical grounding.

> *"Everything today involves coding, algorithms, or data. Mathematics is more relevant now than ever before." (Teacher 2, School C)*

Relevance Undermined in Under-Resourced Schools

Although Mathematics is relevant across contexts, teachers in disadvantaged schools felt that resource shortages undermine its impact.

> *"Without calculators, the internet, or textbooks, Mathematics becomes abstract and disconnected from learners' lives." (Teacher 1, School B)*

Thus, while teachers strongly believe in Mathematics' relevance, systemic barriers hinder the realisation of its full potential.

7. Discussion

The purpose of this study was to explore teachers' perspectives on the relevance of teaching Mathematics in South

Africa and to identify the strategies they use in their classrooms. The discussion integrates the study's findings with existing literature, showing areas of agreement, contradiction, and new insights. The section also synthesises how Mathematics teachers' experiences are shaped by structural, pedagogical, and socio-economic factors.

7.1 Discussion of Strategies Used in Teaching Mathematics

7.1.1 Teacher-Centred Approaches

According to the study, a lot of teachers mainly used repetitive practice, procedural demonstration, and chalk-and-talk. This is in line with a corpus of South African literature that attests to the predominance of conventional approaches in maths classrooms, particularly in overcrowded and underfunded institutions. According to Mwazi et al. (2022), teacher-centered approaches are still widely used because they assist teachers in covering curriculum requirements and managing large class sizes. According to Makonye (2020), teachers frequently return to direct instruction because it fits in with cultures that prioritise exams. Although procedural teaching offers structure, Cunningham (2024) contend that it runs the risk of creating students who memorise without comprehension. Therefore, the current study confirms previous research showing that teacher-centred strategies are frequently used when teachers encounter contextual limitations.

7.1.2 Learner-Centred Approaches

While most participants acknowledged the value of learner-centred approaches like inquiry, group projects, mathematical games, and real-world problem solving, many found it difficult to consistently apply them. This is consistent with the findings of Mudaly (2023), who contends that while learner-centred pedagogies enhance conceptual understanding, they necessitate smaller class sizes and formative assessment assistance. According to Saziwa (2025), interactive techniques boost motivation but are constrained by teacher capacity and available resources. Learner participation enhances performance, but it is challenging in schools with poor infrastructure, according to Mzomwe (2021). Therefore, this study confirms that practical barriers limit the implementation of learner-centred approaches, even though research suggests that they are more effective for deep mathematical learning.

7.1.3 Technology-Enhanced Teaching

Teachers in the current study appreciated technology (such as YouTube videos and GeoGebra), but they were hampered by load shedding, poor connectivity, and a shortage of devices. Recent studies support Saziwa's (2025) assertion that digital technologies are effective tools for mathematical conceptual learning and visualisation. There is a notable digital divide, particularly in township and rural schools, according to DBE (2021). ICT integration is impacted by teachers' continued disparities in digital literacy, according to Maqoga (2025). The results reveal a glaring conflict: although teachers endorse technology, structural injustices prevent its advantages from being fully realised.

7.1.4 Assessment Practices

Teachers use frequent testing, peer evaluation, and ongoing practice, according to the study. The literature also highlights the significance of continuous assessment. Formative assessments improve mathematical learning by identifying misconceptions early, as demonstrated by Amin & Mahabeer, (2021). To improve the foundations of numeracy, Du Toit (2024) advise frequent feedback. As a result, the study confirms previous findings that assessment-driven practice is crucial for mathematical success.

7.2 Discussion of Teachers' Perspectives on the Relevance of Mathematics

7.2.1 Mathematics as a Life Skill

Teachers viewed Mathematics as essential for everyday life, including budgeting, measurement, decision-making, and critical thinking. This aligns with Mudaly (2023), who argues that Mathematics supports cognitive development and life management. Amin and Mahabeer, (2021) highlights numeracy as a key determinant of social and economic mobility. OECD (2021), which frames Mathematics literacy as necessary for informed citizenship in a data-driven world. Thus, the present study confirms the global consensus that Mathematics is foundational for functional living.

7.2.2 The Use of Mathematics in Daily Life

Teachers believed that mathematics was necessary for all aspects of daily life, including critical thinking, budgeting, measurement, and decision-making. This is consistent with Mudaly's (2023) claim that mathematics promotes cognitive growth and life management. Numeracy is a crucial factor in determining social and economic mobility, according to Amin and Mahabeer (2021). According to the Reddy et al. (2023), mathematical literacy is essential for informed citizenship in a world driven by data.

7.2.3 Curriculum Relevance

Some educators contended that the material in mathematics (such as data science, coding, and financial literacy) is too abstract and not sufficiently connected to contemporary realities. Makonye & Mkhize (2021), who contended that South Africa's mathematics curriculum needs to be updated to improve real-life applicability, provide strong support for this criticism. According to Ramatlapana and Berger (2018), contextualising mathematics improves student engagement. The ability of practical mathematics, such as social justice mathematics, to foster relevance and engagement is highlighted by international research (Gutstein, 2021). As a result, although educators acknowledge the value of mathematics, they feel that curriculum reform is required for greater relevance, a view that is well supported by research.

7.2.4 Learner Attitudes and Anxiety

According to teachers, students' perceptions of mathematics as challenging have an impact on their motivation and performance. This is in line with the findings of Luneta and Sunzuma (2022), who discovered that mathematics anxiety is common and has a direct effect on performance. Anxiety lowers the working memory capacity required for solving mathematical problems, according to international studies (Chowdhury, 2021) and Mzomwe (2018), who reported persistent negative attitudes due to weak foundations. Thus, there is strong evidence to support the idea that learner attitudes influence relevance.

7.2.5 Resource Inequalities Undermining Relevance

When students lack textbooks, calculators, and digital tools, maths becomes abstract, according to teachers in underfunded schools. According to DBE (2021) reports, maths performance is disproportionately impacted by material shortages. According to Amin and Mahabeer (2021), one of the main causes of South Africa's mathematics crisis is resource inequality, and TIMSS 2023 indicates that environments lacking resources perform significantly lower in Mathematics. Thus, the study reinforces the strong influence of socio-economic context on perceived relevance.

8. Conclusions

This study looked at the methods teachers employ in their classrooms as well as their opinions on the value of teaching mathematics in South Africa. The results, which are based on qualitative data from eight maths teachers in four public schools, provide significant insights into the advantages and disadvantages of maths education in the socioeconomic and curricular context of South Africa. Most educators concurred that mathematics is still crucial for daily life, academic achievement, cognitive growth, and engagement in the economy of the twenty-first century. They emphasised its importance in making financial decisions, solving problems, using logic, and pursuing careers in STEM. This supports mathematics as a gateway discipline and is consistent with national and international literature. Due to overcrowding, time constraints, and a lack of resources, many teachers relied on direct instruction in addition to traditional and learner-centred approaches. Teachers value inquiry-based and participatory strategies, but these approaches are frequently limited by real-world obstacles. This demonstrates the ongoing disconnect between classroom realities and curriculum expectations.

In underfunded schools, where students lack textbooks, calculators, digital tools, and parental support, teachers stated that mathematics is less relevant. Educational disparities are reinforced by differences in learning experiences and learner engagement brought about by socioeconomic disparities, infrastructure deficiencies, and curriculum overload. Mathematical content, according to some educators, should be contextualised to reflect contemporary realities like data literacy, coding, financial literacy, and mathematical modelling because it is too abstract. Without such reform, students find it difficult to understand the immediate relevance of mathematics, which has an impact on their motivation and performance. Bronfenbrenner's Ecological Systems Theory makes it clear that a variety of interrelated systems, including classroom dynamics, school policies, home environments, district support structures, and national socioeconomic conditions, influence mathematics education. This emphasises the necessity of systemic, all-encompassing interventions as opposed to discrete classroom reforms. Overall, the study finds that although mathematics is still important in South Africa, more support, contextual responsiveness, and structural changes at various educational levels are needed for its meaningful teaching and learning.

9. Recommendations

Based on the findings, the following recommendations are proposed:

Give ongoing instruction in problem-solving techniques, inquiry-based learning, and learner-centred mathematics pedagogies. Provide focused professional development on the integration of digital tools, such as virtual manipulatives,

Desmos, and GeoGebra. Encourage educators to learn how to differentiate their curricula to meet the needs of a wide range of learners. Make certain that all schools have access to the necessary resources for teaching mathematics, including textbooks, calculators, manipulatives, and visual aids. Increase the amount of digital infrastructure, such as tablets, computer labs, and internet access. To lessen inequalities in maths learning opportunities, the government should give underfunded schools priority.

Include practical applications of mathematics, such as data science, measurement projects, financial literacy, and mathematical modelling. Incorporate community-based activities that connect mathematics to social issues to increase learner engagement and relevance. To lessen overload and enable deeper conceptual learning, think about varying the volume and pace of the content. To encourage numeracy at home, schools should provide parents with workshops on mathematics awareness. Access to resources can be improved through community partnerships (e.g., local businesses sponsoring calculators or digital tools). Policies that lower learner-teacher ratios should be given top priority by the Department of Basic Education, particularly during phases that emphasise mathematics. To improve foundational skills, schools might think about adding more maths periods, remedial classes or after-school activities.

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