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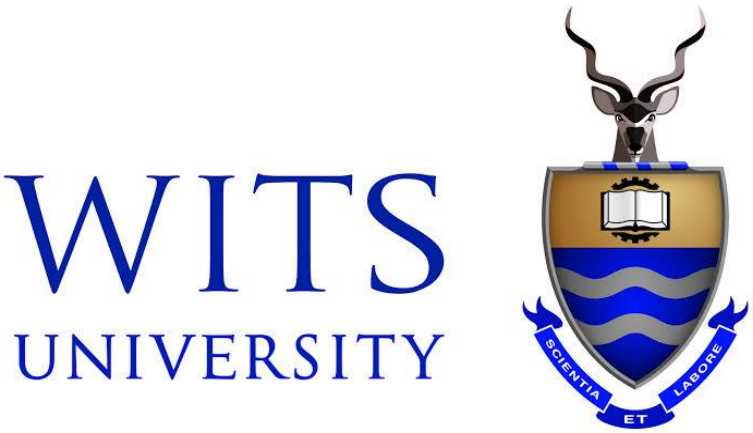
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CREATING ACCESS AND INCLUSION FOR LEARNERS WITH LANGUAGE BARRIERS: EXPLORING TEACHER'S EXPERIENCES OF ALIGNING FOUNDATION PHASE MATHEMATICS CURRICULA WITH THE CURRICULUM ASSESSMENT POLICY STATEMENT

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A RESEARCH REPORT SUBMITTED TO THE WITS SCHOOL OF EDUCATION, FACULTY OF HUMANITIES, UNIVERSITY OF THE WITWATERSRAND IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION BY COURSEWORK AND RESEARCH REPORT.

SUPERVISOR: DR TEBELLO LETSEKA

JOHANNESBURG: 2025

ABSTRACT

This study examines the experiences of Foundation Phase teachers in aligning Mathematics curricula with the Curriculum Assessment Policy Statement (CAPS) to provide access and inclusion for learners with language barriers. The study is grounded in the historical context of South Africa's education system, shaped by decades of apartheid, where racially and linguistically segregated schooling systems entrenched inequality. In the post-apartheid era, the South African government prioritised inclusive education to redress these historical inequalities, as guided by policies, the *White Paper 6* on inclusive education, and CAPS. The CAPS documents seek to standardise curricula and assessments nationwide while fostering inclusivity. Irrespective of these progressive policies, many learners face substantial language challenges, particularly in the Foundation Phase, as lessons are often presented differently from their home language. This is particularly becoming a challenge in multilingual classrooms, where learners' proficiency in the language of teaching and learning English varies significantly.

Using qualitative methods, the study explores how teachers manage these language barriers while adhering to CAPS requirements and how they implement inclusive education strategies in the classroom. The study interrogates and reports on how teachers adapt their instructional methods to meet the needs of linguistically diverse learners by using multilingual resources, visual aids, and differentiated teaching strategies. The findings advocate that while CAPS offers a uniform framework, it does not always accommodate the complications of multilingual classrooms. As a result, teachers often employ creative, context-specific solutions to support learners with language barriers. This study contributes to the broader discourse on inclusive education in South Africa, stressing the need for curriculum flexibility and additional teacher support to better serve learners from diverse linguistic backgrounds.

Keywords: Inclusive education, language barriers, phase education, mathematics, curriculum alignment, Curriculum Assessment Policy Statement (CAPS), language inclusion strategies, policy implementation,

DECLARATION

I validate that this thesis is my original work and has been accomplished independently. It is being submitted to fulfill the requirements for the Master of Education by coursework and research report degree at the University of the Witwatersrand, Johannesburg. This thesis has not been submitted previously for any degree or examination at another institution. I have taken reasonable precautions to ensure this work is original and adheres to copyright laws. Any sources referenced have been properly cited within the text.



Nonkie Madonsela

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I confirm that I edited and proofread Nonkie Madonsela's Master of Education by Coursework and Research Report. The scope of editing was spelling, tenses, vocabulary, sentence construction, coherence, and flow. The general document presentation and referencing in the APA system were also checked. The final document remains the student's prerogative and responsibility.

STUDENT NUMBER: **2769675**

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LIST OF ABBREVIATIONS

ADHD	**Attention Deficit Hyperactivity Disorder**
CAPS	**Curriculum and Assessment Policy Statement**
DBE	**Department of Basic Education**
DBST	**District-based Support Team**
GPLMS	**Gauteng Primary Language and Mathematics Strategies**
IE	**Inclusive Education**
LD	**Learning difficult**
SBST	**School-based Support Team**
SDG	**Sustainable Development Goal**
VCLT	**Constructivist Learning Theory**

CHAPTER 1

THE INTRODUCTION

1.1 Introduction

Access to high-quality education is one of the Sustainable Development Goals,(SDGs), and all economies must achieve this goal by 2030 (United Nations, 2024). However, practically all economies have employed different policies and initiatives towards enhancing educational access. Some developed economies, such as the United Kingdom, Germany, and the Netherlands, have better-developed educational systems than developing countries such as Zimbabwe, Mali, Sudan, and South Africa (Setiawan, 2018). Major trends in educational delivery have been designed to ensure that education becomes inclusive. This implies that access to education should cater to children with diverse physical, emotional, and intellectual needs. Not all economies have well-developed inclusive educational systems, and this is attributed to several factors, such as poor educational policies and lack of financial and resources, to mention but a few (Banks, Hunt, Kalua, Nindi, Zuurmont & Shakespear, 2022). In the African context, South Africa has made some progress towards inclusive education, though more still needs to be done to ensure that all the regions of the country have inclusive education (Walton & Engelbrecht, 2022). This research explores curriculum adaptation methods and teaching practices in the Foundation Phase adopted by the Mathematics teachers in the Johannesburg South District to accommodate learners with language barriers

1.2 Problem Statement

Letsekha et al. (2013) posit that the South African national curriculum was designed to ensure flexibility and must be adapted to different learning environments. The South African Department of Basic Education (DBE) developed a National Curriculum Framework in 2015, understanding that cognitive and general development delays before education can commonly have expensive and long-lasting repercussions on kids, families, and society (Gqoli et al., 2022). This can also affect students' performance, and South Africa suffers from a high level of underperformance in Mathematics (Tsanwani et al., 2014). Naledi Pandor, the former minister of education, argued that

while only 35% of South African children were behind in reading, writing, and Mathematics, the remaining 65% were falling behind (Department of Basic Education, 2008). The average percentage of students in Grade 3, according to the 2013 Annual National Assessments (ANA) in Mathematics, was 49% (Gargiulo & Metcalfe, 2013). This shows poor performance in Mathematics, and this must be addressed to ensure that learners attain marks that will enable them to explore different programmes in institutions of higher learning.

It is important to note that inclusive education is key to transforming the South African economy. Learning needs may arise due to learners' language challenges (White Paper, 2006). The relative ease or difficulty with which students attain academic goals should be considered when creating inclusive interventions (White Paper, 2006). In the context of this research, teaching and learning Mathematics is a challenge due to the issue of language. Therefore, this implies that inclusive education may not be achieved locally in South Africa because schools still face challenges in their Foundation phase; thus, transforming the South African economy may take a long time. Research shows that performance in Mathematics at early stages or for Foundation phase learners predicts the future performance of learners as they grow (Pirjo, 2016; Mazana et al., 2018); (ten Braak et al., 2022). The Foundation Phase is crucial since it is the basis for all learners. Mathematical knowledge is required for all these areas. However, it is commonly known that compared to other African nations like Botswana and Zimbabwe, South Africa's Mathematics subject pass rate is still poor (TIMSS, 2019).

This research explores curriculum adaptation methods and teaching practices Foundation phase Mathematics teachers in the Johannesburg South district adopted to accommodate learners with language barriers. The problem affecting some primary schools in South Africa is that they offer three languages: IsiZulu, Sesotho, and IsiXhosa; however, the medium of instruction is still English for other subjects like Mathematics, and the teachers must explain mathematical concepts in English in an environment where the learners are used to the three local languages mentioned prior. This is a challenge because the learners cannot use languages other than English when they tackle Mathematics questions, which is a barrier to the learning process. Teachers' challenge within the Foundation Phase is adapting the Mathematics curriculum to effectively accommodate learners with language challenges.

1.3 Context

According to Spaull and Kotze (2015), South African school children exhibit poor academic results and levels of performance in Mathematics. Poor performance affects different parts of South Africa. Illegal settlements surround some of the affected primary schools, and most of the classes are overcrowded. It is important to note that some of these schools offer three languages (IsiZulu, Sesotho, and IsiXhosa). However, the medium of instruction is still English for other subjects like (Mathematics). This research explores curriculum adaptation methods and teaching practices, Foundation Phase Mathematics teachers in the Johannesburg South district adopted to accommodate learners with language barriers. This is important because more must be done in South Africa to achieve inclusive education. Access to education is a right for every child in South Africa, as stipulated in educational policies. However, when schools still have language challenges, we cannot safely say that inclusive education is fully in place in the South African educational systems (Donohue & Bonman, 2014; Engelbrecht et al., 2016). Therefore, when certain policies claim that inclusive education is well implemented in South Africa, this is partly true because we still have schools that face inclusive education challenges related to language.

In the South African educational landscape, adapting Mathematics curricula in the Foundation Phase poses unique challenges for teachers, particularly when addressing the diverse linguistic backgrounds of learners. CAPS serves as the national framework, providing guidelines for teaching and assessment. However, the need to cater to learners with language challenges adds a layer of complexity to the implementation of CAPS in the Foundation Phase. South Africa's linguistic diversity, with 11 official languages, contributes to the complexity of education in the country. The government's commitment to inclusive education is evident in policy documents such as the White Paper 6: Special Needs Education (2001) and the CAPS. White Paper 6 stresses the importance of inclusive education and support services for learners with diverse needs, including those with language challenges.

Despite these policy initiatives, adapting the Mathematics curricula in the Foundation Phase to accommodate learners with language challenges remains a significant challenge (Donahue & Bornman, 2014). The multilingual context requires teachers to navigate issues related to language proficiency, limited resources, and the need for differentiated instruction. The multilingual context poses challenges in ensuring that learners with language challenges can comprehend mathematical

concepts presented in the language of instruction (Landsberg et al., 2005). The scarcity of multilingual teaching resources hinders teachers' ability to provide effective instruction that caters to the diverse linguistic backgrounds of learners (Donahue & Bornman, 2014). Establishing effective communication with parents, especially those not proficient in the language of instruction, becomes a hurdle for fostering support at home (Donahue & Bornman, 2014). Integrating culturally relevant examples into mathematics instruction requires careful consideration, adding another layer of complexity (Landsberg et al., 2005).

Access to education in South Africa remains a challenge, although it is important to acknowledge that efforts have been made to redress the adverse effects of the apartheid system (Mlachila & Moeletsi, 2019). With its rich cultural and linguistic diversity, South Africa is committed to providing quality education to all learners, as evidenced by its Curriculum and Assessment Policy Statement Framework (DBE, 2011. However, some parts of the South African educational sector still suffer from language issues when teaching Mathematics. This leads to poor performance of some of the affected learners.

Mabena, Mokgosi, and Ramapela (2021) researched the factors contributing to poor performance in Mathematics in South Africa. The study showed that learner-related issues, such as lack of discipline, language difficulties, and learner attitudes, affected Mathematics performance. Lack of pedagogical topic knowledge and expertise and inadequate professional training affected teachers (Mabena et al., 2021). These results show that more needs to be done to address the problem of poor performance in Mathematics. The study focused on Mpumalanga province, and there is still a research gap since not all schools that use local languages are covered in South Africa. As such, this research aimed to address this gap by focusing on a primary school in Johannesburg South District, which uses more of the local language.

Daniyan (2015) researched the challenges in teaching learners studying Mathematics at the intermediate phase. The research focused on the Tshwane South District. The results of the research showed a variety of difficulties in instructing Mathematics learners. Language obstacles, packed classrooms, the Gauteng Primary Language and Mathematics Strategies (GPLMS), and a lack of resources were among the challenges related to education that were found by the researchers (Daniyan, 2015). Daniyan (2015) and Mabena et al. (2021) have similar research findings. They both discovered that language challenges negatively impact the teaching of Mathematics. These

findings imply that more needs to be done to address the language issue, and the solution can only be implemented after identifying all the root causes. This research, therefore, examined the teacher challenges faced at a primary school in Johannesburg South District.

Machaba (2019) examined the use of Mathematical games as tools for teaching in the Foundation Phase This research showed that using instructional games to teach Mathematics in Foundation Phase (Grades 0–3) classes in South African primary schools is crucial to addressing the low arithmetic performance of students in later grades (Machaba, 2019). However, it must be noted that games can be effective, provided the learners use English as a medium of instruction. If the games are in different languages, it still poses a language barrier because the learners need to use English to solve mathematical questions. This is crucial because English is the common medium of instruction, especially in South Africa. This is also supported by Dicker (2015), who researched teaching Mathematics in multilingual learning classrooms. Dicker (2015) found that most teachers in these schools are second-language English speakers and that English is the language of instruction and learning at these institutions. Mathematical instruction in multilingual classrooms can only be successful with dedicated, well-trained teachers, well-stocked classrooms, a range of instructional techniques, tangible materials, oral rehearsing encouragement, sufficient reaction time, and motivation. These research findings imply that language challenges must be solved holistically.

Additionally, it has been shown that mathematical games enhance children's mathematical skills by fostering strong number sense abilities (Machaba, 2019). Based on these research findings, it can be concluded that there is a need to ensure that the learners understand English. Then, they can use it during the games and even solve mathematical questions in the learning environment. Learners who do not use English will face challenges tackling mathematical questions, resulting in poor performance.

Babane (2020) examined how language challenges affect learners in the Foundation Phase. The study focused on three schools in Gauteng province. According to research findings, language difficulties cause unfavourable feelings and undesirable interaction patterns between children of immigrants and native speakers, which can result in social and cognitive inhibition, loneliness, and bullying by native speakers (Babanem, 2020). In addition, it was shown that although the study's immigrant students had attended classes for at least a year and a half and could form coherent

sentences in English, they still struggled with vocabulary and syntax (Babanem, 2020). These research findings show that language challenges affect children's learning, which may also affect their performance. However, the research did not focus on Mathematics; hence, a research gap must be covered.

Mphahlele et al. (2022) investigated the challenges of using African languages as the Language of Learning and Teaching (LoLT) for Mathematics in rural schools. The study focused on the Foundation Phase Mathematics teaching. According to the findings, the teachers faced three main difficulties: multilingual learners and learners who were educated in English in preschool, scripted lesson plans in English, and teacher training exclusively offered in English (Mphahlele et al., 2022). These research findings depicted that language challenges affect learners and teachers in terms of the teaching of Mathematics. Additionally, it was determined that there is a language gap between policy and practice, where the policy mandates that teachers instruct in African languages. At the same time, the instructional materials are published in English (Mphahlele et al., 2022). Regarding the research methodology and sample size, the study did not cover the Johannesburg district; hence, the current research will close that gap by looking at the subject matter with a focus on primary school. Regarding the knowledge gap, the study did not address why other languages, except English, are still used for teaching Mathematics. The research is silent on that.

1.4 Main Research Question

What curriculum adaptation methods and teaching practices have Foundation Phase Mathematics teachers in the Johannesburg South District adopted to accommodate learners with language barriers?

1.4.1 Sub-research Questions

- What form of support is provided to school-based support teams to assist Foundation phase Mathematics teachers who teach learners with language barriers?
- What methods do teachers adopt to accommodate multilingualism in Foundation phase Mathematics classrooms?
- What factors affect curriculum adaptation to accommodate multilingualism or learners with diverse linguistic backgrounds?
- What challenges do Foundation Phase Mathematics teachers face in adapting the curriculum to accommodate multilingualism?

1.5 Main Research Question

- To explore curriculum adaptation methods and teaching practices, Foundation Phase Mathematics teachers in the Johannesburg South district adapted to accommodate learners with language barriers.

1.5.1 Objectives

- To understand the form of support that is provided to school-based support teams to assist Foundation phase Mathematics teachers who teach learners with language barriers
- To discover the methods utilised by Foundation Phase Mathematics teachers to accommodate multilingualism
- To explore the factors that affect curriculum adaptation in the efforts to accommodate multilingualism or learners with diverse linguistic backgrounds.
- To understand and document the challenges Foundation Phase Mathematics teachers face in adapting the curriculum to accommodate multilingualism.

1.6 Rationale and significance of the study

Rationale: This research is essential because the findings may be beneficial to the Department of Education, especially as far as the design of educational policies is concerned. This is crucial for ensuring that access to quality education is attained and that the teaching process is made effective by solving language-related challenges. This is essential for achieving Sustainable Development Goal (SDG) 4 of quality education. Additionally, the study is critical because it may influence policies made by curriculum developers, principals, educators, and other stakeholders in the South African educational sector. In terms of knowledge contribution, the new knowledge that will be added is on unpacking teacher experiences in delivering educational services, given the context or the environment of learners who are not first-time English speakers. The research, therefore, adds value to existing literature on inclusive education in the South African context.

Significance: Lastly, the study is significant from a CAPS standpoint as well. This is because the CAPS policy document significantly improves the quality of education, fosters inclusivity, and ensures that all students—especially those from linguistically diverse backgrounds—can achieve the objectives of SDG 4.

1.7 Key terms

This section presents the definition of key terms

- Multilingualism - the ability of societies, organizations, groups, and individuals to interact with multiple languages daily is known as multilingualism (Cenoz, 2013). Language barriers - Communication problems when teachers and students do not speak the same language are known as language barriers in education (Mataka et al., 2020). Curriculum- A curriculum is a planned series of activities based on standards that allow students to practice and become proficient in content and applied learning skills (Astal, 2023).
- Curriculum Assessment Policy Statement- Curriculum and Assessment Policy Statement (CAPS) is a policy document crafted in 2012 by the Department of Basic Education, and it guides teaching and learning in South African schools (Ajani, 2021).
- Inclusive education is a philosophy that seeks to give every child, irrespective of their skills, learning preferences, or disabilities, a high-quality education (Singh & Prajapat, 2021).

1.8 Thesis Outline

This section presents the summary of the study.

Chapter 1: Presented the introduction and background to the study.

Chapter 2 : Reviews the relevant literature to position the current study within the broader body of existing knowledge and identify its research gap. It begins with an overview of the Curriculum Assessment Policy Statements (CAPS), followed by a discussion of the inclusive education policy in South Africa. This section examines various policies designed to promote inclusivity. The final section of the chapter addresses the role of language in the learning environment.

Chapter 3: Present the theoretical framework for the study, which is based on Vygotsky's (1980) Constructivist Learning Theory (VCLT). This theory is crucial to the study as it explains how learning occurs in the educational environment. The chapter will also present Piaget's Theory of Cognitive Development.

Chapter 4: Research Paradigm- this chapter discusses the research paradigm. The primary paradigm used in the study is interpretivism. Aspects of positionality will be discussed in this chapter as well.

Chapter 5: Case study- this chapter discusses the research design and methodology used. Some of the key issues explained in this chapter are the research site, sampling, description of the case, data collection, data analysis, elements of trustworthiness, and ethical issues.

Chapter 6: Discussion of results: This chapter discusses results. The key issues discussed are the demographics of the participants and the main themes drawn from the data analysis.

Chapter 7: Conclusion- This chapter provides the conclusion of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter presents the findings from the literature reviewed to situate the study within existing knowledge and establish a gap in the current study. The chapter begins with an account of the literature on the Curriculum Assessment Policy Statements (CAPS), followed by an account of the inclusive education policy in the South African context. Under this section, the various policies aimed at achieving inclusivity are reviewed. The last section of the literature review focuses on the use of language in the learning environment. This revised structure aims to move from broad policy context to classroom-level challenges, making space for deeper engagement with teaching strategies and their practical implications. An overall conclusion will be provided at the end. This structure ensures that each section logically builds upon the previous one and demonstrates how the current study positions itself within the broader field of research.

2.2 Curriculum Assessment Policy Statements

This discussion on CAPS is essential because it is a policy document that guides educational service delivery, and it also touches on aspects of language use in the teaching and learning process. The Curriculum Assessment Policy Statements were introduced in 2012 and provide the Foundation for curriculum creation and implementation in South African schools (Adekunbi Ojo & Mathabathe, 2021; Department of Basic Education, 2011). CAPS highlights the importance of making high-quality education available to all students, regardless of language or socioeconomic status (Department of Basic Education, 2011). In addition, the Curriculum Assessment Policy Statement (CAPS) in South Africa aims to enhance educational quality and inclusivity while addressing social justice issues (Ojo & Mathabathe, 2021). It emphasises human rights, diversity, and respect for various identities, including race, gender, and disability. CAPS seeks to create a curriculum that is relevant and responsive to the needs of all learners, particularly marginalised groups, thereby fostering a more equitable educational environment (Schoeman, 2018). CAPS key goals are to promote inclusivity, enhance educational relevance, and support social justice. Promote Inclusivity: CAPS aims to ensure that all learners, regardless of background, have access to quality education that respects their identities (Sepadi & Molapo, 2024). Although

CAPS offers a broad-minded vision for inclusive education, the practical implementation of its strategies, especially regarding language and teaching, remains limited. This study critically examines how Foundation Phase teachers interpret and implement CAPS while navigating linguistic challenges in Mathematics classrooms.

However, there are still grey areas that need to be addressed so that all children in South Africa enjoy high-quality education. Some of these issues are related to language. Enhance educational relevance: The policy focuses on aligning the curriculum with the socio-economic realities of South Africa, making education more applicable to learners' lives (Mandy & Madiope, 2020). This is crucial, given that there are historical challenges that were faced during apartheid, and there is a need to redress that so that education becomes relevant to modern-day South Africa. Support social justice: CAPS addresses historical educational inequalities, promoting social justice and equity within the schooling systems. This is very critical for the development of the educational sector, especially taking into consideration the adverse effects of apartheid that led to unequal access to high-quality education. Also, from a broader spectrum, this helps improve the chances of attaining Sustainable Development Goal 4 of high-quality education (United Nations, 2025).

In Mathematics education, CAPS specifies learning outcomes, content standards, and assessment procedures for each grade level, strongly emphasizing developing conceptual knowledge and problem-solving capabilities (Stein, 2019). However, even though there is a policy in place that is meant to improve educational service delivery, there are still language barriers that affect learners and teachers at schools in the Johannesburg South district. As such, this is the motivation of the study to explore curriculum adaptation methods and teaching practices. Foundation Phase Mathematics teachers in the Johannesburg South district adapted to accommodate learners with language barriers. This review implies that teachers must align their teaching strategies with CAPS goals to overcome language barriers and support inclusive education practice.

2.3 Inclusive Education Policy

The White Paper on Inclusive Education is a crucial policy document that outlines how inclusive education can be attained in South Africa. It is necessary to discuss the policy document because it also explains the importance of language in the learning process. This aspect of language is also under study in this research; hence, the researcher discusses this policy document.

The South African DBE adopted inclusive education as a key policy goal in 2001 (Department of Basic Education 2001). The White Paper on Inclusive Education outlines the government's commitment to providing fair educational opportunities for students with various needs, including those with language problems. In Mathematics education, inclusive education policies emphasise the importance of accommodating diverse learning styles and offering appropriate support systems to ensure active student participation and achievement (Cele, 2023). However, despite this policy being in place since 2001, there are language challenges affecting one school in Johannesburg South District, hence this research was undertaken.

2.3.1 Language-in-Education Policy

The Language-in-Education Policy is a document that explains language use in the learning process. The current study is anchored on language barriers, and these issues are also outlined in the policy document. The Language-in-Education Policy was introduced in 1997, and it acknowledges language as both a medium of instruction and a possible barrier to learning in South African schools (Department of Basic Education, 1997; Mataka et al., 2020). This policy advocates for multilingualism and emphasises the importance of mother tongue instruction in creating good teaching and learning practices (Indra Nugraha, 2019). Language-in-Education Policies in Mathematics Education emphasise the need for accessible curriculum materials and pedagogical practices tailored to learners' linguistic backgrounds. In practical terms, there is a challenge in that the use of different languages in teaching different subjects, such as Mathematics, becomes a challenge because the learners cannot use any other language to tackle questions except English. This shows a mismatch between what the language policy stipulates and the expected learning process.

2.3.2 The National Strategy for Mathematics, Science, and Technology Education.

The National Strategy for Mathematics, Science, and Technology Education was introduced in the South African educational system in 2001, and it aims to improve the quality and relevance of Mathematics Education in South Africa (Department of Basic Education, 2014; Mholo, 2022). This strategy is relevant to this study because the research aims to explore curriculum adaptation methods and teaching practices. Foundation Phase Mathematics teachers in the Johannesburg South district adapted to accommodate learners with language barriers. To improve learner performance in Mathematics, the technique focuses on overcoming linguistic obstacles and encouraging inclusive educational practices. Essential components of this method include teacher professional development initiatives, curriculum enrichment endeavours, and the provision of tools to strengthen effective mathematics instruction. In the context of this research, there are still language barriers that affect schools in the Johannesburg South District.

2.4 Use of Languages in the Learning Environment

In South Africa's diverse and multilingual setting, language hurdles significantly impact Mathematics education, particularly in the Foundation Phase. The country's complex language tapestry, moulded by historical, social, and political considerations, presents teachers with unique problems in ensuring equitable access to quality education for all learners (Maarman & Lamont-Mbawuli, 2017; Mesthrie, 2011). Learners from historically marginalised language groups often face significant obstacles in acquiring mathematical concepts due to the predominance of English as the language of instruction. Green (2020) agrees with the above sentiments and mentions that teachers face difficulty teaching learners due to curriculum demands and language challenges.

Mphahlele et al. (2022) researched the use of the African language in teaching Mathematics in the Foundation Phase in the three South African provinces: North-West, Limpopo, and Kwa-Zulu-Natal. The findings revealed that teachers faced three major challenges: multilingual learners and learners educated in English in preschool, English-scripted lesson plans, and teacher training exclusively available in English (Mphahlele et al., 2022). These findings show that language limitations might limit learners' capacity to interact effectively with mathematical content, impairing their conceptual understanding and problem-solving abilities. Spraull (2013) shares similar sentiments with Mphahlele et al. (2022) in that the former also established that for many students, particularly those whose native language differs from the language of instruction, dealing

with foreign mathematical vocabulary and linguistic patterns can raise the cognitive load and impair comprehension (Spraull, 2013). This linguistic mismatch between the classroom environment and students' linguistic repertoires substantially impedes successful Mathematics learning, contributing to achievement gaps and perpetuating educational disadvantage.

Heugh (2018) researched language and learning in post-apartheid South Africa. Research findings indicated that students may feel excluded and disconnected from the curriculum when they cannot express themselves properly in the teaching language (Heugh, 2018). This shows that language is a channel for transmitting cultural knowledge and identity, altering students' sense of belonging and self-efficacy in the Mathematics classroom. However, the privileging of certain languages over others within educational contexts can reinforce existing power dynamics and perpetuate linguistic hierarchies, further exacerbating inequities in access to educational opportunities (Mesthrie, 2011; Tenzer & Pudelko, 2017). Although research has been done by other scholars on the use of language in teaching Mathematics in the Foundation Phase, what remains uncovered is curriculum adaptation methods and teaching practices used by Foundation Phase Mathematics teachers to accommodate learners with language barriers (Green, 2020; Heugh, 2018; Maarman & Lamont-Mbawuli, 2017; Mesthrie, 2011; Mphahlele et al., 2022; Spraull, 2013; Tenzer & Pudelko, 2017). The current study will, therefore, close the identified research gap.

2.4.1 Assessment Techniques in the Learning Environment

Witwoski (2021) established that assessment techniques in Mathematics may unintentionally perpetuate linguistic bias, disadvantageously affecting learners with low proficiency in the language of instruction. The findings of Witwoski (2021) are almost at par with Spaull's (2013), who cited that standardised examinations frequently focus significantly on written language and formal mathematical notation, which disadvantages students who excel at mathematical thinking but struggle with linguistic expression. To solve this issue, educators must use inclusive assessment techniques that account for varied linguistic backgrounds, such as adding alternate forms of assessment, offering language help, and valuing multiple ways of expression (Balt et al., 2019; Setati, 2008).

Addressing these hurdles demands a multidimensional strategy that recognises learners' linguistic diversity, promotes inclusive pedagogical approaches, and advocates for equitable language

policies in educational systems (Essien & Sapire, 2022). Educators in South Africa may build more inclusive and empowering learning environments for all learners by acknowledging the tremendous importance of language in mathematics learning and actively striving to eliminate linguistic obstacles. From this perspective, this study explores curriculum adaptation methods and teaching practices that the Foundation phase of mathematics teachers in the Johannesburg South district adopts to accommodate learners with language barriers.

2.4.2 Learner Performance and Teaching Experiences

Learner performance depends on several factors, such as the availability of learning resources, a conducive environment, and the level of expertise of the teachers, to mention a few. Mabena (2021) concurs with the above assertion in their research, which focused on the factors contributing to poor performance in Mathematics in Mpumalanga, South Africa. The study revealed that learner-related factors such as lack of discipline, language challenges, and learner attitudes influenced Mathematics performance. Teachers' variables included a lack of pedagogical topic knowledge and experience, and insufficient professional training (Mabena et al., 2021). This shows that high-quality educational service delivery in Mathematics can be achieved if several challenges are solved, and the key among them is the issue of language. However, because the study only covered Mpumalanga province, there is still a research gap because not all schools teaching local languages were included. As a result, this study will address that methodological research gap by focusing on a primary school in Johannesburg South District that employs more of the local language.

Geldenhuys and Fataar (2021) researched teachers' experiences teaching the Foundation Phase in the Western Cape province in South Africa. The study found that participants' teaching experience did not significantly impact their teaching experiences. It was also determined that some teachers lacked the necessary pedagogical skills to teach the core competencies. Workshops and training can be used as solutions to address the lack of pedagogical skills. This is supported by Makeleni and Sethusha (2014), who indicated that curriculum workshops are essential to improve teaching in educational settings. Sekao & Engelbrecht (2022) examined South African primary school Mathematics teachers' experiences with lesson study. Results from the research indicated that lack of confidence and inadequate content were the major issues that affected teachers. From these

results, it can also be concluded that these experiences ultimately affect the learners because teachers will be incapable of delivering the best teaching Mathematics service.

2.5 Conclusion

To summarise, this chapter fills a significant knowledge vacuum regarding the difficulties caused by language barriers in South Africa's Foundation Phase of Mathematics Education. The Language-in-Education Policy, the White Paper on Inclusive Education, and the Curriculum Assessment Policy Statements (CAPS) provide the framework for attaining inclusive and high-quality education. Even though these policies are progressive, they frequently fall short of completely reducing the negative effects of language barriers on learning, especially in multilingual classrooms where English is the primary language of instruction. Many learners still struggle with the language requirements of Mathematics instruction, particularly those from historically marginalized groups, despite efforts to improve education. According to a literature review, one major barrier to effective learning is the mismatch between the language of instruction and the linguistic backgrounds of the learners. Research has indicated that this language barrier hinders students' comprehension of mathematical ideas and increases cognitive load, resulting in poor academic performance. Teachers also have difficulty modifying their lesson plans and teaching methods to accommodate these diverse students. In light of these ongoing problems, the current study intends to investigate the curriculum adaptation strategies and instructional techniques used by Foundation Phase Mathematics teachers in the Johannesburg South district to accommodate students who struggle with language. By concentrating on these tactics, the study will aid in creating more inclusive teaching methods that consider students' individual needs and linguistic diversity, ultimately improving teaching and learning results in South Africa's elementary school system.

CHAPTER 3

THEORETICAL FRAMEWORK

3.1 Introduction

This section presents the theoretical framework for the study, which is Vygotsky's (1980) Constructivist Learning Theory (VCLT). This theory is important to the study because it explains the learning process in the educational environment. The learning process can be successful if the teachers and learners use a common language as a medium of instruction. For this study, the school in focus uses three South African languages, and learners find it difficult to learn Mathematics using English as a medium of instruction. The learner's social environment is primarily based on the use of isiZulu, Sesotho, and IsiXhosa) hence, this poses challenges to teachers when they teach Mathematics. This, therefore, is a challenge for teachers when it comes to delivering high-quality educational services. The chapter will discuss Piaget's theory of cognitive development. An overall conclusion will be provided at the end.

3.2 Constructivist Learning Theory

According to Vygotsky, learning occurs more often in social and cultural contexts than it does purely within an individual (Schreiber & Valle, 2013). This shows that the social environment of a learner can have a bearing on the learning process and performance. From this perspective, it shows a link between the learning environment, which can further be regarded as the school, and the events or activities that transpire within this context. In the school, teaching transpires, but in the context of this research, the teaching of Mathematics may not be effective due to language challenges, especially at a primary school in Johannesburg South District. Based on the Constructivist theory, learning cannot be purely on the individual, as in this case, the teachers play a key role in trying to use the local languages to teach mathematics.

The acquisition of mathematical language, whether spoken or written, the development of semiotic transformation abilities when working with symbolic representations when learning mathematics concepts, and the significance of the educator in correcting learner-knowledge production are all examples of Vygotsky's versions of social interaction in mathematics as posited by (Burrell & Morgan, 2017). Constructivist learning theory is useful in this study as it is founded

on the premise that learners are active participants in their learning process; knowledge is produced through practice (Sarbah, 2020). Vygotsky believed that learning occurs more frequently in social and cultural contexts than within individuals (Schreiber & Valle, 2013). The acquisition of mathematical language, whether spoken or written, the development of semiotic transformation abilities when working with symbolic representations when learning Mathematics concepts, and the educator's role in correcting learner-knowledge production are all examples of Vygotsky's versions of social interaction in Mathematics as proposed by Walshaw (2017).

One key aspect of Vygotsky's theory is the zone of proximal development (ZPD), which refers to the difference between what a learner can accomplish independently and what they can achieve with the guidance and support of a more knowledgeable other (Vygotsky, 1978). In the context of Mathematics education in South Africa, the ZPD underscores the importance of scaffolding and support for learners as they navigate Mathematical concepts in a language that may differ from their home language (Dowker, 2017). It can, therefore, be concluded that a learner's social environment can impact the learning process and outcomes. Therefore, this shows a link between the learning environment, often known as the school, and the events or activities in the learning process. Vygotsky's Sociocultural Theory (1980) provides fundamental insights into the function of language and social interaction in cognitive development, making it especially relevant in South Africa (Vygotsky, 1978).

Given the country's vast linguistic diversity and cultural complexity, Vygotsky's sociocultural theory is especially applicable in South Africa. Vygotsky's emphasis on the social character of learning resonates well with educators in South Africa who are working to eliminate language barriers and promote inclusive Mathematics teaching (Heugh, 2012; Landsberg, 2019; Mc Lead, 2013). Teaching occurs in schools; however, in the context of this study, from my observation, teaching Mathematics is ineffective or affected by language barriers, particularly at a primary school in Johannesburg's South District. According to this finding, learning cannot be solely dependent on the individual, as teachers play an important role in attempting to use local languages to teach mathematics. Therefore, teachers will have certain experiences as they deal with multilingual children. The study was aimed at exploring and documenting these experiences.

This theory is relevant to the study since it describes the learning process in the educational setting. In short, Vygotsky's sociocultural theory (1962) offers a powerful framework for comprehending and managing the intricate interplay of language, culture, and learning in South African Mathematics classrooms. The learning process can be more effective if teachers and students employ a common language as a medium of instruction. For this study, the focal school uses three South African languages, and students struggle to acquire Mathematical knowledge when English is used as a teaching medium. The learners' social context is predominantly based on the use of isiZulu, Sesotho, and IsiXhosa, and this presents obstacles for teachers when teaching Mathematics. As a result of these obstacles, teachers struggle to provide high-quality education services.

3.3 Piaget's Theory of Cognitive Development

Piaget (1936) proposed that children's cognitive development proceeds in stages (Papalia & Feldman, 2011; Piaget, 1951). The theory states that one's growth progresses from sensorimotor to preoperational, concrete, and formal operational phases (Lefa, 2014; Pakpahan & Saragih, 2022). Some commonalities between Piaget's and Vygotsky's ideas include the assumption that children are active learners in their development. However, the learning process is based on the use of language, and in the context of this study, there are language barriers that affect teachers in the school in Johannesburg South District. Thus, if there are language barriers, the learning process can be affected, and learners may not be fully in charge of their development. These language barriers have an impact on the teachers' experiences, and it is therefore very crucial to examine such teacher experiences.

Piaget (1936) also notes that teachers should provide opportunities for learners to classify and group information to better integrate new information with prior knowledge (Lefa, 2014; Sanghvi, 2020). Language barriers can affect the delivery of education to learners. This implies that Piaget's theory is relevant to the current study because it shows how learners should interact in the educational environment. Piaget's hypothesis has a significant implication: training should be tailored to the learners' developmental stage. Thus, in practical terms, teachers should be capacitated to meet the needs of the learners, though it is very tough to get teachers who can address multilingualism challenges. All in all, these two theories are very crucial because they explain the

learning process. It is impossible to exclude teachers from the learning process. Therefore, given the context, we must examine the teachers' experiences.

3.4 Conclusion

This chapter emphasised the value of Piaget's Theory of Cognitive Development and Vygotsky's Constructivist Learning Theory (VCLT) in comprehending teachers' difficulties in South African classrooms, particularly multilingual environments. Vygotsky's theory highlights the importance of language and social interaction in learning, emphasising that social environments and interactions with teachers and other more experienced people are crucial for cognitive development. These social interactions are especially important in the Johannesburg South District, where students encounter language barriers when learning mathematics. Effective teaching is significantly hampered by the challenge of using English as the medium of instruction when learners are primarily accustomed to languages like isiZulu, Sesotho, and IsiXhosa. The idea that learning should be in line with learners' developmental stages and that teachers should give students opportunities to engage with the material actively is further supported by Piaget's cognitive stages theory. Nonetheless, the difficulties presented by multilingualism demand that teachers possess methods for bridging linguistic divides. In order to improve learning outcomes, the study emphasises the value of teachers' experiences navigating these obstacles and advocates for a thorough strategy to address multilingualism in South African education.

CHAPTER 4

RESEARCH PARADIGM: INTERPRETIVISM

4.1 Introduction

A research paradigm is an array of beliefs, attitudes, methodologies, and assumptions researchers utilise to conduct research and interpret results (Ryan, 2018). The research paradigm can also be defined as the collective term for the theories, practices, and assumptions that shape the design, execution, and interpretation of research (Keong et al., 2023). It is, in essence, a viewpoint or lens through which a researcher examines the nature of knowledge (epistemology), the reality being studied (ontology), and the methods used in the research. Understanding research paradigms is crucial because they influence the questions researchers pose, how they look into those questions, and how they interpret their results. Some research paradigms include interpretivism, positivism, pragmatism, and critical paradigms (Malik & Tariq, 2021). These paradigms are going to be discussed in detail below. The components of a research paradigm will be discussed as well. An overall conclusion will be provided at the end.

4.2 Components of a research paradigm

This section discusses the components of research paradigms. These components are ontology, epistemology, and methodology.

4.2.1 Ontology

This concerns reality's nature (Al-Amouid & O'Mahoney, 2015). "What exists?" and "What is the nature of the phenomenon being studied?" are among the questions it answers. Researchers' perceptions of reality and what is worthwhile to study are influenced by ontological presuppositions (Al-babneh, 2020). Research on the nature and organisation of knowledge in a particular field uses ontology. It gives ideas and their connections a formal representation, which benefits researchers in some ways**.**

4.2.2 Epistemology

Epistemology studies knowledge (Cunningham & Fitzgerald, 1996); (Knight et al., 2014). It refers to how knowledge can be acquired and how it can be validated (Borås, 2017). It addresses questions like "How do we know what we know?" and "What is considered valid knowledge?" Researchers use epistemology to clarify what knowledge is, how it is obtained, and how certain we can be of what we know. It helps the researcher comprehend the fundamental presumptions regarding what is known. To add more, when it comes to research, epistemology aids in defining what constitutes valid and reliable knowledge (Prince Alamina et al., 2022). It encourages thoughtful analysis of data collection, interpretation, and evaluation, guaranteeing that research findings are significant and substantiated. Lastly, how researchers formulate their research questions is influenced by epistemology (Moon et al., 2021). For instance, knowledge is viewed as socially constructed in some epistemological frameworks (like constructivism), which leads scholars to inquire about how various cultures or groups interpret phenomena.

4.3 Methodology

The methodology involves research processes, techniques, and strategies (Ali Khan et al., 2023). It includes the methods for data collection, analysis, and interpretation. Both ontological and epistemological assumptions influence the methodology, guiding the researcher in approaching data collection and analysis (Kant, 2014).

4.4 Positivism

The foundation of positivism is the idea that information obtained by measurement and observation from the senses is reliable (Park et al., 2020). Positivism is one of the most well-known research paradigms, especially in the social and natural sciences. It is predicated on the idea that reality is objective and amenable to measurement and observation (Junjie & Yingxin, 2022). The fundamental tenet of positivism is that knowledge is based on sensory experience and verifiable by empirical evidence. From an ontology point of view, reality is viewed as objective and outside the researcher's control in positivism (Park et al., 2020). One observable reality that can be comprehended by empirical research is presumed to exist. Conversely, knowledge is viewed epistemologically as something that scientific techniques can quantify, observe, and examine. Unbiased observations and conclusions are made possible by the researcher's supposed objectivity and disengagement from the research process. Lastly, concerning methodology, positivist studies

usually employ quantitative techniques like experiments, surveys, and statistical analysis (Maksimović & Evtimov, 2023). These techniques aim to establish cause-and-effect links and produce broadly applicable findings. Positivism is frequently employed in studies that measure variables and prove laws or theories through rigorous testing.

4.5 Pragmatism

Instead of rigorously following a particular methodology or theoretical framework, pragmatic research emphasises the results and implications of studies (Elgeddawy & Abouraia, 2024). It is frequently viewed as a common ground between interpretivism and positivism. Pragmatists hold that objective and subjective forces shape reality from an ontological standpoint (Maarouf, 2019). Although they accept the existence of reality, they contend that it is always changing in response to human experience and behaviour. From an epistemological perspective, pragmatism views knowledge as something created by solving real-world problems (Vo, 2024). Researchers aim to find workable answers to real-world issues and are viewed as active participants in the research process. For instance, lowering poverty in a community. Finally, pragmatics frequently employs a mixed-approaches methodology that blends qualitative and quantitative techniques (Dawadi, 2021). The research question and the particular study context determine the methods used. The main points of emphasis are what helps solve the research problem and what functions well in practice.

4.6 Critical paradigm

Critical theory, also known as the critical paradigm, focuses on exposing and confronting systems of power, social disparities, and injustices (Parry, 2023). Social research uses this approach to tackle social transformation, empowerment, and liberation. Regarding ontology, the critical theory viewpoint perceives reality as influenced by power dynamics, social structures, and historical contexts (O'Mahony, 2023). Social realities are considered to be constructed by dominant groups, and these constructions often sustain inequality and oppression. From an epistemological standpoint, knowledge within critical theory is not impartial; it is fundamentally political (Sek et al., 2011). Scholars within this critical framework are viewed as advocates for underrepresented groups and strive for social change. Knowledge is frequently created through discussions, reflections, and critiques. Regarding methodology, critical theory predominantly employs qualitative approaches that prioritise the comprehension of social injustices, power dynamics, and

marginalisation (Migdley, 2023). Techniques may include interviews, participatory action research, or analysis of media and literature. The focus is on understanding how knowledge can be utilised to confront the status quo and foster social transformation.

4.7 Interpretivism

From an ontological standpoint, interpretivism views reality as subjective and constructed by society (Scotland, 2012). This suggests that there is no singular objective reality; instead, numerous realities are influenced by personal experiences and cultural contexts. Furthermore, from an epistemological perspective, knowledge is perceived as context-dependent and subjective (Levers, 2013). Researchers are considered a part of the research process, and their viewpoints shape how knowledge is created. The aim is not to eliminate bias but to comprehend individuals' subjective interpretations of their experiences (Pulla & Carter, 2018).

From a methodological standpoint, interpretive research frequently employs qualitative techniques like interviews, case studies, ethnography, and participant observation (Ponelis, 2015). These techniques seek to uncover the underlying meanings of human behaviour by examining individual viewpoints and cultural contexts. Interpretivism is appropriate for research on understanding how individuals view the world and interpret their experiences (Chowdhury, 2014). This study conducted interviews to gather information on the curriculum adaptation strategies and teaching methods utilized by Foundation Phase Mathematics educators in the Johannesburg South district to support students facing language barriers.

The Foundation of interpretivism is the idea that reality is socially created, multifaceted, and subjective (Ryan, 2018). This suggests that the only way to comprehend another person's reality is through their own experience, which may differ from another person is according to the individual's historical or social background. This study adopted interpretivism because the aim was to unpack the experiences encountered by teachers in teaching Foundation Phase Mathematics (Chowdhury, 2014). This paradigm was chosen because it would enable the researcher to obtain a comprehensive grasp of the meanings that the respondents (teachers) attached to their experiences, actions, and interactions in the exploration of curriculum adaption methods and teaching practices in Foundation Phase Mathematics teachers in the Johannesburg South District adopted to accommodate students with linguistic problems (Alharahsheh & Pius, 2020). In addition, the paradigm is useful for the study because it allows flexibility in the research questions (Wooi Keong

& Md Husin, 2023). Finally, this paradigm was also chosen because it allows the researcher to explore an issue in natural settings and contexts, and in this case, teachers are interviewed in their natural setting (Wooi Keong & Husin, 2023).

4.8 Positionality

Positionality is a standpoint or viewpoint researchers take concerning their research (Holmes, 2020). It encompasses the researcher's personal and political personalities, experiences, views, and viewpoints, all forming their comprehension of the research issue and influencing the research process (Bourke, 2014). The researcher works in the educational sector. To avoid biases, the researcher will follow the interview guide and stick to the questions in the research instrument.

4.9 Conclusion

To sum up, this chapter used the interpretive paradigm to investigate the experiences of Johannesburg South District Foundation Phase Mathematics teachers. The interpretivism approach was selected because it enables a thorough understanding of teachers' subjective experiences and interactions, particularly concerning modifying teaching strategies to accommodate students with linguistic challenges. The study seeks to understand the meanings teachers attach to their teaching methods by concentrating on how they view and handle these difficulties. The adaptability of this paradigm and its emphasis on natural environments were crucial in capturing the participants' genuine experiences. Finally, the researcher's positionality, based on their work experience in the educational field, helped mitigate potential biases and shape the research process. All things considered, the interpretivism paradigm offered an appropriate framework for examining the intricacies of instructional strategies and curriculum modifications in light of linguistic diversity in the classroom

CHAPTER 5

RESEARCH DESIGN: QUALITATIVE CASE STUDY

5.1 Introduction

This chapter presents the research approach adopted to answer the research questions. The target population, research design, and research paradigm are three critical study components discussed in this chapter. In addition, this chapter will go over sampling processes, sample size, and data-gathering methods. The chapter also discusses the administered interviews and the data analysis method. Finally, the ethical guidelines for academic research, the study's limitations, and the conclusion are covered.

5.2 Research Methodology

Research methodology is the systematic process of organizing, carrying out, and interpreting research (Snyder, 2019). Quantitative, qualitative, and hybrid or mixed-method procedures are the three methods used in research (Gao, Pham, and Polio, 2022; Snyder, 2019). The study employed the qualitative approach, and a case study was conducted to align Foundation Phase Mathematics curricula with CAPS expectations within South African realities. This qualitative approach is particularly suited to exploring the teachers' complex, context-dependent experiences working with learners facing language barriers. The qualitative framework is informed by the theoretical concepts of self-regulated learning, ensuring data quality and trustworthiness (Park & Drennan, 2011; Liew, 2010). This approach was chosen because it provides insights into the subject matter while allowing for high-quality data generation. This was instrumental in answering the present study's research questions (Hamilton & Finley, 2020).

5.3 Case Study Design

This qualitative study used case studies to study complex phenomena within a particular context. When applied appropriately, this method is valuable in developing theory, evaluation of programmes and development of interventions. According to Yin (2003), a case study should be considered when: (a) the focus of the study is to answer “how” and “why” questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon and context. In the context of the present study, the case study design was chosen because the research involved the experiences of Foundation Phase Mathematics teachers in adopting CAPS to accommodate learners with

language barriers. However, the case could not be considered without the context of the school and classroom settings in the Johannesburg South District. It would have been impossible to have a true picture of teachers' experiences without considering the context within which these experiences took place.

5.4 Research Site

The selection of this school in the Johannesburg South District of Gauteng provides a diverse sample because it is one of the overcrowded schools with an enrolment of approximately 1,816 learners. It is the only public school in the township of Kanana Park, which covers a large area, including informal settlements. Considering factors such as language proficiency and socioeconomic status (Smith et al., 2018), overcrowding in South African schools is a common issue, often occasioned by urban migration, inadequate infrastructure, and the concentration of learners in schools near informal settlements (Spaull, 2013; Department of Basic Education, 2018). In this school, the challenges are further exacerbated by the socioeconomic situation of the area, where most parents are unemployed and some are school dropouts. Research demonstrates how poverty and unemployment in communities surrounding schools significantly impact learners' academic performance and overall well-being (Van der Berg, 2008; Fleisch, 2018). The school faces great pressure to accommodate a socioeconomically and linguistically diverse population, leading to a high teacher-to-student ratio, limited physical resources, and challenges in attending to the special needs of its learners. Contemplating factors such as language proficiency, socioeconomic status (Smith et al., 2018), and the interferences of overcrowding, this school was the best site for data generation for this study.

5.5 Sampling

A target population is the number of potential respondents from which to select a sample (Astrand, Wardak, and Ben Hamed, 2020). The study's target population comprised Mathematics teachers at a primary school in the Johannesburg South District. Sampling refers to selecting a group of individuals or participants from a broader population to conduct a study (Gautam et al., 2017). Sampling techniques can be probabilistic or non-probabilistic.

Figure 5.1 illustrates some of the sampling approaches utilised in the research

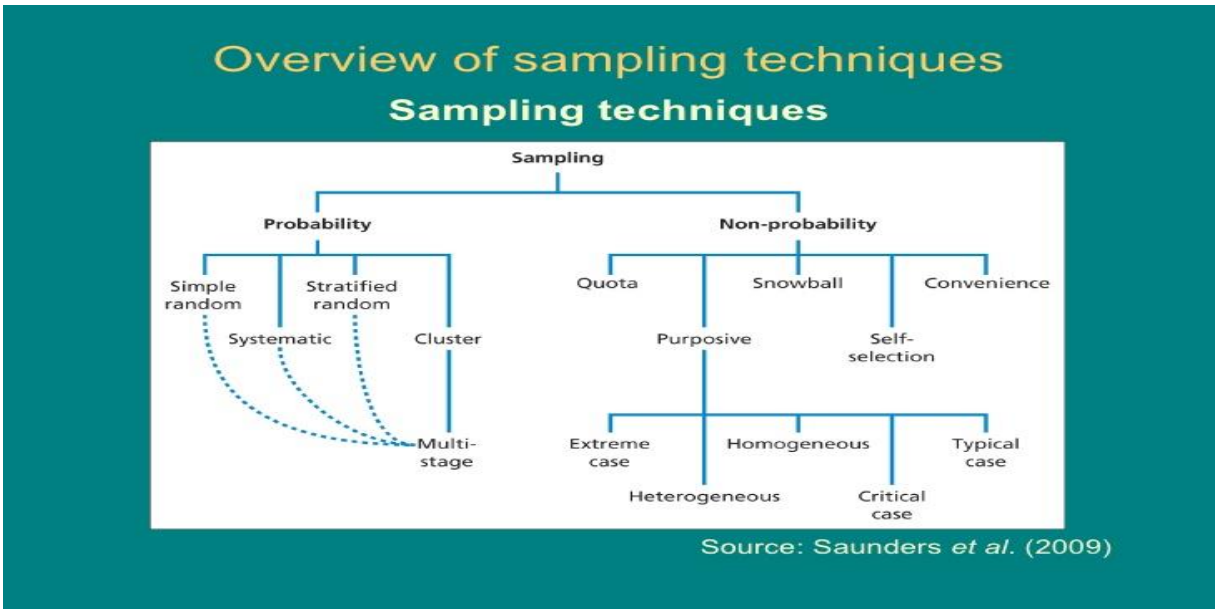


Figure 5.1: Sampling Methods

Figure 5.1 depicts many types of probability sampling, including simple random, systematic, stratified random, cluster, and multistage sampling (Showkat et al., 2017). Conversely, non-probability sampling is classified into several forms, including purposive, quota, and convenience sampling (Kalton, 2023). Purposive sampling was used to select the ten teachers for interviews. This sampling technique entailed choosing the required participants on the condition that they matched a desirable standard or possessed certain attributes (Etikan, 2016). This sampling technique was selected because it allowed the researcher to focus on the specific candidates (teachers) that provided answers to the research questions, and this is the desirable standard for this study (Ward & Guthrie, 2019). The sample size comprised ten teachers in the Foundation Phase. No specific criteria are used to derive an appropriate sample size for qualitative research; hence, in this study, the researcher assumed that data saturation would be reached with this sample size (Daniela, 2020).

5.6 Data Collection

Diviák (2019) defines data collection as a methodical manner of gathering and measuring information from many sources to obtain answers to different research questions. Data can be collected using primary and secondary methods. Figure 5.2 below depicts some of the data collection methods used in research.



Figure 5.2: Ways of data collection

Figure 5.2 illustrates that surveys, questionnaires, and interviews can collect primary data (Cooper, 2021; Durpin, 2020; Young, 2015). Data for this study was collected through semi-structured interviews, selected because they allow high-quality data collection, and the researcher has room to ask probing questions (Alshenqeeti, 2014; Lopez, 2013). Additionally, semi-structured interviews were selected because they are cost-effective as they can be done online; hence, there is no need to incur travel costs. These interviews were conducted virtually, and an interview guide was used to facilitate the interviews. Conducting semi-structured interviews as the primary data collection method ensured a comprehensive understanding of teachers' experiences and practices (Govender & Mbatha, 2018). Finally, these interviews allowed for flexibility and depth in exploring participants' insights on the subject matter compared to other data collection methods.

Semi-structured interviews were conducted electronically via Zoom or Teams. Interviews were conducted in English to investigate teachers' experiences and reflections on teaching Mathematics before and after using English as the language of learning and instruction (Park & Drennan, 2011). These interviews were conducted at convenient times, as determined by the respondents. Virtual interviews were chosen to economize on travel expenses (Steele et al., 2022). Each interview ran for 15 to 20 minutes and featured open-ended questions. A recording device was used to record all the interviews. These recordings will be kept on a password-protected hard drive for a

maximum of three years and will be destroyed thereafter. The recordings will be accessible to the researcher and the research supervisor only.

5.7 Data Analysis

Reviewing or modifying raw data to produce relevant information for use in qualitative or quantitative research applications is known as data analysis (Belotto, 2018). Qualitative data can be analysed using various methods, such as content analysis, discourse analysis, or thematic analysis (Neuendorf, 2018). The data analysis in this study was done using thematic data analysis. This method was selected because it enables precise examination of certain material and offers information on the data that can be utilised to address research issues (Bengtsson, 2016). Data analysis involved thematic analysis to identify recurring themes and patterns in teachers' experiences and practices (Williams et al., 2022). This method allows the researcher to focus on themes based on the coded data, and these themes will be derived and analysed in line with the outlined research objectives (Bengtsson, 2016). Finally, thematic data analysis was selected because it allows the researcher to gain a deep contextual understanding of the respondent's views on the subject matter. This enables the answering of the research questions. This implies that the method is useful in getting answers to close identified research gaps. Figure 5.3 below shows the thematic data analysis steps.

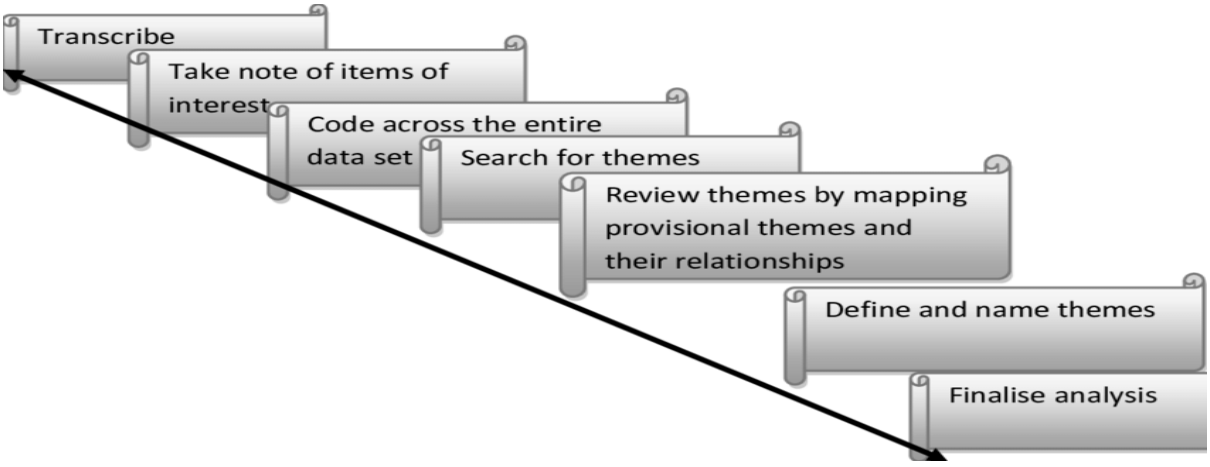


Figure 5.3: Thematic data analysis steps.

The researcher familiarised himself with the data and transcribed it, as shown in Figure 3.3. Afterward, the researcher arranged the data, coded it, and derived themes (Jnanathapaswi, 2021). These themes were reviewed and analysed, linking them to the research objectives of this study.

5.8 Elements of Trustworthiness

The principles of transferability, dependability, and confirmability were observed. Transferability quantifies the degree to which the study's findings can be used in different settings (Stahl & King, 2020). This study was achieved by providing in-depth details of the research site, sampling technique, and sample size. The consistency and dependability of the findings of your investigation are measured or shown via dependability (Kostjens & Moser, 2018). The goal of confirmability is to demonstrate the objectivity of a qualitative study. This was achieved by detailing the data analysis steps used in the study.

5.9 Ethical Considerations

In research, ethics refers to the different anticipated standards that must be followed, particularly when working with organizations and study participants (Glenna, Hesse, Hinrichs, Chiles, & Sachs, 2019). The following ethical considerations were met:

5.9.1 Seeking Permission

Permission to carry out research was obtained from the Department of Education. Additionally, the researcher got ethical approval from the University of Witwatersrand ethics committee. The local school used as a case study also approved the researcher's data collection through semi-structured interviews. Approval was sought from the SGB and principal.

5.9.2 Informed Consent

Participants signed informed consent forms, proving that they agreed to participate in the study voluntarily and that no remuneration or compensation was offered (Dankar et al., 2019). Only teachers who consented to participate in the study were interviewed.

5.9.3 No Harm or Injury

All the participants were not subjected to any harm or injury, and this was achieved by ensuring that all interviews were conducted virtually and that all participants did so in their safe environments (Chiumento et al., 2020).

5.9.4 Privacy and Confidentiality

In the research field, all the participants must have their privacy and confidentiality protected (Dankar et al., 2019: El Ouazzani & El Bakkali, 2018). In this study, all the participants were given pseudonyms to protect their identities. Personal information such as email addresses and physical details were not requested during interviews. This helped to keep them anonymous, and their information was only shared with my research supervisor. Therefore, these steps helped to ensure that privacy and confidentiality were achieved.

5.10 Conclusion

This chapter presented the research methodology. From the discussion, it was established that the study used the qualitative approach and the interpretivism paradigm. The study's target population was the Mathematics teachers at a primary school in Johannesburg South District. It was also established that purposive sampling was used to get the ten participants. A semi-structured interview guide was used for data generation, and all interviews were conducted virtually. Thematic data analysis was the method used to collect data from the field. All the different ethical values were discussed. The next chapter is going to be based on data analysis and presentation.

CHAPTER 6

DISCUSSION

6.1 Introduction

In this chapter, I offer a detailed examination of the data generated. As explained in Chapter Three, the data were interpreted qualitatively using thematic analysis. This chapter's data analysis and interpretation were guided by the research methodologies and questions outlined in the research design. Here, I investigated the participants' viewpoints, considering my purpose of researching curriculum adaptation methods and instructional practices used by Foundation Phase Mathematics teachers in the Johannesburg South District to accommodate learners with language issues. Based on my collected data, I describe numerous emerging themes from the participants' perspectives. I give their comments in a non-chronological order, carefully evaluating each demographic feature. I extracted themes and developed a detailed argument to provide the rich explanation required to satisfy the study objectives, culminating in a conclusion.

Gender Distribution

A total of ten (10) participants took part in this study. This is in line with the sample size outlined in chapter four. The response rate was, therefore, 100%, and data saturation was reached using the identified sample size. Regarding gender, seven female teachers and three male participants participated in the study. Figure 6.1 shows the graphical representation of the gender.

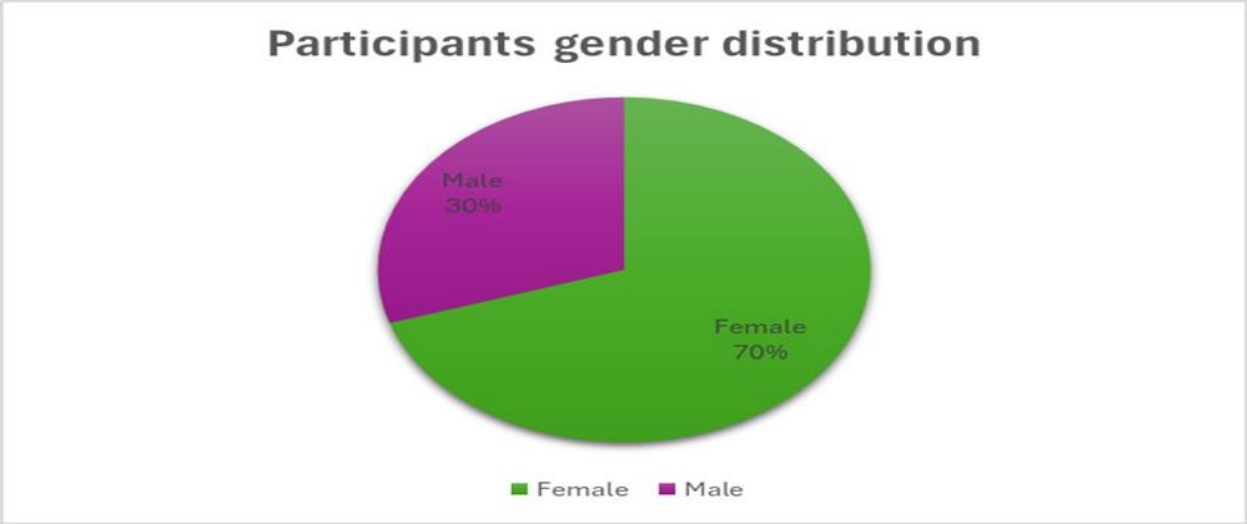


Figure 6.1: Gender distribution

Figure 6.1 shows that there were more female participants than males who taught Mathematics in the Foundation Phase. This could be explained by the fact that the schools in the Johannesburg South District are more female-dominated. All in all, the sample was sufficient to reach data saturation.

Positions of Participants

All the participants were qualified teachers with different experience levels. The next section presents their years of experience and educational qualifications.

Experience of workers

The ten participants had varying levels of experience. All the participants were given pseudonyms to fulfill the ethical values of privacy and confidentiality. Table 6.2 below provides more information on these aspects.

Table 6. 2: Assigned codes, experience and educational qualifications

Teacher	Pseudonym	Other positions	Age	Years of experience	Educational qualifications
Teacher 1	T1	Member of the entertainment committee	47	10	Postgraduate Certificate in Education
Teacher 2	T2	None	45	10	Bachelor of Education
Teacher 3	T3	None	29	5	Postgraduate Certificate in Education
Teacher 4	T4	None	48	5	Diploma in Education
Teacher 5	T5	None	49	3	Honours Inclusive Education
Teacher 6	T6	Grade R Lead teacher	46	6	Diploma in Education

Teacher 7	7	None	36	1	Honours in Educational management
Teacher 8	T8	None	43	4	Master's in education
Teacher 9	T9	None	29	2	Diploma in Education
Teacher 10	T10	Foundation Phase departmental head	49	8	Honours in Educational management

Table 6.2 shows that all the ten participants had unique experience levels, with the lowest being one year and the maximum being ten (10) years. This demonstrates that the participants who took part in the study had a variety of experiences and were knowledgeable enough to provide answers to the research questions. Finally, four out of ten participants held other positions in this school.

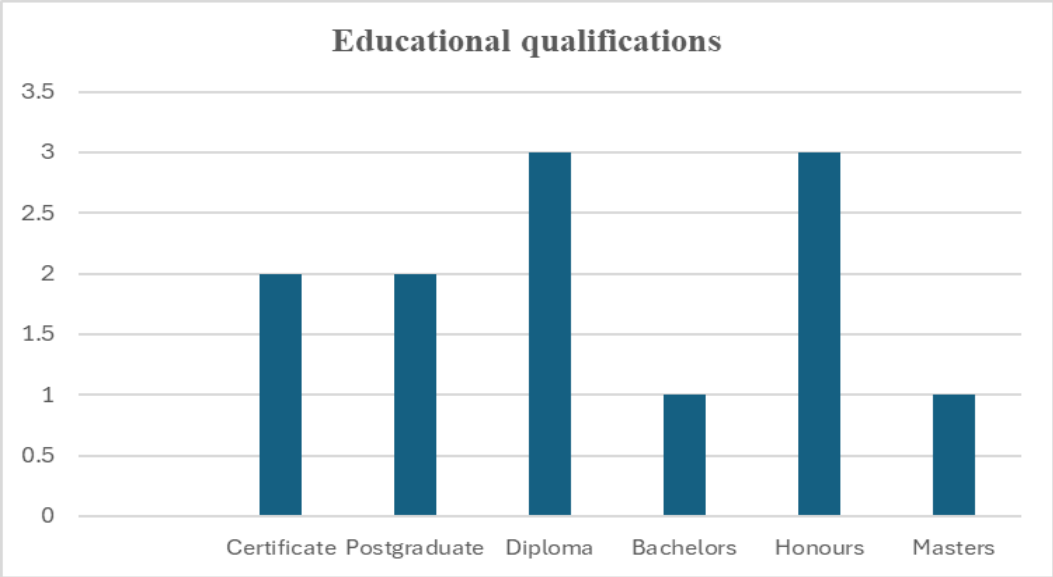


Figure: 6.2: Educational qualifications

Figure 6.2 shows the educational qualifications of the respondents. The lowest level was a diploma in education, and the highest qualification was a master's degree. Two participants had certificates in education, two respondents were postgraduate diploma holders, three had diplomas in education, one had a bachelor's degree, and one had a master's degree.

6.2 Data Analysis: Accounting for Teachers' Experiences of Adapting Mathematics Curricula

6.2.1 Learners' Experiences with Mathematical Learning

One of the most prevalent themes from the data is how teachers understood and made sense of learners' experiences while engaging in mathematical learning. The interviews showed that these experiences were deeply rooted in the school context and the wider community where learners come from. The interviewees highlighted issues related to classroom sizes and difficulties conversing in English, which is not commonly spoken in the District where the school is located. These issues not only made teaching Mathematics difficult, but they also had implications for how learners engaged with the subject. These were some of the participants' views:

> *Learners get bored easily because they lack the necessary language skills, so we use teaching aids (T1- interviewed June 2024). My experience is based on impacting the knowledge and skills l have to the learners,*
>
> *However, the environment has challenges, such as big classes and language problems (T3- interviewed June 2024).*
>
> *A lot of learners do not understand the mathematical language, and this is because they come from different backgrounds (T9- interviewed, June 2024).*
>
> *Number recognition is a great challenge, and these learners cannot express themselves in English; they prefer other languages, such as Sotho, making learning difficult (T 10- interviewed June 2024).*

The participants above also gave a glimpse of the sense teachers make of the learners' experiences in the classroom context. The above responses demonstrate that the learners' experience at the selected school in Johannesburg South District is characterised by challenges centered on the use of language in learning and the Foundation Phase Mathematics. These challenges make the teaching process difficult, as the teacher must deliver good educational service to the learners. All ten participants shared similar views on their educational experiences. Another important observation that emerged is that some of the needs of learners in Mathematics are also not addressed due to large classes. The response from participant 5 below supports this finding:

> *Our classes are too big, and we cannot meet all their needs as far as mathematics is concerned (T5- interviewed, June 2024).*

This means that teachers know these learners may continue their educational journey but have a poor foundation in Mathematics due to these challenges. These research findings are on par with the views of Green (2020; Maarman & Lamont-Mbawuli, 2017; Mesthrie, 2011), who established that teachers face a difficult task to teach learners due to curriculum demands and language

challenges. The study's results fit the theoretical framework quite nicely, especially Piaget's theory of cognitive development and Vygotsky's sociocultural theory. Language barriers make it difficult to teach Mathematics effectively, consistent with Vygotsky's focus on the social environment and the role of language in learning. Teachers in this study know that language barriers cause learners to struggle with mathematical ideas, affecting their basic mathematical comprehension. Teachers' responsibility to bridge the gap between students' native tongues and the medium of instruction (English) reflects Vygotsky's theory that language and social context significantly impact learning. Moreover, the findings are supported by Piaget's theory, which emphasises the significance of developmental stages and the integration of new information with existing knowledge. Because they cannot fully integrate Mathematical knowledge at the required stage, learners' cognitive development is limited when they cannot communicate mathematical concepts effectively due to language barriers. Therefore, the teachers' awareness of these difficulties is consistent with the theoretical knowledge that social context (language) and cognitive stages are important components of the learning process.

6.2.2 Teacher's Understanding of Learning Barriers

The second theme from the data is the teachers' understanding of learning barriers. The literature on learning barriers suggests that learning barriers affect the progress of educational institutions (Green, 2020; Heugh, 2018; Maarman & Lamont-Mbawuli, 2017). The theme demonstrates how teachers understood learning barriers in teaching Foundation Phase Mathematics. The data collected established that teachers understood learning barriers as the diverse challenges learners face in their learning process. This is supported by the responses below:

> *Big classes and linguistics challenges cause the inability to understand the language of learning mathematics, and we don't get support from parents to have a curriculum that supports multilingualism (T3- interviewed June 2024).*

> *This can hinder the learners from learning mathematics well, including language, culture, poor social support structures, and financial challenges. One of the problems here is the lack of parental support (T4- interviewed June 2024).*

The above responses demonstrate that in the context of mathematics teaching and learning, teachers understand learning barriers and refer to different challenges that limit children's ability to comprehend the learning of Mathematics fully. One crucial observation to note is that it was established that apart from language problems, other barriers are a lack of parental support,

financial challenges, and a lack of supportive social structures, such as family members, as noted by participant T4. Language problems, therefore, affect the learning process, which is at par with Piaget's theory of cognitive development in that language challenges can affect cognitive development (Lefa, 2014; Pakpahan & Saragih, 2022). Furthermore, other barriers were reported by the participants. It was also established that a lack of resources to use at school is a learning barrier. Therefore, the respondents also cited a unique challenge affecting learners: the lack of resources. Below is an extract of the responses from participants T8 and T9:

> *These challenges affect learners' understanding of what is being transferred to them in learning mathematics, which is caused by the fact that they come from different homes where they use African languages or their mother tongue, which is not English (T8-interviewed June 2024).*

> *A barrier is anything that stands in the way of learners; ultimately, they perform poorly. This caused by lack of timeous assessment, resources to use, Attention-deficit/hyperactivity disorder (ADHD), cultural and social issues, and language is the biggest cause. However, the lack of resources limits us from adapting the curriculum to suit the needs of the learners. (T9- interviewed June2024).*

The above responses further highlight that ADHD is another learning barrier. This is not a language barrier, but the participants raised it. This is also supported by participant T2, who pointed out that ADHD and dyslexia are also some of the barriers that affect the learning process of Mathematics in the Johannesburg South district. This implies that such a learning barrier adversely affects the learning process, and learners will not be active participants in their learning process, as outlined in Vygotsky's (1980) Constructivist Learning Theory:

> *A learning barrier is a condition that affects the process of learning more difficult. This can be caused by health conditions like ADHD, Dyslexia to mention a few. Secondly, the language barrier causes learners not to understand the language in which the subject is taught. Lastly, it will also show that the teacher's experience and his/ her knowledge of the subject can accommodate different learning styles of different learners. (T2- interviewed, June 2024).*

All ten participants cited language as a major learning barrier, though other challenges were reported. The fifth objective of the study was to understand and document the challenges faced by Foundational mathematics teachers in adapting the curriculum to accommodate multilingualism. The responses and explanations provided under themes 6.1 and 6.2 show that teachers lack resources, parental support, and institutional challenges such as lack of assessment. These challenges affect their ability to adapt the curriculum to accommodate multilingualism.

To add more on the main causes of these learning challenges, it was established that the factors vary, including the socio-economic status of the learners, inappropriate teaching methods,

overcrowding, and lack of motivation on the part of the learners. The issue of socioeconomic challenges established from the primary research links with Vygotsky's sociocultural theory discussed in Chapter 2. The theory outlined that the social character of learning resonates well with South African teachers working to eliminate language barriers and promote inclusive mathematics teaching (Heugh, 2012; Landsberg, 2019; Mc Lead, 2013). The responses below support the above sentiments:

> *Lack of readiness from the learner: The main factor is the learner's background and exposure. The learner coming from a disadvantaged environment will not be as ready as the learner coming from an environment with a lot of exposure. Also, limited cognitive abilities: the main factor is the different health condition that may hinder the positive progress of the learner. ADHD condition which usually affects the concentration of the learner is on example. (T10- interviewed June 2024).*
>
> *Inappropriate teaching methods: this points at the teacher training methods whether the equip in addition to that the teacher not being the teacher non the practical aspects fully. In addition to that the teacher not able to use different methods on a concept hence not catering for different learning styles of learners. (T4- interviewed June 2024).*

The responses show that the causes of learning challenges vary, and the teachers also face a tough time adapting to these challenges. All these challenges are complex and require a holistic approach to improve mathematics teaching at this school in Johannesburg South District. This holistic approach entails the provision of financial and non-financial resources. The research findings obtained in this study support the research findings of Heugh (2018) and Phahlele et al. (2022), who established that the South African educational sector is complex due to multilingualism, and this affects learners as they cannot articulate or meet the mathematical demands in the Foundation phase. Also, some challenges affecting learners are a lack of supportive structures, resources, discipline, language challenges, and learner attitudes (Mabena et al., 2021).

6.2.3 Coping Mechanisms Developed by Teachers

The data revealed that part of the experience of being a Foundation Phase Mathematics teacher in the school selected for the study entailed developing several strategies to deal with the challenges encountered in the classroom. In the thematic analysis of the data, these strategies were characterized as coping mechanisms related to attempts to manage challenging situations. The strategies used by teachers appeared to differ based on experience and level of education. However, all the participants appeared to prioritise planning their lessons regardless of their experience or education level. Other coping mechanisms teachers use include creating an inclusive learning atmosphere, group work, scaffolding, lesson preparation, and resource mobilization :

I prepare all my lessons, and l learn other teaching methods. These strategies are quite effective as we try to improve the learning process, although the language problem is challenging. (T1- interviewed June 2024).

I create a conducive environment for the learners by allowing them freedom of expression, and this is somehow effective. However, as l mentioned prior, the challenges we face are bigger, and this requires support from the Department of Education (T2- interviewed June 2024).

On my side, l reduce workload, plan my lessons, and allow code-switching to try and maneuver " on the language problem. These strategies are helpful as learners are getting better in mathematics performance (T5- interviewed June 2024).

Different strategies can be used; for example, l use scaffolding strategy which support the learners to learn new mathematic concepts; l also use some of my resources in teaching. These techniques are useful as there is some gradual improvement, but more can be done if we get more support from the school and the government (T6- interviewed June 2024).

In terms of effectiveness, it was established that these coping mechanisms are useful for teachers and benefit learners. All ten respondents cited that the coping mechanisms help to improve the learning process of mathematics, though more should and could be done to address the language barrier problem. Overall, in terms of the effectiveness of this coping mechanism used by teachers, it was established that all ten participants outlined that they are useful but, moreover, must be done to address some of the bigger challenges, such as language issues. These research findings are on par with the views of Mtunjani et al. (2018), who indicated that teachers could use mathematical manipulatives such as counting blocks to improve mathematics learning. This shows that mathematical manipulatives can be regarded as a coping mechanism to address Mathematics learning challenges. Participants T2 and T7 shared similar sentiments on creating an inclusive educational environment. The response from T7 below supports this:

I ensure that l create an inclusive environment for all learners using real-world examples. I believe they are working as there is a growing interest in mathematics, but language remains challenging (T7- interviewed June 2024).

These responses show that the teachers know the importance of inclusive education as they use different strategies to accommodate learners with language challenges to achieve inclusivity. One important finding from the data collected is that some teachers use screening of students to get help from the School-Based Support Team (SBST) and District-Based Support Team (DBST). The screening of students entails checking if the learners may be suffering from challenges that will impact their performance in mathematics. This shows some collaboration between the educators and the government departments:

For me l use the following: early identification or screening of learner's barriers and engage with the relevant stake holders whish are parents and the SBST and the DSBT, engage with a specialist from the school or the District and give learners extra support in areas of need through the support of the SBST guidance. I also use visual aids, gestures and body language as coping mechanisms. The strategies are effective but needs one to be patient and tolerant. Progress can be very minimum in the early days. The learner will gradually master the key words of the concepts and relate the meaning in his or her own (T7- interviewed June 2024).

One of the study's objectives was to explore curriculum adaptation methods and teaching practices Foundation Phase Mathematics teachers in the Johannesburg South district adopted to accommodate learners with language barriers. The various strategies outlined by teachers to achieve inclusivity respond to this issue of curriculum adaptation and contextualisation. Another research objective of the study was aimed at discovering the methods utilised by Foundational Mathematics teachers to accommodate multilingualism. Different methods were outlined prior that are used by the teachers, and this answers this research objective well.

6.2.4 Support

The thematic analysis also revealed that the support offered by the school also shaped teachers' experiences in dealing with language barriers in teaching Mathematics. The participants also reflected on the support they needed, which was not readily available at the school. Participants acknowledged that support was readily available at the managerial level, among fellow teachers, and at the DBST. However, more resources and teaching aids are needed to facilitate curriculum adaptation. Participants also highlighted that recognition and acknowledgment for their extra work in facilitating curriculum adaptation would be valuable. Responses from participants are presented below:

Yes, we get support from HOD. However, we need more resources, training programmes, tailor-made methods of assessment (T7- interviewed June 2024).

My support comes from peers or other educators, school management, cluster meetings l attend, and the head of department as well. We require recognition for hard work, more resources to use in teaching these learners with language problems, more classes to address overcrowding (30-35 per class is good) (T8- interviewed June 2024).

SBST supports addressing learners with language challenges, and we offer extra time to learners with challenges. But we need to be motivated with other non-financial incentives, for example rewards (T9- interviewed June 2024).

The school offers trainings, but they are not enough, DBST also comes to support us. But we need more training, more resources, more personnel to address language issues, technology must be availed, smart board systems are required as well T9- interviewed June 2024).

Another study objective was to understand the form of support provided to school-based support teams to assist Foundation phase mathematics teachers who teach learners with language barriers. Based on the responses above, the school offers teacher training, peer collaboration, DBST and SBST, and head-of-department support. These responses show that there is some level of support from the school system as far as the learning process of Mathematics is concerned, and this aligns with the research findings of Mpanza and Govender (2022), who posited that some schools in South Africa provide support to teachers and learners through the SBST. All ten participants agreed that the support is good, but the effectiveness of this support requires improvement. This improvement can be achieved by ensuring that education policies are implemented at all South African educational sector levels. Some of these policies, also discussed in Chapter 2, are The White Paper on Inclusive Education, Curriculum Assessment Policy Statements, and Language-in-Education Policy. It is also very key to note that any weakness of these policies should be dealt with to ensure meaningful progress in addressing, especially the issue of multilingualism in the Foundation Phase.

Some of the support needed by the teachers is in the form of providing educational and psychosocial support experts, parental involvement, use of Indigenous languages, more resources in the form of curriculum and financial support, and harnessing technology. This is also supported by the views of the participants cited below:

> *The school offers us forms where we assess the kids and if need be, we recommend further help, we get training on technology, Parental involvement was introduced. However, we need more resources from department that supports language development, more workshops that addresses the challenges we have (T3- interviewed June 2024).*
>
> *After identification of the challenges the teacher notifies the parent, and both work together in designing an individual support plan bearing in mind the language barrier as hindrance to better understanding of a mathematics concept. The teacher will use the methods mentioned earlier in proving the support. The learner then will be submitted to the SBST which does its own assessment and findings. The parent and the teacher are then both supported by the SBST. But we need the following, teacher training, more educational psychologist (T5- interviewed June 2024).*

It can, therefore, be concluded that there are different forms of support offered, and there is a need to ensure that the relevant stakeholders, such as the Department of Basic Education and school authorities, among others, work collaboratively to address the challenges of language faced in teaching Foundation Phase Mathematics. These research findings align with the views of Hazell

et al. (2019), who revealed that periodical training and ongoing professional support are essential for teachers who teach in the Foundation phase.

6.2.5 Adapting CAPS

The last theme derived from the data was centered around CAPS and the adjustments teachers had to make in using CAPS in their teaching. This theme provided an understanding of curriculum adaptation methods and teaching practices that respond directly to the use of CAPS by teachers at a school in Johannesburg South District. The responses from participants are presented below:

> *I am expected to follow the CAPS guidelines but without support from government and the school, language barrier cannot be solved completely. So, there is need for multi stakeholder collaboration which is lacking (T7- interviewed June 2024).*
>
> *Lack of change in annual teaching plans, institutional factors and external challenges such as the home backgrounds of these kids are key factors which affect us in addressing linguistic challenges (T7- interviewed June 2024).*
>
> *CAPS outlines that l must provide effective teaching, do assessments and improve educational service delivery. However, the key factors impacting is that the school keep receiving learners who have language problems, and this is a migration issue. The school cannot deny them education because it is their right, but migration issues are at the centre of this because some of these kids come from different countries and they are good in local languages and cannot use English. So, its complex (T8- interviewed June 2024).*
>
> *The curriculum is designed to cater for the diverse needs of learners, promoting equal opportunities for all but other challenges we cited must be addressed so that we can fully accommodate multilingualism or learners with diverse linguistic backgrounds. T8- interviewed (June2024).*

The above responses show that all the teachers know the CAPS requirements for teaching Mathematics. However, the key factors that affect curriculum adaptation in the efforts to accommodate multilingualism or learners with diverse linguistic backgrounds are institutional challenges, migration, lack of stakeholder engagement, and lack of resources, as well as other challenges cited in previous sections of this chapter. This answers the fourth research objective of this study. This implies that all these challenges must be addressed to solve linguistic challenges, which will improve Mathematics learning at a school in the Johannesburg South district. These research findings are similar to that of Mphahlele et al (2022), who researched the use of African language in teaching Mathematics in the Foundation Phase in the three South African provinces: North-West, Limpopo, and KwaZulu-Natal. The findings revealed that teachers faced three major challenges: multilingual learners and learners who were educated in English in preschool, English-

scripted lesson plans, and teacher training exclusively available in English (Mphahlele et al., 2022). Thus, all these challenges must be addressed to ensure increased Mathematics performance in the Foundation Phase.

The research gap identified in this study has been completely covered or solved. This implies that the overall aim of the study, which targeted to explore curriculum adaptation methods and teaching practices Foundation phase mathematics teachers in the Johannesburg South district adopted to accommodate learners with language barriers, was achieved. Based on this analysis, it can be concluded that teachers use different curriculum adaptation methods and teaching practices in the Foundation Phase of Mathematics to accommodate learners with language barriers, though more must be done to address the language challenges.

6.3 Policy Recommendations

This section provides policy recommendations. These policy recommendations are based on the research findings of this qualitative study. It is essential for the school in Johannesburg South District to address the language problems. This will help redress some educational challenges created during the apartheid era. Also, solving the language challenges will help increase South Africa's capacity to attain SDG 4 of quality education and other related SDG goals. From a broader spectrum, addressing language challenges helps reduce poverty in a non-deterministic way, and this will help in attaining the NDP 2030 goals. This is justified by the premise that language affects high-quality educational service delivery, and poverty encompasses access to education (Mihai et al., 2015; Muna, 2020). These policy recommendations are resource mobilization, infrastructure development, stakeholder engagement, training, and workshops.

6.3.1 Resource Mobilisation

There is a need for resource mobilization by the Department of Education and the government to ensure that the teachers' needs are met, which will help improve Mathematics learning. These resources will help pay psychosocial support experts. These experts are essential for helping learners with language problems.

6.3.2 Infrastructure Development

The study findings established limited classes, and overcrowding is a challenge. More classes are needed to accommodate the large numbers. This will help ensure that teachers give maximum

attention to learners, which may help improve performance in mathematics. This will also allow the teachers more time to deal with language problems that affect the learning of the Foundation Phase Mathematics.

6.3.3 Stakeholder Engagement

Many stakeholders are needed to solve the language and other challenges cited by the participants. Therefore, parents, educational departments, school authorities, civic organizations, and government departments should work collaboratively to address learners' challenges in the Foundation Phase Mathematics. This should be spearheaded by the teachers who have more detailed information on the nature of language problems they have. The rationale for involving teachers will address the problem by looking at the root cause. This may be very helpful to get tailor-made solutions.

6.3.4 Training and Workshops

Training and workshops are essential for teachers to gain more knowledge and expertise to improve teaching learners with language challenges. Therefore, it is recommended that the Department of Basic Education and the school in question organise these workshops. This will go a long way in improving learners' performance as far as the subject of mathematics is concerned.

6.4 Study Limitations

The study was limited to the schools used in Johannesburg only.

6.5 Areas for Further Research

Further studies can examine how language issues affect other schools in other South African provinces. It is critical to get an overview of how language affects the learning in the Foundation Phase Mathematics at the national level. This will also help formulate policy and improve Mathematics performance in South African educational institutions.

6.6 Conclusion

This chapter presents the data analysis and presentation. The key themes discussed were teaching experience, learning barriers and challenges in teaching Mathematics, coping mechanisms, nature of support, CAPS requirements, and adaptation. The findings from the study indicated that teachers at a school in Johannesburg South District have different experiences in teaching Mathematics in the Foundation phase. However, one common challenge they all faced was multilingualism. It was

also established that language is the biggest learning barrier affecting Foundational phase learners. In terms of support, it was discovered that some form of support is offered through the SBST and the DBST, though it is insufficient to address multilingualism. The next chapter, Chapter 5, will be based on a study summary, a conclusion, and policy recommendations.

CHAPTER 7
CONCLUSION

7.1 Introduction

This chapter presents a summary of the study, addresses the research questions, discusses the findings, outlines the implications of the results, and offers recommendations for future research. The recommendations are based on the study's findings and participants' comments. Additionally, this chapter highlights the study's limitations and concludes with a final reflection on the research.

7.2 Summary of the Study

The study examined language barriers affecting Mathematics education in a school within the Johannesburg South District. It reviewed key policies such as the Curriculum Assessment Policy Statements (CAPS), Language-in-Education Policy, Inclusive Education Policy, and the National Strategy for Mathematics, Science, and Technology Education (Adekunbi Ojo & Mathabathe, 2021; Department of Basic Education, 2011). Despite these policies being in place for over two decades, language remains a major challenge in Mathematics education, particularly for learners from historically marginalised linguistic groups, as English is the primary language of instruction (Department of Basic Education, 1997; Mataka et al., 2020). The study highlighted that language barriers negatively affect learner performance and that more inclusive teaching and assessment strategies are needed to support these learners effectively (Witwoski, 2021; Mabena, 2021).

7.3 Research Questions

The study was guided by the following research questions:

- What form of support is provided to school-based support teams to assist Foundation phase Mathematics teachers who teach learners with language barriers?
- What methods do teachers adopt to accommodate multilingualism in Foundation phase Mathematics classrooms?
- What factors affect curriculum adaptation to accommodate multilingualism or learners with diverse linguistic backgrounds?
- What challenges do Foundation phase Mathematics teachers face in adapting the curriculum to accommodate multilingualism?

7.4 Findings

Data collected from teacher interviews revealed several themes:

- **Language and Other Learning Barriers:** Apart from language issues, learners face lack of parental support, financial challenges, and limited social support structures, all of which hinder Mathematics learning in the Johannesburg South District.
- **Teacher Coping Mechanisms:** Teachers use strategies such as fostering inclusive learning environments, encouraging group work, scaffolding lessons, thorough lesson preparation, and resource mobilisation to address these challenges.
- **Support Structures:** The school offers teacher training, peer collaboration, and support from the District-Based Support Teams (DBST), School-Based Support Teams (SBST), and heads of department. These forms of support alleviate some language challenges but require further enhancement.
- **Curriculum Adaptation and CAPS:** Institutional barriers, migration, insufficient stakeholder participation, and resource limitations impede curriculum adaptation needed to accommodate multilingual learners.

7.5 Implications of the Results

The study's findings reveal that language barriers in Mathematics are complex and intertwined with socio-economic and institutional factors. To improve learner outcomes, holistic interventions are needed that extend beyond the classroom, including enhanced parental involvement and improved resource allocation. Policy implementation, particularly regarding CAPS, must be flexible to address linguistic diversity effectively. Educators require ongoing support to develop inclusive pedagogical strategies that mitigate language challenges in Mathematics learning.

7.6 Recommendations for Future Research

Recommendations for Future research :

- Evaluating the effectiveness of specific language support interventions in Mathematics classrooms.
- Investigating the role of parental involvement in supporting multilingual learners.

- Examining how CAPS and other policies can be adapted more flexibly to meet the needs of linguistically diverse classrooms.
- Conducting longitudinal studies to assess the long-term impact of language barriers on learner achievement.

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APPENDIX A

Participation Information Sheet: Observation and Interviews

Dear Sir /Madam

My name is Nonkie Madonsela, and I am a master's student in the Wits School of Education at the University of the Witwatersrand, Johannesburg. I am researching Creating Access and Inclusion for Learners with Language Barriers: Exploring Teacher's Experiences of Aligning Foundation Phase Mathematics Curricula with the Curriculum Assessment Policy Statement in the Foundation Phase under the supervision of Dr Tebello Letseka.

I am inviting you to take part in an interview. If you decide to participate, you will participate in this research study by participating in an online interview of 15-20 minutes.

Permission to record the interview for this research would be appreciated. This information will be kept on my password-protected laptop until I finish my certification, at which point it will be erased. The data will only be accessible to my supervisor and me as the researcher. The data will be erased after three years of completing the study. The interview will be anonymous and confidential. I promise not to disclose your name or any other information that could be used to identify you when I present the research study's findings.

Your decision to participate in the research study should be based on your desire to volunteer. You are not required to participate. You may withdraw from the study at any moment. If you choose not to, you must not respond to any questions. If you decide to participate in the research study, you will not directly gain from it. If you choose not to join, you will not forfeit any services, advantages, or privileges you would typically enjoy. Participating in the research project is free of charge. There is no compensation for participating in this research project.

The dangers associated with this research study are no greater than those associated with daily living. I will end the interview immediately and reschedule if you have any doubts. A research report about this study will be published. The report can be viewed on the university library's website. I will be pleased to email you a summary of this study if it interests you.

If you have any questions during or after this research study, please contact me or my supervisor using the details listed below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), by telephone at +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,

Nonkie Madonsela

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APPENDIX B

Google Form Questions and Consent Form



Title: **Creating Access and Inclusion for Learners with Language Barriers: Exploring Teacher's Experiences of Aligning Foundation Phase Mathematics Curricula with the Curriculum Assessment Policy Statement**

Name of Researcher: Nonkie Madonsela

Question	**Response**
1. Do you agree that the research study was explained to you?	YES/NO
2. Do you understand what this study is about?	YES/NO
3. Do you agree that your participation will remain anonymous (your name will not be used in my final research report)?	YES/NO
4. Do you agree to be a part of this study?	YES/NO
5. Please fill in your full name	ANSWER

APPENDIX C

Consent Form: Semi-Structured Interview



SEMI -STRUCTURED INTERVIEW GUIDE

I am Nonkie Madonsela, a student studying towards a Master of Inclusive Education in the Department of Humanities at the University of Witwatersrand; I am conducting a study on research entitled: Creating Access and Inclusion for Learners with Language Barriers: Exploring Teacher's Experiences of Aligning Foundation Phase Mathematics Curricula with the Curriculum Assessment Policy Statement under the supervision of Dr Tebello Letseka.

All information is for academic purposes only. Thank You!

Time: Approximately 20 -40 minutes

Name of field worker: Nonkie Madonsela **Contacts:** 083 209 0292

Section A: Biographical information.

(1) Age: ……

(2) Gender: Female Male

(3) Position at work: ……

(4) Years of experience: 3 years

(b) Qualification: Diploma Honours Masters PhD Other (clarify)

Section B: Teaching Experiences

(5) What can you comment about your experience in teaching mathematics at the Foundation phase?

(6) Are there any challenges that you face in teaching mathematics in the Foundation phase?

(7) Explain more about what you think are the main underlying issues on the causes of these challenges.

Section C: Coping Mechanisms

(8) What coping mechanisms have you deployed to deal with the challenges?

(b) How effective are these strategies?

(9) Is there any form of support that you receive from the school?

(b) How effective is the support?

(10) Is there any other form of support you receive from the educational department and comment on the effectiveness of?

(11) What form of other support do you think is required to solve the challenges you cited?

APPENDIX D

School Permission Form



Date 15/03/2024

To the School Principal

476 Grace drive

Kanana Park

Johannesburg

1829

Good day Tiisetso Bekezela Management Committee

I am Nonkie Madonsela a student studying towards a Master of Inclusive Education in the Department of Humanities at the University of Witwatersrand, am conducting a study on research entitled: Creating Access and Inclusion for Learners with Language Barriers: Exploring Teacher's Experiences of Aligning Foundation Phase Mathematics Curricula with the Curriculum Assessment Policy Statement under the supervision of Dr Tebello Letseka.

The study aims to gain an understanding of the teacher experiences they face in teaching mathematics in the Foundation phase. Since your school is situated in an area that has more learners who use different local languages, it is therefore deemed a good fit for this research. I therefore kindly request permission to carry out my research in your school and use teachers in the Foundation phase as the research participants.

This research study will only involve voluntary participation from interview subjects; no one will be pressured or compelled to participate. Interviewees are free to end the session at any moment and decline to answer any further questions. Additionally, interviewees have the option to respond to some questions alone and ignore others, or to respond to only a portion of the questions posed. If individuals opt to participate in the research study, they won't directly gain from it, and if they choose not to participate, they won't lose any services, benefits, or privileges that they would typically enjoy.

A research report will be published about this study. The report can be viewed on the website of the university library. After I'm done, I'll provide the school with a PDF copy of my research report as well as a link. If the school asks for a hard copy, I will print one as well.

Please feel free to contact my supervisor or me using the information provided below if you have any questions at any point during or after this research study. Please contact the University Human Research Ethics Committee (Non-Medical) at +27(0) 11 717 1408, or email hrecnon-medical@wits.ac.za, if you have any questions or complaints regarding the ethical protocols of this research study.

Yours sincerely,

Nonkie Madonsela

Researcher:

Nonkie Madonsela 2769675@students.wits.ac.za ; 083 209 0292

Supervisor:

Dr Tebello Letseka; tebello.letseka@wits.ac.za; 011 717 3096

APPENDIX E

GDE Request Form

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GDE RESEARCH REQUEST FORM

REQUEST TO CONDUCT RESEARCH IN INSTITUTIONS AND/OR OFFICES OF THE GAUTENG DEPARTMENT OF EDUCATION

1. PARTICULARS OF THE RESEARCHER

1.1	**Details of the Researcher**
a) Surname and Initials:	Madonsela N
b) First Name/s:	Nonkie
c) Title (Prof/Dr/Mr/Mrs/Ms):	Mrs
d) Student Number:	***2769675***
e) SA ID Number:	9311040633085
f) Work permit no. (If not SA citizen)	N/A

1.2	**Private Contact Details**
a. Home Address	***c. Postal Address (if different)***
27 Sardinha Park, Shearwater Road	Same as Home Address
Wilgeuwel, Roodepoort	

b. Postal Code: 1724	***d. Postal Code:***
e. Tel: N/A	***f. Cell: 0832090292***
g. Fax: N/A	***h. E-mail: 2769675@gmail.com***

2. PURPOSE & DETAILS OF THE PROPOSED RESEARCH

2.1	*Purpose of the Research (Place a cross where appropriate)*
Undergraduate Study – Self	
Postgraduate Study – Self	**X**
Private Company/Agency – Commissioned by Provincial Government or Department	
Private Research by Independent Researcher	
Non-Governmental Organisation	
National Department of Education	
Commissions and Committees	
Independent Research Agencies	
Statutory Research Agencies	
Higher Education Institutions only	

2.2	*Full title of Thesis / Dissertation / Research Project*
Creating Access and Inclusion for Learners with Language Barriers: Exploring Teacher's Experiences of Aligning Foundation Phase Mathematics Curricula with the Curriculum Assessment Policy Statement	

2.3	**Value of the Research to Education (Attach Research Proposal)**
• To promote inclusive education in a South African context	
• To tackle the issue of language in relation to inclusive education.	
• To influence policy on inclusive education.	

2.4	**Date**
***a. Estimated date of* completion of research in GDE Institutions**	26/7/2024
***b. Estimated date of* submission of Research Report /Thesis/Dissertation and Research Summary to GDE:**	9/9/2024

2.5	**Student and Postgraduate Enrolment Particulars**
a. Name of institution where enrolled:	University of the Witwatersrand
b. Degree / Qualification:	Master of Education in Inclusive Education
c. Faculty and Discipline / Area of Study:	Wits School of Education, Faculty of Humanities
d. Name of Supervisor / Promoter:	Dr Tebello Letseka

2.6	**Employer (or state Unemployed / or a Full Time Student):**
a. Name of Organisation:	Tiisetso-Bekezela Primary School
b. Position in Organisation:	Mathematics Teacher
c. Head of Organisation:	Mrs M.A Letseleha
d. Street Address:	476 Grace drive, Kanana Park
	Johannesburg
e. Postal Code:	1824
f. Telephone Number (Code + Ext):	010 230 0928
g. Fax Number:	N/A
h. E-mail address:	Bekezela2011@gmail.com

2.7	**PERSAL Number (GDE employees only)**

2	5	7	0	1	6	2	2

3. PROPOSED RESEARCH METHOD/S

(Please indicate by placing a cross in the appropriate block whether the following modes would be adopted)

3.1 ***Questionnaire/s (If Yes, supply copies of each to be used)***

YES		**NO**	**X**

3.2 ***Interview/s (If Yes, provide copies of each schedule)***

YES	**X**	**NO**	

3.3 ***Use of official documents***

YES		**NO**	**X**
If Yes, please specify the document/s:			

3.4 ***Workshop/s / Group Discussions (If Yes, Supply details)***

YES		**NO**	**X**

3.5 ***Standardised Tests (e.g. Psychometric Tests)***

YES		**NO**	**X**
If Yes, please specify the test/s to be used and provide a copy/ies			

4. INSTITUTIONS TO BE INVOLVED IN THE RESEARCH

4.1 ***TYPE and NUMBER of Institutions (Please indicate by placing a cross alongside all types of institutions to be researched)***

INSTITUTIONS	**Write NUMBER here**
Primary Schools	X
Secondary Schools	
ABET Centres	
ECD Centres	
LSEN Schools	
Further Education & Training Institutions	
Districts and/or Head Office	

4.2 **Name/s of institutions to be approached for research (Please complete on a separate sheet if space is found to be insufficient).**

Name/s of Institution/s
Tiisetso Bekezela Primary School

4.3 **District/s where the study is to be conducted**. ***(Please indicate by placing a cross alongside the relevant district/s)***

District/s			
Ekurhuleni North		*Ekurhuleni South*	
Gauteng East		***Gauteng North***	
Gauteng West		***Johannesburg Central***	
Johannesburg East		***Johannesburg North***	
Johannesburg South	***X***	***Johannesburg West***	
Sedibeng East		***Sedibeng West***	
Tshwane North		***Tshwane South***	
Tshwane West			

If Head Office/s (Please indicate Directorate/s)

4.4 The approximate number of learners to be involved per school (Please indicate the number by gender: M- Male and F- Female)

Grade	ECD		1		2		3		4		5		6	
Gender	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Grade	7		8		9		10		11		12	
Gender	M	F	M	F	M	F	M	F	M	F	M	F
Number	0	0	0	0	0	0	0	0	0	0	0	0

4.5 The approximate number of ECD Practitioners/educators/officials involved in the study (Please indicate the number in the relevant column)

Type of staff	Educator/s	ECD Practitioner/s	HODs	Deputy Principal/s	Principal/s	Office-Based Officials
Number	*10*			*1*	1	

4.6 Letters of Consent (Attach copies of Consent letters to be used for Principal, SGB and all participants. For learners also include parental consent letter)

4.7 Are the participants to be involved in groups or individually?

Groups		***Individually***	**X**

4.8 Average period each participant will be involved in the test or other research activities (Please indicate time in minutes for ALL participants)

Participant/s	Activity	Time
Foundation phase Teachers	Semi-structured	Approximately 40 minutes

4.9 Time of day that you propose to conduct your research.

SEE Condition 5.4 on Page 7

4.10 School term/s during which the research would be undertaken

First Term		Second Term	**X**	Third Term	

5. CONDITIONS FOR CONDUCTING RESEARCH IN GDE

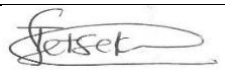
Permission <u>may be granted</u> to proceed with the above study subject to the conditions listed below being met and permission may be withdrawn should any of these conditions be flouted:

1) ***The District/Head Office Senior Manager/s concerned, the Principal/s and the chairperson/s of the School Governing Body (SGB.) must be presented with a copy of this letter.***
2) ***The Researcher will make every effort to obtain the goodwill and cooperation of the GDE District officials, principals, SGBs, teachers, ECD Practitioners, parents, and learners involved. Participation <u>is voluntary</u> and additional remuneration will not be paid;***
3) ***Research may only commence from the second week of February and must be concluded by the end of the THIRD quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.***
4) ***Because of COVID-19, pandemic researchers can ONLY collect data online, telephonically, or may make arrangements for Zoom with the school Principal. Requests for such arrangements should be submitted to the GDE Education Research and Knowledge Management directorate. The approval letter will then indicate the type of arrangements that have been made with the school.***
5) ***The Researchers are advised to make arrangements with the schools via Fax, email, or telephonically with the Principal.***
6) ***Research may only be conducted <u>BEFORE or AFTER</u> school hours so that the normal school program is not interrupted. The Principal and/or Director must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.***
7) ***Items 3 and 6 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and paid for by the Gauteng Department of Education.***
8) ***It is the researcher's responsibility to obtain written consent from the SGB/s; principal/s, educator/s, ECD Practitioners, parents, and learners, as applicable, before commencing with research.***
9) ***The researcher is responsible for supplying and utilizing his/her research resources, such as stationery, photocopies, transport, faxes, and telephones, and should not depend on the goodwill of the institution/s, staff, and/or the office/s visited for supplying such resources.***
10) ***All research conducted in GDE Institutions is anonymous. The names and personal details of the GDE officials, schools, ECD Centres, principals, parents, teachers, ECD Practitioners and learners that participate in the study may neither be asked nor appear in the research title, report/thesis/ dissertation, or GDE Research Summary.***
11) ***On successful completion of the study, the researcher must supply the Director: of Education Research and Knowledge Management, with electronic copies of the Research Report, Thesis, and Dissertation as well as a Research Summary (on the GDE Summary template). Failure to submit these documents may result in future permission being withheld, or a fine imposed for BOTH the Researcher and the Supervisor.***
12) ***Should the researcher have been involved with research at a school, ECD Centres, and/or a district/head office level, the Director/s and school/s concerned must also be supplied with a GDE Summary.***

13) The researcher may be expected to provide short presentations on the purpose, findings, and recommendations of his/her research to both GDE officials and the schools concerned;

6. DECLARATION BY THE RESEARCHER	
6.1 I declare that all statements made by myself in this application are true and accurate.	
6.2 I have read, understand and accept ALL the conditions associated with the granting of approval to conduct research in GDE Institutions and I undertake to abide by them. I understand that failure to comply may result in permission being withdrawn, further permission being withheld, a fine imposed and legal action may be taken against me. This agreement is binding.	
6.3 I promise once I have completed my studies, (before graduation) or on successful project completion, to submit electronic copies of my Research Report / Thesis / Dissertation as well a GDE Summary on the GDE template sent to me with my approval letter or found on www. education.@gpg.gov.za	
Signature:	
Date:	22/01/2024
7. DECLARATION BY SUPERVISOR / LECTURER / PROMOTER	
7.1 I declare that: (Name of Researcher) : Nonkie Madonsela	
7.2 is enrolled at the institution / employed by the organisation to which the undersigned is attached.	
7.3 The questionnaires / structured interviews/tests meet the criteria of: • Educational Accountability;	

• Proper Research Design; • Sensitivity towards Participants; • Correct Content and Terminology; • Acceptable Grammar; • Absence of Non-essential / Superfluous items; • Ethical clearance
7.4 The student/researcher has agreed to ALL the conditions of conducting research in GDE Institutions and will abide by them.
7.5 I will ensure that after successful completion of the research degree/project/study an electronic copy of the Research Report / Thesis / Dissertation and a Research Summary (on the GDE template) will be sent to the GDE. Failure to submit the Research Report, Thesis, Dissertation, and Research Summary may result in: permission being withheld from BOTH the student and the Supervisor in the future and a fine may be imposed.

7.6 Surname of the Supervisor :	Letseka
7.7 First Name/s of the Supervisor :	Tebello
7.8 Title:	Dr
7.9 Institution / Organisation:	Wits School of Education – University of the Witwatersrand
7.10 Faculty / Department:	Humanities
7.11 Telephone:	+2711 717 3096
7.12 E-mail address:	Tebello.letseka@wits.ac.za
7.13 Signature:	
7.14 Date:	*15/03/2024*

ANNEXURE A: **GROUP RESEARCH**

This information must be completed by every researcher/student/field worker who will be visiting GDE Institutions for research purposes, besides the main researcher who applied and the Supervisor/ lecturer / Promoter of the research.

By signing this declaration, the researcher/students/fieldworker accepts the conditions associated with the granting of approval to conduct research in GDE Institutions and undertakes to abide by them.

Supervisor/ Promoter / Lecturer's Surname and Name……

DECLARATION BY RESEARCHERS / STUDENTS:

Surname & Initials	Name	Tel	Cell	Email address	Signature

N.B. This form (and all other relevant documentation where available) may be completed and forwarded electronically to Gumani.Mukatuni@gauteng.gov.za, please copy (cc) ResearchInfo@gauteng.gov.za. The last 2 pages of this document must however have the original signatures of both the researcher and his/her supervisor or promoter. It should be scanned and emailed, posted, or hand-delivered (in a sealed envelope) to Mr. Gumani Mukatuni, 7th Floor Marshal Street, Johannesburg. All inquiries about the status of research requests can be directed to Mr Gumani Mukatuni and/or Ms Busi Mchunu on tel. no. 011 355 0775/1379.