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The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language

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UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Masters Research Dissertation.

The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language.

By

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A research study submitted to the Wits School of Education, Faculty of Humanities, University of Witwatersrand in fulfilment of the requirements for the degree of

MASTERS OF EDUCATION (M Ed)

2024

Declaration.

I **Thato Shumba (1911233),** hereby declare that this research project ***Monolingual pedagogies as a contributing factor in the academic performance of grade 4 learners learning in an additional language different from their mother-tongue*** is my own work. It is being submitted as part of the Master's degree at the University of the Witwatersrand, Johannesburg. This dissertation has not been submitted for any other degree or examination at any other university. According to the APA style of citing, I have provided a comprehensive list of references that are in alphabetical order. I understand the consequences should the university discover that the work submitted is not my own or fail to acknowledge any of the sources or ideas which are not of my own.

T.J Shumba



30 January 2024.

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Abstract.

Within the South African educational landscape, a critical challenge arises when transitioning to an additional language as the sole medium of instruction. This hasty embrace often neglects the crucial development of both Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP) in the learners' first languages, also known as their mother tongue. This oversight is particularly concerning when implemented as early as grade four, as the pressure of globalization often dictates a swift shift from mother tongues to English as the primary language of instruction. This abrupt linguistic transition exacerbates existing educational disparities, highlighting the urgent need for a critical examination of language policies and their practical implementation within South African schools. This study employed a mixed-methods approach to investigate whether monolingual pedagogies contribute to the academic performance of Grade 4 learners studying in an additional language (English) different from their mother tongues. The research took place in a township school in Kaalfontein, predominantly populated by Black African learners with no prior exposure to English outside the classroom setting. The mixed-method design involved two key data sources: a sample of approximately 140 learners divided into control and experimental groups, and a range of data collection tools. Both groups participated in pre- and post-test assessments to gauge their academic progress in English, while the experimental group received additional interventions employing translanguaging and multilingual pedagogy approaches. These approaches deliberately intertwined learners' home languages with English in the learning process. Data from classroom observations and semi-structured interviews with participants further enriched the study.

Quantitative data from the written tests was analysed using R-computing software, while interview responses were analysed through Glaser and Laudel's model of grounded theory. The paired t-test revealed statistically significant differences in post-test performance between the groups, favouring the experimental group. This suggests that the translanguaging and multilingual interventions positively impacted learners' academic performance in English, providing them with a valuable bridge between their home languages and the language of instruction. This study's findings offer compelling evidence that monolingual pedagogies may not be the optimal approach for learners acquiring an additional language. By incorporating translanguaging and multilingual strategies, educators can leverage learners' existing linguistic

resources, fostering deeper understanding and ultimately improving academic outcomes in diverse educational settings.

Key terms: Academic achievement, Critical race, culturally responsive teaching, Informal settlement, intermediate phase, Language acquisition, monolingual, mother-tongue, multilingual, translanguaging.List of Abbreviations:

BICS……. Basic Interpersonal Communication Skills

CALP ……Cognitive Academic Language Proficiency

DoE ……...Department of Education

HL ……. Home-Language

IQ ……Intelligent Quotient

L1…….. First Language

L2…… Second Language

LiEP …… Language in Education Policy

LoLT ……... Language of Learning and Teaching

PIRLS……. Progress in International Reading Literacy Study

SSCE ……. Senior Secondary Certificate Examination

TIMSS…… Trends in International Mathematics and Science Study

TL……. Translanguaging

WAEC…….... West African Examination Council

Table of Content.

DECLARATION. ..... **II**

ACKNOWLEDGEMENTS ..... **III**

ABSTRACT. ..... **IV**

KEY TERMS: V

LIST OF ABBREVIATIONS: V

LIST OF FIGURES ..... **IX**

LIST OF TABLES. ..... **IX**

LIST OF APPENDIXES ..... **X**

CHAPTER 1: **1**

1.1 INTRODUCTION AND STUDY BACKGROUND. 1

1.2. PROBLEM STATEMENT. 2

1.3. STUDY RATIONALE. 3

1.4. THEORETICAL FRAMEWORK. 4

1.4.1 Critical Race Theory (CRT) *4*

1.4.2. Cummins Interdependent Model. *5*

1.4.3. Justification for theoretical frameworks. *5*

1.5 RESEARCH QUESTIONS 7

1.5.1. The main research questions for the study: *7*

1.6. HYPOTHESIS. 7

1.7. RESEARCH AIMS AND OBJECTIVES. 8

1.7.1. The specific objectives of the study are: *8*

1.8. CLARIFICATION OF CONCEPTS. 8

1.9. RESEARCH DESIGN AND METHODOLOGY. 10

1.9.1. Research Paradigm *10*

1.9.2. Research methodology. *11*

1.10. RESEARCH DESIGN. 11

1.10.1. Mixed Methods Research Design: *11*

1.11. Research sampling. *13*

1.12. DATA COLLECTION. 14

1.12.1. Quantitative Research *14*

1.12.2. Qualitative Research collection method. *14*

1.13. DATA ANALYSIS. 15

1.13.1. Qualitative Data Analysis *15*

1.13.2. QUANTITATIVE DATA ANALYSIS 15

1.14. RESEARCH ETHICS. 16

1.15. LIMITATIONS OF THE STUDY. 19

1.16. ETHICAL CLEARANCE. 19

1.17. CHAPTER OUTLINE. 19

1.18. CONCLUSION. 20

CHAPTER 2: LITERATURE REVIEW **21**

2.1. INTRODUCTION. 21

2.2. LITERACY DEVELOPMENT IN SOUTH AFRICA. 21

2.3. EDUCATION AND LANGUAGE RIGHTS NATIONALLY AND GLOBALLY. 22

2.4. The detrimental effects of using a foreign language as the sole language of instruction in classrooms..... 24
2.5. Language Acquisition and Educational Success: Translanguaging and multilingual pedagogy reinforcement. 26
2.6. Language Barriers and their Impact on the academic performance of African leaners. 28
2.7. Culturally Responsive Teaching. 29
2.8. Colonial language as an instrument of power. 30
2.9. Conclusion. 34

CHAPTER 3: RESEARCH METHODS AND DESIGN. 35

3.1 Introduction. 35
3.2 Research method. 35
3.3 Research paradigm. 35
3.3.1. Questioning Dominant Discourses: 35
3.3.2. Understanding Power Imbalances: 35
3.4 Research design 36
3.5 Research Site. 37
3.6 Population. 37
3.7 Sampling Technique. 38
3.8 Sample. 39
3.9 Data collection. 40
3.9.1 Mixed-methods research. 40
3.9.2 Unit of analysis. 44
3.9.3 Unit of observation. 44
3.9.4 Data analysis. 45
3.9.5 Quality assurance of Qualitative and Quantitative Data. 47
3.10. Ethical considerations. 50
3.11. Conclusion. 51

CHAPTER 4: DATA PRESENTATION, INTERPRETATION AND ANALYSIS. 52

4.1. introduction. 52
4.2. Data presentation and analysis. 53
4.3 Quantitative Analysis. 54
4.3.1. Null hypothesis. 54
4.3.2. Alternative hypothesis. 55
4.4. Pre-test Analysis. 56
4.5. Intervention. 60
4.6. Post-test analysis. 61
4.7. Test reliability. 62
4.8 Qualitative data analysis: Observations. 77
4.8.1.: Emerging themes for observations 78
4.9. Analysis of qualitative data: Interviews. 83
4.9.1 Emerging themes for interviews. 87
4.10. Summary of research findings: 100
4.10.1 Pre-test. 100
4.10.2. Post-test. 101
4.11. Discussion of research findings: Quantitative and Qualitative. 102
4.12. Chapter Summary. 110
4.13. Conclusion. 111

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS. 113

5.1. INTRODUCTION. 113
5.2 CHAPTERS OVERVIEW. 115
5.3 SUMMARY OF RESEARCH FINDINGS. 124
5.3.1. Pre-test. *124*
5.3.2. Post-test. *125*
5.3.3. Qualitative data (Observations). *126*
5.3.4. Interviews. *127*
5.4 RESEARCH CONCLUSIONS. 128
5.5 RECOMMENDATIONS. 135
5.6 AVENUES FOR FURTHER RESEARCH. 144
5.7 CONCLUDING REMARKS. 145
REFERENCE LIST: 147

List of Figures

Figure 3.1 Triangulation of mixed method design…….…….36

Figure 3.2 Credibility of qualitative data…..……47

Figure 4.1 Control group pre-test marks…….…..…57

Figure 4.2 Experimental group pre-test marks…….……58

Figure 4.3 Experimental and control group pre-test marks…….…..59

Figure 4.4 Experimental group post-test marks…….67

Figure 4.5 Experimental group pre and post-test marks……..……..68

Figure 4.6 Control group post-test marks……...……70

Figure 4.7 Control group pre and post-test marks……..……71

Figure 4.8 Experimental and control group post-test marks……..…….74

Figure 4.9 Summary of data collection process……...……...86

List of tables.

Table 3.1 Break down of population sample…….40

Table 4.1 A statistical analysis of the experimental group and control group pre-test results, dependent t-test statistic…….60

Table 4.2 Question 2 to 3, broken down into 6 MCQ's for question 2 and 5 MCQ's for question 3, Experimental group……..63

Table 4.3 Individual question analysis……..……..64

Table 4.4 Question 3, experimental group……..…65

Table 4.5 Continuation……66

Table 4.6 A statistical analysis of the experimental groups pre and post-test results: Dependent t-test statistics……..……..……69

Table 4.7 A statistical analysis of the control groups pre and post-test results, dependent t-test statistics……72

Table 4.8 A statistical analysis of the experimental and control groups post-test results, dependent t-test statistics……..……75

List of Appendixes

Appendix A Letter to the principle ……156

APPENDIX B Teachers information sheet……..159

APPENDIX C Learners information letter……..162

APPENDIX D Information letter to the parents/Guardian…….…….164

APPENDIX E Consent letter for teachers……..…….166

APPENDIX F Parents/guardian consent form……..…..……..168

APPENDIX G Learners assent form…….…….……..170

APPENDIX H Pre-test……..……...…….172

APPENDIX I Control group post-test……...…177

APPENDIX J experimental group post-test……..182

APPENDIX K Grade 4 Interview……..……190

APPENDIX L GDE approval letter……191

APPENDIX M Wits ethics clearance…….192

APPENDIX N Permission letter from the school……...194

Chapter 1: Orientation.

1.1 Introduction and study background.

The study's background was grounded in the critical examination of literacy development in the early years of schooling, emphasizing its fundamental importance for academic success. Language development plays a pivotal role in shaping a solid foundation for a successful academic career, highlighting the significance of mastering both Basic Interpersonal Conversational Skills (BICS) and Cognitive Academic Language Proficiency (CALP) in the mother tongue. However, the rapid adoption of an additional language as the Language of Learning and Teaching (LoLT) poses challenges, particularly when the BICS and CALP of the mother tongue have not been adequately implemented (Bailey, Huang, Shin, Farnsworth, & Butler 2007).

In response to the linguistic diversity within South Africa, the Language in Learning Policy (LiEP) was introduced in 1997, aiming to provide equal access to education in a language comprehensible to all learners (Department of Education, 1997). This policy sought to address historical injustices, promote additive multilingualism, and build a more inclusive and fair educational system by encouraging the use of formerly marginalized languages in the classroom (Murungi, 2015). However, the study argues that the persistent use of monolingual pedagogies, prioritizing English as the primary language of instruction, has created recurrent issues of inclusivity in the South African educational system (Engelbrecht, 2018).

Analysing the Progress in International Reading Literacy Study (PIRLS) provided a crucial insight into the reading skills of South African learners, revealing stark differences based on school resources and socioeconomic backgrounds (Ollis, 2017). The study contended that poor reading literacy levels in South Africa may be attributed to the adoption of monolingual pedagogies, as evidenced by the PIRLS assessment (Mullis, 2017). Zhou and Landa (2019) argued that monolingual pedagogies pose serious difficulties for learners, especially those from underprivileged backgrounds, who struggle to comprehend texts in an additional language.

Moreover, the study underscored the global emphasis on English as a language of imperialism, potentially neglecting the needs of learners and culturally impoverishing third-world nations (Hornberger & Vaish, 2009). African learners, according to Hornberger and Vaish (2009), are compelled to read without understanding due to the imposition of a Euro-American model. The study aimed to explore the challenges of language barriers and academic exclusion faced by African learners in monolingual classrooms, emphasizing the impact on academic performance.

The urgency of this research is underscored by South Africa's literacy problem, with over 78% of learners unable to read for meaning (Ollis, 2017). The study contended that addressing these challenges is crucial for overcoming educational barriers and ensuring the success of South African learners (Taylor et al., 2018).

The research was motivated by the need to understand the poor PIRLS results obtained by South Africa from 2006 to 2020. It sought to contribute to the broader discourse on the impact of monolingual pedagogies on the academic performance of South African learners, with potential implications for global educational practices.

1.2. Problem statement.

The pervasive problem under scrutiny revolved around the use of an additional language as the sole medium of instruction in educational institutions, particularly when the Basic Interpersonal Conversational Skills (BICS) and Cognitive Academic Language Proficiency (CALP) of the first language or mother tongue are not adequately cultivated. This issue becomes pronounced as early as the third grade, where the shift from using the mother tongue to English as a medium of instruction, driven by the imperative of globalization, exposes stark inequalities in the educational system (Hornberger & Vaish, 2009).

Despite South Africa's regulatory framework aimed at fostering linguistic diversity in schools, implementation failures are evident. The Constitution, specifically in section 6, recognizes 11 official languages, emphasizing the need for schools to cater to this linguistic diversity (Constitution of the Republic of South Africa, 1996). The Use of Official Languages Act, 2012, further provides a legal framework for the use of official languages in various public institutions, including educational establishments (Constitution of the Republic of South Africa, 2012). Additionally, the national Language in Education Policy (LiEP), introduced in 1997, emphasizes two key features: the right of all learners to learn in their home languages throughout their schooling career and the promotion of additive multilingualism, preserving native languages while facilitating the learning of a second language (Department of Education, 1997).

However, these well-intentioned policies are beset by implementation challenges, leading to what Veronelli (2015) aptly terms the "coloniality of language." This concept highlights how language is wielded to uphold, perpetuate, and rationalize colonial structures of knowledge, imposing a presupposition of impartiality on individuals. The policies, intended to establish a universal and neutral educational environment, fall short in protecting learners grappling with learning in a

second or even third language. The discussions around the choice of the medium of instruction are embroiled in contestations over the influence of language as an educational tool, contributing to the maintenance of existing systems of dominance, oppression, and systematic marginalization within bilingual educational settings.

In essence, the problem at hand manifests in the failure to implement language policies, leading to the marginalization of learners and perpetuating an unjust educational system that undermines the principles of linguistic diversity outlined in the regulatory framework. This problem statement sets the stage for an in-depth exploration of the repercussions of these injustices and their broader implications for educational equity and inclusivity.

1.3. Study rationale.

The rationale for this study stemmed from the recognition of the challenges associated with the prevalent use of monolingual pedagogies in the South African school system and the consequential impact on African learners who are studying in a second/third language. Existing research has highlighted the adverse effects of monolingual instruction, particularly when English is promoted as the primary language of instruction, on non-additional language speaking learners, especially those from historically marginalized backgrounds. These learners often grapple with acquiring complex concepts in a language other than their mother tongue, leading to potential negative consequences for both academic performance and social inclusion.

Previous studies, such as those conducted by Charamba and Zano (2019) and Mgijima and Makalela (2016), have demonstrated the potential benefits of multilingual and translanguaging pedagogies. Charamba and Zano's study revealed a significant improvement in academic performance among learners who received instructions in both Sesotho and English compared to those instructed in English only. Mgijima and Makalela's research in the Eastern Cape province highlights the effectiveness of translanguaging approaches in teaching grade 4 pupils, emphasizing the importance of drawing conclusions from context and incorporating learners' language repertoires to enhance literacy skills. However, despite these valuable insights, there was a notable gap in the literature concerning the broader effects of monolingual pedagogies on the academic achievement and social integration of African learners in South African schools where learners are studying in a second/third language. Therefore, this study aimed to fill this gap by systematically investigating how monolingual classrooms impact the academic achievement and social participation of African learners in South African schools.

Utilizing a mixed-methods approach, this study intended to gather comprehensive data on the experiences of African learners in monolingual classrooms. This included exploring their perceptions of academic abilities and examining their social interactions with peers. Grade 4 learners studying in a language different from their mother tongue was the focal point of this investigation. By employing tests and questionnaires, the study aimed to generate a nuanced understanding of the challenges faced by these learners.

The findings of this research were expected to contribute valuable insights that can inform policy and practice in South African schools. Educators and policymakers can utilize these insights to develop targeted strategies aimed at promoting equitable access to quality education for all learners, particularly those navigating the complexities of monolingual classrooms. Ultimately, this study sought to address a crucial gap in the existing literature and provide practical recommendations to enhance the educational experience of African learners in the South African context.

1.4. Theoretical framework.

In establishing a robust theoretical framework for this study, the research draws upon Cummins' Interdependent Model, which illuminates the intricate interplay between language proficiency and academic achievement, and integrates Critical Race Theory to unravel the nuanced dynamics of power, privilege, and structural inequalities within educational systems.

1.4.1 Critical Race Theory (CRT)

Varpio, Paradis, Uijtdehaage, and Young (2020). define a theoretical framework as a logically connected set of ideas and premises drawn from one or more theories, developed by a researcher to support a study. In this research, the Critical Race Theory (CRT) serves as a theoretical framework. Originally rooted in the legal profession, CRT has expanded into various fields, including education. Delgado and Stefancic (2023) posit that CRT views racism as a systemic, institutionalized problem perpetuating social, economic, and political inequality rather than an individual bias. Applying CRT to the study, the use of monolingualism as a medium of instruction in South African schools can be seen as maintaining systemic inequities.

Within monolingual classrooms, African learners often face challenges as their home language is disregarded, hindering their comprehension of the curriculum and active engagement in learning (Lubbe, 2017). CRT helps investigate how this monolingual approach reinforces systemic disadvantage against African learners and sheds light on the historical aspects that influenced

language laws in South Africa, particularly during the apartheid era. Through the CRT lens, the study aims to understand how language policies have impacted academic and social outcomes for African learners and highlight their perspectives and experiences.

1.4.2. Cummins Interdependent Model.

The Cummins Interdependent Model is another crucial theoretical framework for this research. Prinsloo, Rogers, and Harvey (2018) distinguish between Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP), emphasizing the importance of deliberate teaching of academic language. Cummins (2009) argues that proficiency in one's mother tongue shapes and affects the learning of a second language, emphasizing the need for learners to be skilled in their first language for effective second language acquisition. The interdependence between languages is crucial, and Sierens (2019) highlights how underdeveloped first language skills can pose barriers to both first and second language acquisition.

Examining the additive bilingual strategy, where the mother tongue is retained and used as a basis for learning an additional language, aligns with Cummins' model (Cummins, 2009). Furthermore, Chung, Chen & Geva (2019) stress the concept of cross-language transfer in developing bilingual readers, suggesting that conditions promoting learning in one language can enhance learning in another. This theoretical framework guides the investigation into the impact of language proficiency on academic success, emphasizing the importance of nurturing skills in the first language to facilitate effective second language learning.

1.4.3. Justification for theoretical frameworks.

Critical race theory (CRT)

The application of the Critical Race Theory (CRT) model to this study is justified on multiple grounds. Yoso (2013) contends that CRT serves as a pertinent theoretical framework for investigating the impact of monolingual classrooms on the academic and social inclusion of African Learners in South Africa. By employing CRT as a critical lens, the study aims to scrutinize systemic racism in education, unravelling the intricate ways in which social, economic, and political power intersect with race to perpetuate and uphold societal inequalities. CRT, with its recognition of deeply entrenched and institutionalized racism, provides a comprehensive understanding of how monolingual education in South Africa has historically marginalized African Learners, contributing to persistent educational disparities. The CRT approach

underscores the importance of centring the lived experiences of marginalized communities in research endeavours. To comprehend the true effects of monolingual classrooms on the lives of African Learners, it becomes imperative to incorporate their perspectives and experiences. CRT aids in identifying obstacles to the academic and social achievement of African Learners within the South African educational system, offering valuable insights into addressing the challenges inherent in the current study.

In conclusion, CRT advocates for systemic reform in education, recognizing institutional racism as a systemic issue that necessitates fundamental changes in societal power dynamics, extending beyond individual attitudes or prejudices that may be addressed through legislative measures. As such, CRT aligns with policy recommendations calling for systemic changes in education, particularly in the realm of language practices. By emphasizing the intersections of race, authority, and disparity, centring the experiences of marginalized communities, and advocating for transformative change, CRT provides an effective and relevant framework for researching the effects of monolingual classrooms on the academic and social inclusion of African Learners in South Africa.

Cummins interdependent model.

The application of the Cummins Interdependent Linguistic Model to this study is substantiated by the profound impact of apartheid on the language and literacy development of learners in South Africa, particularly those from diverse cultural and linguistic backgrounds. English, as the language associated with power and upward mobility, plays a pivotal role in the education of African Learners, serving as the primary medium of instruction in schools. However, the exclusive use of English as the language of teaching may potentially disadvantage learners with limited exposure to it, hindering their academic success (Hlatshwayo, 2019).

The Cummins Interdependent Linguistic Model provides a valuable theoretical foundation for understanding the intellectual and social participation of African Learners in monolingual classrooms. Research indicates that learners' proficiency in a second language can be enhanced by the literacy skills they acquire in their first language (Thomas & Collier, 2002). To bolster the academic performance of African Learners in English-medium schools, it becomes crucial to support the development of their first-language literacy skills. Moreover, the Cummins approach underscores the importance of cultivating a nurturing and inclusive learning environment while examining the impact of language and literacy on academic performance. This necessitates a

comprehensive consideration of learners' cultural, social, and linguistic backgrounds, alongside the implementation of strategies to foster intercultural competency among both teachers and learners (Ngidi, 2015). In essence, adopting the Cummins Interdependent Linguistic Model as the theoretical framework for this study offers a comprehensive and nuanced approach to examining the effects of monolingual classrooms on the academic and social inclusion of African Learners in South Africa.

1.5 Research questions

1.5.1. The main research questions for the study:

1. How do monolingual classrooms impact the academic performance of intermediate phase grade 4 African learners learning in an additional language?

2. How do language policies and curriculum frameworks intersect with monolingual classroom practices to impact the learning outcomes of intermediate phase grade 4 African learners?

3. How do the historical and cultural contexts of African learners influence their experiences in monolingual classrooms, and what implications does this have for teaching and learning practices?

1.6. Hypothesis.

The research was guided by specific hypotheses that aimed to be either confirmed or refuted through the analysis of the data.

Research Hypothesis: The language of instruction significantly impacts the academic performance of Grade 4 learners who are acquiring knowledge in an additional language distinct from their home-language.

Null Hypothesis: there will be no substantial difference in the academic performance of grade 4 mathematics learners post intervention in the experimental group.

By navigating these questions, the study aims to contribute nuanced insights to the broader discourse on language education, providing actionable implications for both pedagogical approaches and educational policies within the unique context of an increasingly diverse and dynamic educational landscape.

1.7. Research aims and objectives.

The primary aim of this study is to enhance our understanding of the challenges and academic exclusion faced by African learners within monolingual classrooms, while also exploring the impact of these challenges on their academic and social integration. This research contributes to the existing body of knowledge in language education by illuminating the unique experiences of African learners studying in an additional language.

1.7.1. The specific objectives of the study are:

Examine the Challenges Faced: To investigate and identify the specific challenges that African learners encounter in monolingual classrooms, including but not limited to restricted access to instruction, limited participation opportunities, and the potential negative effects on self-esteem.

Explore Linguistic and Cultural Biases: To analyse how monolingual pedagogies may reinforce linguistic and cultural biases, impacting the learning experiences of African learners in second or third additional languages.

Assess Academic and Social Implications: To evaluate the academic and social implications of learning in an additional language for African learners, with a focus on understanding how these implications may contribute to or hinder their overall educational success and social integration.

Inform Policy and Practice: to provide an insight and recommendations based on the research findings to inform educational policy and practice in South African schools. This includes offering strategies for educators and policymakers to enhance equitable access to quality education for all learners, particularly those facing language-related challenges.

By achieving these objectives, the study aimed to contribute valuable insights that can guide the development of more inclusive and effective language education policies, ensuring a more equitable educational experience for African learners in South Africa.

1.8. Clarification of concepts.

Monolingual pedagogies: The monolingual educational methods referred to in the current study are those that use a single language for instruction and instructional materials. This strategy is frequently employed in nations where a dominant language predominates and all levels of education are imparted in that language (Garcia, 2009). The fact that monolingual teaching methods can be exclusive and isolating for learners who speak other languages or come from

diverse cultural backgrounds is one of the main critiques levelled against them. These learners might find it difficult to keep up with the lessons, which could result in poor academic achievement and disengagement.

BICS: In the current study BICS refers to the basic interpersonal communication skills, whereby these are linguistic skills needed for every day, social interactions. Usually, these skills originate from ones first language/mother-tongue Gibbons, 1998).

CALP: In this study CALP refers to the cognitive academic language proficiency skills needed in formal learning, which includes listening, speaking and comprehending learning materials. This academic language usually refers to the language of learning and teaching in the classroom (Gibbons, 1998).

Home language: Home language for this study refers to the language the learners use in their homes and communities.

First additional language: In this study the term first-additional language refers to the language the learners use at school and are exposed to it only at school.

LoLT: In this study the term LoLT refers Language used in the classroom for learning and teaching.

Inclusive Education: In the current study inclusion is defined as the process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures, and communities while minimizing exclusion in South African classroom spaces. 2015 (UNESCO). According to the findings of the current study, inclusive education is the promotion of an environment in which all learners of school age are accepted, regardless of ethnicity, socioeconomic position, or native tongue. ensuring that all learners are fairly and appropriately dispersed, that they are assisted without discrimination or isolation, and that they are free to fully exercise their right to an education in a language they understand.

Culturally Responsive Teaching: Teaching that is culturally relevant or responsive is a methodology that is based on teachers' cultural competency or ability to educate in a cross-cultural or multicultural environment. Each learner is encouraged to connect the educational material to their cultural background by teachers who use this approach (Williams, 2011). This approach puts

an emphasis on using the learners background as a core for teaching and learning where their customs, experiences and cultural tools are used for better classroom instruction.

1.9. Research Design and Methodology.

Grounded in the critical paradigm, this research methodology seeks to illuminate power structures, challenge societal norms, and critically analyse the underlying dynamics shaping the phenomena under investigation.

1.9.1. Research Paradigm

This study adopted a critical paradigm to thoroughly explore the selected research focus. The critical paradigm is grounded in the cultivation of critical consciousness, aimed at questioning prevailing discourses and advocate for social justice within the educational system (Bryman, 2016). Recognizing inherent power imbalances, this paradigm enabled a comprehensive investigation into the structural and systemic causes of the marginalization experienced by African learners. It also delved into how educators, curriculum designers, and policies either perpetuate or challenge these disparities.

A critical paradigm places a strong emphasis on the researcher's consciousness and positionality, demanding an understanding of their social position and its potential impact on the research process and outcomes (Lather, 2013). Continuous critical self-reflection and active opposition to power disparities are integral components of this paradigm. By contesting prevailing discourses and promoting the empowerment of marginalized individuals, the critical research paradigm is characterized by a commitment to social justice and equity (Bryman, 2016). Addressing structural and systemic factors leading to marginalization, this approach acknowledges and seeks to transform uneven power relations (Bartolomé, (2019). The researcher will engage in reflexivity and positionality practices to analyse their involvement in maintaining power disparities linked to race, language, gender, culture, and other social identities.

Interdisciplinary collaboration is another critical aspect of the chosen paradigm. Drawing on theoretical perspectives from various fields, such as critical pedagogy and critical race theory, contributes to a comprehensive understanding of the social phenomena under investigation—specifically, the impact of monolingual pedagogies on learners studying in a language different from their mother tongue (Bryman, 2016).

The critical paradigm encouraged a less presumptuous approach, emphasizing collaboration with participants, particularly grade 4 learners. Rather than analysing them, this paradigm promoted

engagement and cooperation, allowing participants to co-create information and recognizing their experiences and knowledge (Chilisa, 2022).

In summary, the critical research paradigm employed in this study was characterized by its focus on social justice and equity, reflexivity and positionality, interdisciplinary collaboration, and meaningful engagement and cooperation with participants.

1.9.2. Research methodology.

For the chosen research topic, a mixed-methods approach was deemed appropriate, as it allowed for the integration of both qualitative and quantitative data. This approach was particularly effective for studying complex social phenomena (Johnson & Christensen, 2014).

To identify the challenges African learners' encounter in monolingual classrooms, qualitative approaches such as interviews were employed. These interviews provided in-depth insights into the lived experiences of African learners studying in an additional language. The study aimed to enhance the researcher's understanding of the environmental, cultural, and language-specific factors influencing the academic and social inclusion of African learners (Creswell, 2013).

Quantitative approaches, utilizing standardized tests, were employed to determine African learners' overall academic achievement levels in monolingual classrooms. This quantitative method can also unveil potential relationships between linguistic competence and academic success. By gathering substantial amounts of data, this approach facilitates the identification of patterns and trends across a larger population of learners (Maxwell & Miller, 2008).

Employing a mixed-methods approach enabled a comprehensive analysis of the effects of monolingual classrooms on the academic and social inclusion of African learners in South Africa. This approach considered both individual experiences and general trends across a broader learner population, providing a nuanced understanding of the research topic.

1.10. Research design.

This study employed a mixed-method research design, integrating both qualitative and quantitative approaches, to comprehensively investigate and analyse the multifaceted aspects of the research questions at hand.

1.10.1. Mixed Methods Research Design:

The study design specified where, when, and how data were gathered and analysed, serving as the framework for addressing the research questions. It encompassed a set of strategies and tools

carefully chosen and applied by the researcher to conduct the investigation. The use of a mixed methods research design aimed to ensure that the study's results would explicitly and productively address the research problem.

In this project, parallel triangulation was employed. The researcher simultaneously and independently gathered both qualitative and quantitative data, following the Convergent Parallel Design. The two sets of data—qualitative and quantitative—were independently analysed, compared, and integrated to corroborate or cross-validate the research findings (McMillan & Schumacher, 2010).

The strategy of using both evaluative quantitative data and generative qualitative data proved advantageous for this study. It allowed the exploration of the effects of language in Foundation Phase science education while evaluating the results generated by one method using evidence from the other. This design overcame the weakness of relying on a single method by leveraging the strengths of both (Creswell, 2013), offering confirmatory results from quantitative data analyses along with explanatory descriptions drawn from qualitative analyses ("deep structure") (Castro, Kellison, Boyd & Kopak, 2010).

The quantitative component involved collecting data from standardized achievement tests, providing broader and generalizable insights into the academic performance of African learners in monolingual classrooms. Qualitative data, derived from interviews, offered perceptions of the learning environment and challenges faced by learners studying in a second language (Johnson & Christensen, 2014; Maxwell & Miller, 2008). The mixed-methods approach ensured separate analyses of qualitative and quantitative data, followed by integration for a more comprehensive understanding of the research topic (Fetters, Curry, & Creswell, 2013).

The researcher carefully considered the research aims, research questions, philosophical underpinnings, breadth, and nature of the existing body of information about the subject under study to choose the most suitable research method. To establish a cause-and-effect link between an independent variable (language proficiency) and a dependent variable (academic performance), the study adopted a quasi-experimental research design.

1.11. Research sampling.

The Head of Department (HOD), possessing extensive knowledge about each class's unique attributes, meticulously selected two classes, ensuring a balanced representation from diverse linguistic backgrounds (Sepedi and IsiZulu). The selection criteria included factors such as prior academic performance, equitable distribution of learners from different language backgrounds, and similar exposure to English.

A subset of the population representative of the entire group was chosen using a non-random sampling technique. In this method, elements were not randomly picked, and not all members of the population (Drake-Koka Primary School) had an equal chance of being included in the subset selection.

The researcher employed purposive sampling, a non-probability sampling technique, to create the sample for the current investigation. Purposive sampling deliberately selects individuals based on specific qualities, in this case, their medium of instruction being different from their home language and their grade level (fourth-grade) (Kalu, 2019).

Purposive sampling was used to select participants from the two fourth-grade mathematics classrooms, already set up in accordance with the school's administrative procedures. These classrooms were instructed by teachers fluent in the learners' mother tongue and English. The study focused on the impact of monolingual pedagogies on fourth-grade learners' academic performance and the potential improvement through the use of translanguaging and multilingual pedagogies.

Two already constituted fourth-grade mathematics classes participated in the study, with 70 learners in each class out of the five existing mathematics classes. The selection was based on teacher competency in English and the ability to use multilingual pedagogies. Only 10 participants were chosen for interviews, five from the experimental group and five from the control group, using non-random sampling based on criteria such as participant availability, proximity, understanding of the subject, and observed behaviour.

The sample size of 140 was determined considering Krejcie and Morgan's (1970) table, recommending a sample size of 134 for a population size of 340. The researcher, with the help of the HOD, selected classes based on better knowledge of which ones would be best suited for the study. Purposive sampling allowed the inclusion of learners facing a common language dilemma,

not prepared for the abrupt switch from their home languages to English in the fourth grade. The chosen classes had an estimated 70 learners each, providing a total of 140 participants.

1.12. Data collection.

The data collection and analysis phase involved systematically gathering information through standardized achievement tests, in-depth interviews, and classroom observations, followed by a rigorous examination using both qualitative thematic analysis and quantitative statistical methods.

1.12.1. Quantitative Research

Standardized Achievement Tests

Quantitative research, focusing on quantifying relationships between variables, utilized standardized achievement tests. These tests aimed to provide objective measurements and statistical analysis for hypothesis testing (Muijs, and Dunne 2010). Administering standardized achievement tests to black African learners in monolingual classrooms offered quantitative data on their academic performance. The tests were developed in English for the control group and in both English and their home language, Sepedi, for the experimental group. The questions covered fractions, time, distance and shapes, assessing both reading ability and mathematical understanding. The tests were administered and explained by teachers in the language used during the study, allowing the researcher to evaluate if language or mathematics itself is the primary challenge.

1.12.2. Qualitative Research collection method.

Semi-Structured Interviews.

Qualitative research, sought to understand human behaviour and perceptions, employing semi-structured interviews. These interviews involved a total of 10 learners selected randomly from the participant pool of 140 learners. The interviews explored themes such as ease of understanding, cultural representation, and classroom inclusivity. The questions focused on academic progress, relationships with teachers and peers, and barriers experienced in the classroom. The interviews were recorded with participants' permission, transcribed, and used to gain insights into learners' opinions and attitudes regarding the language of instruction.

Observations.

Observations were conducted in both experimental and control classrooms during mathematics lessons over three weeks. The researcher aimed to identify the frequency of behavioural

infractions, expressions of confusion, disengagement, or zoning-out during lessons. This qualitative data provided insights into teacher competency in implementing multilingual pedagogies (experimental group) and monolingual pedagogies (control group). The observations also assessed the learners' attitudes and their potential impact on learning. The researcher maintained a journal for each observed lesson, covering topics related to fractions, time, distance and shapes.

1.13. Data analysis.

The data analysis process involved inspecting, cleaning, transforming, and interpreting collected data to derive useful information (Bryman, 2012). In this study, a comprehensive approach utilizing both qualitative coding methods and quantitative statistical tests was employed. The aim was to compare outcomes between the control and experimental groups, adopting a data triangulation design that involved separate analysis of qualitative and quantitative data before merging them for comparison and validation.

1.13.1. Qualitative Data Analysis

For qualitative data collected through in-depth interviews and observations, a thematic analysis method was chosen. Following data transcription and familiarization, codes were assigned to significant statements or quotes. These codes were then organized into categories, leading to the emergence of themes (Braun & Clarke, 2019). This approach was apt for uncovering common themes and trends related to the impact of monolingual classrooms on the academic and social inclusion of African learners. The analysis focused on identifying patterns drawn from observations and interviews, categorizing them as positive or negative. Common attitudes during class, engagement levels, understanding, and teacher attitudes were scrutinized to form themes. Similarly, for interviews, themes revolved around the frequency of translation needs, learners' ability to respond in English, and the number of learners proficient in English.

1.13.2. Quantitative Data Analysis

Quantitative data, gathered through standardized achievement tests, underwent both descriptive and inferential statistics. Descriptive statistics, including measures of central tendency and dispersion, provided an overview of learners' academic performance (Anastasi & Urbina, 1997). Inferential statistics, such as correlation analysis and regression analysis, were employed to identify potential relationships and predictors of academic and social inclusion among African learners in monolingual classrooms (Cohen, 2013). Since only post-test data was available, the researcher utilized class averages before and after the intervention. Learners were scored one for

correct answers, zero for incorrect answers, and blank spaces were left open. An Excel spreadsheet labelled 'Mathematics Fourth-Grade Test' facilitated efficient data collection and identification of common points of error and success. The use of t-tests was deemed appropriate for comparing results between the control and experimental groups, offering a robust method to interpret the data accurately and highlight differences in performance.

1.14. Research ethics.

In the realm of research, ethics play a pivotal role in safeguarding the well-being of participants, particularly when involving vulnerable populations such as young children. Adherence to ethical principles is paramount, with a focus on autonomy, nonmaleficence, and beneficence, as articulated by Piper and Simons (2005). These principles dictate that participants should willingly engage in the study, possess the freedom to withdraw at any juncture, be shielded from harm, and that the research should contribute to beneficial changes.

Before embarking on the research journey, the University of the Witwatersrand Human Research Ethics Committee granted an ethical clearance certificate with the protocol number "1-123/07/64". This initial step underscores the commitment to upholding ethical standards throughout the research process. The ensuing discussion sheds light on the key factors considered in ensuring ethical practices within the current study:

*Voluntary Participation***.**

(Leedy & Ormrod, 2005) state that voluntary participation means that the participants in a research study have the right to decide whether they want to take part in the study or not. This is an important ethical consideration in research that involves human subjects, as it ensures that participants are not coerced, forced, or unduly influenced in any way to participate. Voluntary participation was requirement that the researcher obtains an informed consent from participants, which involved providing them with detailed information about the research, its purpose, and expected procedures. This allowed participants to make an informed decision about whether or not to participate. The researcher also ensured that the consent process is free from coercion, undue influence, and that participants clearly understand what their involvement will entail. In addition, the researcher respected participants' right to withdraw from the study at any time, even if they have already given consent. Voluntary participation was a crucial ethical consideration for the researcher, as it ensured that participants' autonomy and agency are respected, and that they are not subjected to any form of harm or exploitation.

Confidentiality.

The American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014) sates that confidentiality in research refers to the principle of protecting participants' personal information, data, and identity from unauthorized access or disclosure. Confidentiality is important for building trust and safeguarding participants' privacy, and it is a key ethical consideration in research that involves human subjects. To protect participants' confidentiality, the researcher used measures such as de-identification, pseudonymization, and data encryption. The researcher ensured that any identifying information, such as names or contact details, was removed or hidden from the data collected or reported. Furthermore, any data collected was be stored in a secure and confidential manner to prevent unauthorized access. Only the researcher directly involved in the study will have access to the data, and any third-party access will be restricted to ensure privacy. The Researcher also informed the participants about their data protection measures and assure them that their data will be kept confidential. In the rare circumstances where confidentiality cannot be guaranteed, this was explained explicitly and consent must be sought.

Anonymity.

The American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014) sates that Anonymity in research refers to the principle of protecting the identity of participants in the research study. Anonymity means that the participants' identities are unknown to the researchers, and their responses or data cannot be linked to any particular person. To maintain anonymity, the researcher collected data without using any identifiable information such as names, addresses or contact information, the participants were referred to using numbers e.g. Participant 70 from group B. Furthermore, the researcher used indirect or non-specific questions that do not provide identifying information. In addition, the stored data was anonymous with any potentially identifiable information removed or destroyed.

Anonymity is an important principle for:

Providing participants with a sense of security that their privacy is protected; avoiding any potential breach of confidentiality; and reducing the risk of stigma, discrimination or social repercussions that could result from participating in the research study.

However, complete anonymity may not always be possible, especially given that the nature of the research involves personal and sensitive information. In such cases, the researcher adopted measures such as pseudonymization to protect participants' personal information, while ensuring that they remain identifiable within the study.

Informed Consent.

Prior to the commencement of the research, a comprehensive explanation of the research objectives was provided to all participants. In accordance with ethical standards outlined by Gay (2010), participants were explicitly informed of their unequivocal right to withdraw from the research at any stage, and reassured that such a decision would not result in any form of reprisal. To ensure a clear understanding of the potential risks involved, participants were required to either express their agreement in writing or provide explicit consent after receiving thorough information about the research risks. Given that the participants in this study were minors, an additional layer of ethical consideration was implemented. In alignment with the guidelines proposed by McMillan and Schumacher (2010), the involvement of minors necessitated the co-signing of consent forms by their parents or legal guardians. This procedural step ensured that the participation of minors was contingent upon the explicit approval of their parents, safeguarding the rights and well-being of the underage participants.

Full Disclosure.

Maintaining transparency throughout the research process was of utmost importance. The researcher adopted a policy of full disclosure, openly communicating with all participants about the methodology employed in the research. As per Woolfolk. et,al., (2011), participants were apprised of any foreseeable risks associated with their involvement, with discomfort identified as the sole potential risk. In adherence to ethical standards, the purpose of the research was explicitly communicated to all participants, leaving no room for ambiguity or undisclosed information. This commitment to full disclosure not only upholds ethical principles but also ensures that participants enter the research with a clear understanding of its objectives, potential risks, and anticipated outcomes.

*Getting both groups on the same level after the study***.**

It is of great importance to make sure all the learners receive the same tools and resources after the intervention to make sure that both groups are in sync. After the intervention the control group

received all the materials the experimental group has received and the same instruction was used to get them on par with the other group.

1.15. Limitations of the study.

Since many teachers are overloaded and probably won't have time, it may be difficult to find participation. This will be avoided by the researcher by planning the interviews properly in advance, by offering incentives to make the participants feel welcome, and by setting a time limit on the focus group discussion. The research will solve this by making sure the participants realize that the study and its results are fully confidential and that their identity will always be safeguarded. The participants might be reluctant to participate out of fear of the consequences.

1.16. Ethical Clearance.

University Approval: Securing approval from the University of the Witwatersrand Human Research Ethics Committee before commencing the research with the protocol number "1-123/07/64" These considerations collectively underscore the commitment to ethical research practices, upholding the dignity and rights of the participants, and ensuring that the research endeavour aligns with principles that prioritize both individual autonomy and the broader welfare of the participants.

1.17. Chapter outline.

Chapter 1

This chapter consisted of an introduction, a background of the researched problem, a statement of the problem, research questions, the aim of the research, motivation for the study, and definitions of concepts used in the research.

Chapter 2,

This chapter gives the theoretical background relevant to the study was explored, presenting an in-depth examination of existing theories, models, and frameworks that informed the research focus.

Chapter 3

Gives a meticulously detailed the research design and methodology, providing a thorough understanding of the approach, strategies, and tools employed in the study.

Chapter 4

This chapter was dedicated to the presentation, analysis, and interpretation of the collected data, offering valuable insights and findings derived from the research process.

Chapter 5

This chapter was an encapsulated summary of the entire study, researcher-proposed recommendations, and a conclusive discussion, providing closure to the research endeavour.

1.18. Conclusion.

In conclusion, Chapter 1 established the foundation for the entire research endeavour, offering a comprehensive overview of the study. The introduction provided context, the background illuminated the historical and contextual aspects of the problem, the statement of the problem clarified the research focus, while the research questions guided the inquiry. The aim of the research and the motivation behind it were articulated, providing a clear understanding of the study's purpose. Furthermore, key concepts integral to the research were defined, establishing a solid groundwork for the subsequent chapters. Overall, Chapter 1 served as a crucial starting point, setting the stage for the theoretical exploration, methodological insights, data analysis, and conclusive reflections that followed in the subsequent chapters.

Chapter 2: Literature review.

This literature review section provides an exhaustive examination of prior academic literature and research outcomes pertinent to the study's focal point. It offers a discerning amalgamation of contemporary understanding while pinpointing areas within the literature that necessitate further investigation, aligning with the objectives of the present study.

2.1. Introduction.

This chapter presents an outline of pertinent and recent research on reading comprehension in South African primary schools. Focusing on the poor development of the mother-tongue in the classrooms may affect one's academic ability as well as empirical findings that included translanguaging techniques in language and literacy development in classrooms all around the world. In order to improve learners' overall learning experiences and academic competency, it is important to recognize translanguaging and multilingual pedagogies as effective support techniques in educational settings in South Africa and around the world The results of the PIRLS assessments will be used to discuss the current state of literacy development in South Africa. Following that, this chapter shall focus on existing research on reading comprehension in South Africa and studies that have used translanguaging as a pedagogical approach and practical measures that can be taken to promote and improve academic proficiency, the researcher's analysis will be focused on the low literacy levels in South Africa, its academic influence and the impact low literacy levels may have on the social inclusion of African learners.

2.2. Literacy development in South Africa.

Smith (2018) defines literacy development as the process which individuals acquire and enhance their skills in reading, writing, speaking and listening. Smith further explains literacy development as the ability to understand, analyse and communicate effectively using various forms of language. From this definition looking at the literacy development in South Africa one can conclude the literacy development in South African classrooms is poor. This statement is supported by the poor 2021 PIRLS results which show South Africa's concerning decline in reading literacy levels, South African learners scored below the international benchmark average of 500, scoring 359 in 2021 declining from 408 in 2016 (Mullis, 2023; Mullis, 2017). Language barrier, particularly the use of English as the language of learning and teaching in schools can cause issues for learners who speak various languages different from English at home (Smith, 2019). Johnson and Anderson (2020) reflect that socioeconomic, disadvantages including poverty and insufficient access to educational resources might make it much harder for disadvantaged learners to develop their literacy skills.

2.3. Education and Language Rights nationally and globally.

According to Avineri, Graham, Johnson, Riner, & Rosa (2019), Language rights in education encompass the right of individuals to be educated in their native or preferred language. It involves ensuring that individuals have access to education in a language they understand and can effectively communicate in. These rights are important for promoting inclusivity, cultural preservation, and effective learning outcomes.

Language rights, language development, and the need for a multilingual literate society have consistently been contentious issues in South Africa, not just among the general public but also among academics and education professionals (Balfour, 2007). In 1997 the national Language in Education Policy (LiEP) was introduced, with two key features in mind: a) that all learners had the right to learn in their home languages throughout their schooling career and b) an underlying principle of additive multilingualism, to preserve native languages while allowing access to the learning of a second language (Department of Education, 1997). Two important caveats to these principles are: a) parents exercise the language rights of their children by choosing the school their child will attend; b) schools need to formulate their own language policies to suit their specific context (Reid, 2016).

Yet 26 years of running with this policy, with the objectives to maximize educational access, participation and success for all learners, there remains a need to advocate for the incorporation of the mother-tongue or multilingualism in South African classroom spaces, there remains a failure to meet the two key features of the LiEP (Reid, 2016). The enacted policy in South African classrooms show that the language policy excludes the vast majority of the learners it was designed for and as a result, undermines the 'democracy' that South Africa has developed over the years. Whereby by the end of the foundation phase (Grade 1-3), learners are instructed in English and are required to become proficient in their reading fluency but lack the creative urge to read for enjoyment, as they cannot comprehend what they are reading (Fleish, 2018).

Gradual (2017) points out that in most South African schools English is introduced in grade 4 as an additional language and abruptly becomes a medium of instruction from then till grade 12. Although the PIRLS results have over the years proven that 8/10 of South African learners cannot read for meaning while English is spoken by less than one quarter of the South African population, English is still solely used as the medium of instruction in learning and teaching.

Looking into UNESCO (2018) it states that, the right to education is a fundamental human right that calls for equal access to educational opportunities, resources, and outcomes. According to the United Nations Universal Declaration of Human Rights (1948) and Skutnabb-Kangas (2000), language is a crucial component of education and a fundamental human right. As a result, monolingual educational institutions that prohibit the use of a minority group's mother tongue or home language violate that group's right to use that language (Cummins, 2001; Skutnabb-Kangas, 2000). This statement made in the 2000's has still not be addressed in 2023 as the vast majority of primary school learners are still violated.

Many multilingual societies encourage the use of various languages in the classroom, either vertically (using different languages for primary versus secondary education) or horizontally (using various languages as the medium of instruction in the same class) (Probyn, 2019). Reynolds Altmann, and Allen (2020) report that one's proficiency in English communication has a significant impact on one's performance on academic tests. Their research examines the situation of White, Hispanic, and Black learners in America. According to their study, it would seem that a learner's performance on intelligence tests is significantly influenced by their command of the English language, particularly in the field of science and technical education, which places a strong emphasis on laboratory and workshop practical's. In contrast Karthik and Noblit (2020) argue that one's intelligence should not be measured by their command of the English language, but rather they argue that it is impossible to overestimate the importance of learning a second or third language, particularly if it is utilised to improve communication skills and raise scholastic success. With more than 250 million learners, 22 official languages, and hundreds of minority languages India stands out as a notable example (Karthik & Noblit, 2020). The primary language of instruction (English) in the country's educational system is the subject of a divisive policy discussion at the moment. It is disheartening that language-in-education legislation in a nation like India with many distinct languages has been dominated by a monolingual mindset and that actual pedagogical advances have typically been disregarded in these policy talks. Additionally, there is no controversy that English is an important language of instruction for learners in India's public schools, but the nation's language-in-education policy which is known as the three-language formula which puts forward the learning of three languages and one of them must be the mother tongue or the regional language would only be successful if it adopted a flexible multilingual approach that recognised that all the majority of the languages

that children are exposed to daily are their home languages, so these languages should be used in learning and teaching (Karthik & Noblit, 2020).

2.4. The detrimental effects of using an additional language foreign to the learners as the sole language of instruction in classrooms.

In Tanzania's secondary schools, research has been carried out concerning the negative impacts of learning in a foreign language. Although the majority of the research advise against using a foreign language for instruction, Tanzania has continued to teach its secondary learners in English which foreign language for many. This affects school quality adversely and raises the likelihood that learners' dropout (Vuzo, 2018). Vuzo carried out a similar study to Wilson and Komba (2012) in 2018 which reflected that many Tanzanian learners leave various grades with mediocre marks in subjects like English and many others like Mathematics, Physics, Geography, and related ones due to the inability to comprehend what they are reading. Because of this, most of these learners decide to retake the examination however, only a tiny portion of them are successful in passing and can move on to A-level courses or college studies.

Wilson and Komba (2012) cite Kagashe (2011) in their reports, which state that of the 397,251 learners who took the national examinations in 2010, 174,193 (43.83%) obtained a division zero score, meaning they failed the test, and only 223,058 (56.15%) passed. The number of learners who sat for the examinations in 2010 was 397,251, and the average pass grade dropped from 52.83% to 50.40%. Wilson and Komba (2012) assume that the reason for these poor outcomes is that English is the only language used in the classroom and examination papers, which makes it challenging for learners to comprehend. The majority of linguists in Tanzania similarly blame poor language development for the majority of learners' dismal performance in higher education (Vuzo, 2018). The lesson must be taught in Kiswahili according to Jones, Rubagumya, and Mwansoko (1998), quoted in Wilson and Komba (2012). As a result, English, Biology, Chemistry, General Studies, Mathematics, and other academic disciplines are routinely taught informally in Kiswahili in classrooms. In 2015 Komba performed a similar study whereby the study had two main goals: To compare the form one annual examination results of learners who used English as their primary school language of instruction with those of learners who used Swahili, and then to compare the form two national examination results for learners who used English and those who used Swahili. These were the outcomes of the study: First, in the form one yearly tests, English-speaking primary school children outperformed their Swahili-speaking peers, with the difference statistically significant at $p < 0.05$ in a two-tailed test. Second, in form

two national exams, children who had received instruction in English rather than Swahili from primary school did better than their Swahili-trained peers. This difference was statistically significant at $p< 0.05$ in a two-tailed test. Thus, it was determined that learners' primary school language of instruction had a considerable impact on their academic performance in secondary school.

Comparable findings to the above can be seen in Umameh's (2011) study, which examined the performance of learners from five secondary schools in the Kogi state's Idah local government area in Nigeria using a sample of 30 participants. They found that learners do poorly on the Senior Secondary Certificate Examination (SSCE) English and Mathematics examination, claiming that the English language instruction needs to be improved if Mathematics education is to be improved (there is a relationship between language competency and mathematics). Technical education should be seen as (a) an essential part of general education, (b) a way to prepare for particular occupations and effective participation in the labour market, (c) a part of continuous improvement and readiness for national integration, (d) a tool for promoting eco-friendly environmental sustainability, and (e) a way to fight poverty (Haug, 2017). This cannot be done without a full understanding of the language used for communication and instruction in schools. For pupils enrolled in technical and scientific schooling, competency in the English language is required to completely understand the programme's contents, which will increase the student's academic awareness (Haug, 2017).

While lamenting the poor academic performance of learners in the West African Examination Council (WAEC), it was eventually discovered that IQ tests frequently demonstrate a learner's proficiency in a language, and in this case, English had a significant impact on all of the other subjects of the curriculum, which invariably highlighted the supposition that learners' prominence in the English language might affect the other subjects (Martirosyan, Hwang and Wanjohi, 2015).

Research in Zimbabwe continues to demonstrate how effective bi/multilingual methods of instruction may be in boosting the cognitive development of multilingual learners, despite the paucity of data on their use in the teaching of scientific subjects (Sibanda, 2015). Given that Grade R learner, who make up about 80% of the total student population from Grade R to the fourth grade (Grade R is an elementary education for children between four and five years old), face significant challenges in the classroom, it is important to recognise that Zimbabwe has a literacy rate of 86.4%. This is particularly relevant given the pass rate for General Science at the Ordinary

level of 81,9 in 2018 (UNESCO, 2018). Given that English has developed into the nation's primary language of learning and teaching (LoLT), Karthik and Noblit (2020) and Wei (2018) contend that learners who struggle with their English communication abilities may find it challenging to excel academically. The academic achievement of language learners will undoubtedly be impacted and improved by their ability to communicate effectively in an additional language (English). However, it is indisputably true that a learner's academic performance would decline in any academic scenario when the competency of an additional language is poor Vuzo, 2018). Due to their linguistic deficiencies, the majority of children find it difficult to learn through this medium (Karthik & Noblit, 2020; Wei, 2018). The rich English culture in South African schools is almost non-existent, and the English language is interwoven with social, political, and cultural issues. This has promoted the use of translanguaging as a method for bridging the language barrier.

2.5. Language Acquisition and Educational Success: Translanguaging and multilingual pedagogy reinforcement.

The ability to communicate and learn is facilitated by language, which is a key component of human growth (Vygotsky, 1978). Language proficiency is an essential gauge of performance in a wide range of subject areas in educational settings, and it plays a crucial role in academic achievement (August & Shanahan, 2009). Language acquisition is a difficult process that is impacted by a variety of contextual, social, and individual factors (Kuhl, 2000). Researchers have found adaptable ways to allow easier ways to acquire language skills. Research has proven a few pedagogical practices to help with language acquisition and possibly a successful academic career.

Translanguaging can be used as a practice to acquire new language skills, Wei (2018), explains this practice as a flexible adoption of several languages for instruction. It puts into practice the use of resources that individuals in the classroom use to think and communicate their ideas: one that is multilingual, multisemiotic, multisensory, and multimodal. In a variety of educational settings where the LoLT differs from the learners' home language, translanguaging has consistently been demonstrated to be a successful pedagogical method over the past decade (MacSwan, 2017; Wei, 2018). This follows studies that showed how language matters negatively for learners' academic performance when the native language and the language of instruction are dissimilar (Wei, 2018). By purposely removing illogical and dogmatic distinctions between native speakers and immigrants, the majority and the minority, as well as target languages versus

mother tongues, translanguaging would inspire both the learner and the instructor (Ünsal, Jakobson, Molander & Wickman, 2018). This translanguaging technique emphasises teaching and learning on reaching conclusions, increasing professional knowledge, and achieving goals in addition to altering power systems (Charamba, 2019). Multilingual learners are frequently compelled to adopt a monolingual worldview in order to make sense of the world and who they are, according to studies on the relationship between speech and ways of knowing (Charamba & Zano, 2019). Despite McKinney's (2020) assertion that the current language policy has a monolingual emphasis, the South African Language in Education Policy (1997) acknowledged that the majority of our learners are bilingual. Even though English is the primary language of instruction and learning in the majority of schools, it is startling how many learners only use it in the classroom. Multilingual learners are at a disadvantage since they must simultaneously study a new language (English) and other topics in a language they are not fluent in. Moreover, learners in most school's transfer from utilising their mother tongue or their Home Languages (HL) as the LoLT to English as the language of instruction. The reading abilities of fourth graders are typically negatively impacted by this rapid shift (Best, Floyd, & McNamara, 2004). Therefore, it is imperative to provide learners with the assistance and guidance they need throughout this transitional period.

Makalela on page 2 (2019) makes a claim that "Increasing international mobility has raised awareness on the fluidity and porous nature of boundaries not only between nation states, but also between named languages. Despite the complexities of overlaps across a wider spectrum of languages and classrooms worldwide, orthodox education programmes still reflect monolingual and epistemic biases, which disproportionately put the majority of the learners at an educational disadvantage". Whereby to back up his claim he explored data collected from South African primary school classrooms on how using translanguaging pedagogies deepens comprehension and allows learners to have a sense of "self" when learning. According to the study's findings, translanguaging proved to be very common and demonstrated endless dependencies between the many linguistic resources used in classroom discourses. Whereby within the African value system of ubuntu (I = We), this multilingual usage is translated as follows: I am because you are. he then proceeds to make the case that successful learning and teaching can take advantage of this cultural competence (Ubuntu). whereby he then takes into account how the universals of Ubuntu translanguaging as a regime for multilingual practices becomes transformative in boosting epistemic access and identity positions of multilingual learners.

Language minority learners can achieve better academic results and foster social inclusion through the use of multilingual, translanguaging pedagogies and the inclusion of African languages in the classroom (Janks, 2017). Examples are provided in studies A and B.

a. A study by Charamba and Zano (2019, p. 299) conducted the Free State province of South Africa in which "two groups of learners were given instructions; the experimental group received instructions in both Sesotho and English, while the control group received instructions in English only". The research reports that "80% of the participants in the experimental group passed the test, compared to a pass rate of 46.6% in the control group" (Charamba & Zano, 2019. p. 300). According to the study's findings by Charamba and Zano (2019), there is a connection between home-language ability and English language proficiency. The experiment also demonstrates how translanguaging might improve the academic performance of science learners.

b. Mgijima and Makalela (2016) did a study in the rural parts of the Eastern Cape Province (South Africa). They talked about the value of using translanguaging approaches to instruct grade 4 pupils and how to derive inferences from reading by using pertinent previous knowledge. The effectiveness of simultaneously teaching bilingual Xhosa-English readers in their first and second languages was examined. According to the findings, learners do better when they draw conclusions from the context rather than just reading the text. Mgijima and Makalela (2016) promote a literacy model that combines abilities and practices derived from all accessible language repertoires of learners to aid them in developing a sense of self, which, in turn, helps them to be active participants in their learning.

There is, however, a dearth of literature on the broader effects of monolingual pedagogies, particularly on the academic achievement and social integration of African learners in South African schools where learners are learning in a second/third language.

2.6. Language Barriers and their Impact on the academic performance of African leaners.

Language barriers in education refer to difficulties and challenges that arise when individuals who speak different languages try to communicate and access educational opportunities. These barriers can affect learners, teachers, and other stakeholders in the education system, Faltis and Wolfe (1999). One prominent language barrier in education is the limited English proficiency of non-native English-speaking learners. According to Faltis and Wolfe (1999), learners who are not fluent in the language of instruction may struggle to understand classroom lectures, texts, and assignments, thus hindering their academic progress. This can lead to academic

underachievement, low self-esteem, and limited participation in classroom activities. Teachers also face language barriers when instructing learners who do not speak the same language as them, this can create communication difficulties, impacting effective classroom management, and hindering the delivery of content and instructional strategies (Cummins, 2000). Moreover, teachers may find it challenging to provide appropriate support and differentiated instruction to diverse language learners.

Academics such as Charamba and Zano (2019), Lyon (2018), Lubbe (2017) and many more have noted that African languages or mother-tongue, which most African learners often speak, are not the primary languages of instruction in South African schools. The vast majority of learners suffer a language barrier when learning in a second or third language, which factors into the PIRLS study's poor literacy results and their classroom learning experiences (Howie, et al., 2016). There is an accomplishment gap between white and African learners in South Africa when African learners have difficulty learning the language of instruction which differs from their home language (Chisholm, 2015). According to Kwang-Sun Choi (2011), learners who struggle with using English in class frequently experience failure, low self-esteem, and frustration. Because African learners do not speak the same formal English that is used in classroom settings, they are frequently referred to as being "linguistically challenged" (Akomolafe, 2015).

2.7. Culturally Responsive Teaching.

Teaching that is culturally relevant or responsive is a methodology that is based on teachers' cultural competency or ability to educate in a cross-cultural or multicultural environment. Each learner is encouraged to connect the educational material to their cultural background (Brown and Williams, 2015). This approach emphasises using the learners' background as a core for teaching and learning where their customs, experiences and cultural tools are used for better classroom instruction, which can be used as a strategy for addressing a cultural barrier between teachers and African learners. Academics in South Africa have discovered that culturally responsive instruction that supports African learners' cultural heritage improves academic achievement and fosters a positive learning environment (Jansen, 2017). A learner-centred strategy that scaffolds learning and improves understanding is provided by teachers who are culturally sensitive to their learners' cultural beliefs and practices (Nkambule, 2022). Meaning that if teachers related more content to their learners' prior knowledge, and possibly home their home language this can improve the academic performance of many learners.

Using a variety of resources, such as language research, sociological research, educational research, and the critical race theory, to support its assertions regarding the efficacy of this strategy, Ladson-Billings (1995) provided a theoretical analysis. Ladson-Billings (1995) found that culturally responsive teaching (CRT) can raise academic performance and close the achievement gap between learners from different cultural backgrounds and their peers. The CRT places a strong emphasis on the necessity for educators to value and acknowledge the cultural experiences and viewpoints of their pupils and to include these in their lesson plans. According to research by Ladson-Billings (1995), this strategy fosters learners' motivation, academic engagement, and a sense of community in the classroom. Additionally, it can promote fruitful interactions between educators and learners and result in a more holistic and equitable learning environment (Ladson-Billings, 1995).

Kieran and Anderson (2019) claim that the racial, cultural, linguistic, and educational backgrounds of learners are becoming progressively diversified. Teachers must integrate pedagogies that address this diversity and take into account how the differences between learners affect learning. With the help of universal design for learning (UDL), educators now have a framework for differentiating instruction to account for learner diversity. Utilising UDL concepts without specifically taking into account how cultural variations and viewpoints impact learning could widen the achievement gap for learners of colour.

2.8. Colonial language as an instrument of power.

Colonial language refers to the language used by colonizers to impose their own linguistic and cultural dominance over native populations. Colonial languages are typically the languages of the colonizing nation, such as English, French, Spanish, or Portuguese, and were enforced in educational systems during colonization. These languages were often prioritized over the indigenous languages, which were marginalized or even prohibited in schools (Hirsch and Lopes, 2020). When the Europeans came to Africa, they came with a mission to deepen the claws of colonialism and plant the seeds on African language inferiority. The English language was used by colonizers as a means of indoctrination and control in Africa. The colonial powers, such as Britain, utilized English as an instrument of cultural assimilation and dominance (Hirsch and Lopes, 2020).

A study conducted by Rehman, (2013) shows how language translates into power even in the post-colonial era. This study examines the enduring influence of English as a tool of power in the Indian subcontinent, both during British colonialism and in its aftermath. Focusing on English

novels from these periods, it argues that English continues to hold social and cultural sway, leading to a sense of mimicry and hybrid identity among the people. Analysing this "mimicry" Rehman (2013) reveals a complex interplay where both colonizers and colonized have transformed each other's languages and cultures through the adoption and adaptation of English. Ultimately, the study sheds light on the lasting legacies of colonialism, the psychological impact of linguistic subjugation, and the ongoing struggles for cultural and linguistic self-determination in the Indian region. From this study Sabina shows how the Indian man starts to mimic the colonizer as they were trained to do so. The concept of mimicry as a colonial strategy is intricately explored in Defoe's (1936) "The Life and Adventures of Robinson Crusoe," particularly within the passages detailing Robinson Crusoe's English lessons to Friday. In these lessons, indications of linguistic colonization of the indigenous by the settler emerge, representing an early manifestation of English linguistic imperialism. Crusoe's endeavour to "teach him everything that was proper to make him useful, handy and helpful" (p. 195) lays the groundwork for perceiving English as the language of intellectual and social advancement.

The interaction between Crusoe and Friday (an Indian man, mirrors the "racial structure of western society at the heyday of slavery." Crusoe's assumption of mastery and his insistence on Friday learning his language, rather than reciprocally learning Friday's language, marks a pivotal moment in the extensive history of the global dissemination of English. The excerpt illustrates this dynamic: "In a little time, I began to speak to him, and teach him to speak to me; and, first, I made him know his name should be Friday... I likewise taught him to say master, and then let him know that was to be my name" (Defoe, 1836. p. 102).

As Crusoe suggests, the dialogues between him and Friday offer insights into the construction of Self and Other, exemplified in the exchange:

Master: "Well, Friday, and what does your nation do with the men they take? Do they carry them away and eat them, as these did?"

Friday: "Yes, my nation eats man’s up too; eat all up" (p. 199).

Ngugi wa Thiong'o (1986), in his book "Decolonising the Mind," shows that the imposition of the English language on African populations during the colonial era was a deliberate strategy aimed at erasing indigenous languages and cultures. In schools, English became the primary

language of instruction, and the curriculum focused heavily on European literature, history, and values, while neglecting African languages and cultural heritage.

This language policy had several profound effects. First, it created a sense of linguistic inferiority among Africans, as their native languages and dialects were deemed less important and were often discouraged or even punished. Second, it disrupted intergenerational transmission of oral traditions, knowledge, and cultural practices, contributing to the erosion of African identities (Achebe, 1988). Third, English became associated with social prestige, access to better job opportunities, and upward mobility, further entrenching its dominance and undermining local languages (Hena et al., 2020). The intentional promotion of English by colonizers served to establish a system of cultural and intellectual hegemony, perpetuating power imbalances, and preserving the colonial legacy long after independence. Decades later post-colonialism African children still find themselves disadvantaged, in a system which fails to address historical injustices where some languages are given preference over others and fail to recognized the value of multilingualism as well as the development and preservation of the nation's linguistic history (Makalela, 2016).

In this context, several discussions, opinions, viewpoints, and disputes have been connected by a common theme. Its main goal is to draw attention to what Bhatt, Badwan, and Madiba (2022) refer to as the "coloniality of language," which refers to the way language may be used to support, legitimise, and preserve colonial institutions of knowledge that impose a presumption of impartiality on people. While attempting to argue that a medium of instruction is chosen to establish a universal and neutral place, these discussions contest the influence of language as an educational tool used in maintaining current systems of dominance, oppression, and systematic marginalisation in bilingual educational settings, Kendi (2019).

To restore and maintain ties with both ancient and modern modes of knowing, as well as to lessen the dominance of the English language and reveal its symbolic violence, MacKenzie, Engman, and McGurk (2022) call for the revival of native languages in schools. For these reasons, it is important to critically analyse how language is understood and used in the context of the multilingual classroom. By raising many thought-provoking queries about concepts like monolingualism and multilingualism in education, Gurney and Demuro (2022) argued for the advancement of this study. They both have issues with drastically simplistic and essentialist approaches to language education in a multilingual educational setting. These tactics are basedon

two widely held beliefs. What Hall, (2022) calls the "monolithic perspective" of language, which condenses sociolinguistic diversity and linguistic complexity into a single, standardised entity. The second is "linguistic monism," which, according to Holquist (2014, p. 8), "conceives the world as consisting of geographically dispersed common languages, each of which has a unique separate identity of its own that is both and unitary." This pervasive ideology is harmful because it conflicts with the reality of change, flexibility, diversity, and geographic awareness. It additionally endorses a philosophical rejection of inclusivity. The violent ideology's insistence on an unyielding divide is another aspect of it. Gurney and Demuro (2022) argue that modern languages and cultures contribute to the processes of linguistic inequality and social separation by establishing a link between language alienation and language replacing. And this is reflected in the education system, where African languages are pushed aside and abruptly replaced with English as a medium of instruction overlooking that the sole use of a foreign language in the classroom might have a negative influence on one's academic performance (Bailey 2007). Therefore, Gurney and Demuro (2022) advocate a translanguaging pedagogy as a Foucauldian method of language instruction that may be able to obfuscate the distinctions between acceptable instruction languages in ways that are potentially transformational and anti-hegemonic to confront structural inequalities. Language users in the multilingual educational setting can create linguistic spaces that recognise, reflect, and verify their linguistic variety and cohesion as determined by various social actors by making use of their diverse verbal repertoires, and translanguaging makes this possible (Taibi & Badwan, 2022).

According to Canagarajah (2020), language must be viewed as a "distributed practice" that is spread out across different places, people, rituals, material situations, and religious beliefs. Canagarajah's (2020) emphasis on cultural semiotic resources, which in addition to indigenous languages also include ceremonies, ancestors' traditions, and traditions relating to the land, effectively articulates this stance. Speaking in one's native language in class in a bilingual institution is a sign of self-affirmation. By emphasising the significance of indigenous knowledge(s) that are produced in a variety of forms, that value sublingual tradition and recognise emotional responses, and communicative incoherence as equally important sources of knowledge creation, it is critical to oppose the hierarchical foundations of stated information literacy and intellectual contributions that are completely divorced from thoughts and colonial impacts (Canagarajah, 2020). When the colonisers came to Africa they imposed not only their beliefs on

Africans but their language too, yet decades post-coloniality Africans are still bound to colonial strings.

There is a need to carry out the research on the effects of monolingual classrooms in South Africa as there exists a huge gap between policies on paper and the enacted policies in the classroom. This research aims to fill the research gaps on why the enacted policies do not match the policies put forward by the department of education. The research looks at the factors that may contribute to monolingual pedagogies which include institutional racism, language as a tool of dominance and more.

2.9. Conclusion.

There is an undying emphasis placed on globalisation in the South African curriculum and the expansion of English as a language of imperialism, which neglects the requirements of learners while culturally impoverishing third-world nations through the degradation of their language ecology (Hornberger & Vaish, 2009). African learners are forced to read without understanding because of the employment of a Euro-American model (Hornberger & Vaish, 2009). If African learners cannot identify themselves or relate to others, then, for whom was the educational system specifically designed? This study intends to explore the challenges of the language barrier and academic exclusion that African learners encounter in monolingual classrooms, as well as how these difficulties affect their academic performance. The poor PIRLS results are questionable to academics, and there remains a need to uncover the reasons behind these poor results and solutions must be given. This research will help determine the effects monolingual pedagogies may have on the academic performance of South African learners and possibly, globally. The study is guided by the poor PIRLS results obtained by South Africa from 2006-2021 (Mullis, et al., 2023).

Chapter 3: Research method and Design.

3.1 Introduction.

This section discusses in detail the holistic framework that guides how this study will be conducted and how aligned it is with the objectives of the study. It entails the method, design, approaches, philosophy, strategy, and other necessary considerations that will be employed to successfully meet the research goal. It also justifies how the researcher's selections are made. Finally, it addresses the medium for data collection, and analysis through a mixed-method design.

3.2 Research method.

The research approach embodied a systematic and theoretical method adopted in a study, providing a roadmap for understanding the nature of inquiry (Kothari, 2004). As outlined by Mackey and Gass (2015), while research paradigms are vast and varied, the primary methods of research can be classified into qualitative, quantitative, and mixed methods (Creswell, 2013; Kothari, 2012). For this study the researcher employed a mixed method research approach.

3.3 Research paradigm.

The study was grounded in a critical perspective, aligning with the principles of the critical paradigm as outlined by Bryman (2016). The critical paradigm emphasised cultivating a critical consciousness throughout the research process, challenging dominant discourses, and advancing social justice. This paradigm recognised inherent power imbalances within the educational system and sought to comprehensively investigate the structural and systemic causes of marginalization among African learners. The researcher employed this paradigm by addressing its key points, which include:

3.3.1. Questioning Dominant Discourses:

The critical paradigm adopted for this research involved a continuous questioning of prevailing discourses that contribute to the marginalization of African learners. This included a critical examination of existing educational narratives, policies, and practices of using a language which is foreign to majority of the learners in townships.

3.3.2. Understanding Power Imbalances:

Recognizing the inherent power imbalances in the educational system was a foundational aspect for this study. As the study aimed to shed light on the ways in which power dynamics manifest and influence the marginalization of certain groups of learners, black African learners specifically.

The critical paradigm facilitated an in-depth exploration of the structural and systemic factors contributing to the marginalization of African learners. This involved examining the roles of educators, curriculum designers, and policies in either perpetuating or opposing disparities.

The chosen research paradigm is grounded in the critical perspective, providing a robust framework for examining the marginalization of African learners. By actively challenging power imbalances, questioning dominant discourses, and emphasizing social justice, this paradigm aimed to contribute valuable insights to the field of education, fostering a more equitable and inclusive educational landscape.

3.4 Research design:

The research design provides a structured strategy to integrate various components of a study coherently and logically for the researcher, ensuring the research question is addressable (Trochim, 2006; Creswell, 2013; Kothari, 2012). In this study, a triangulation mixed-method design was employed, using a control and experimental group to evaluate the impacts of monolingual pedagogies in South African fourth-grade classrooms, see figure 3.1:

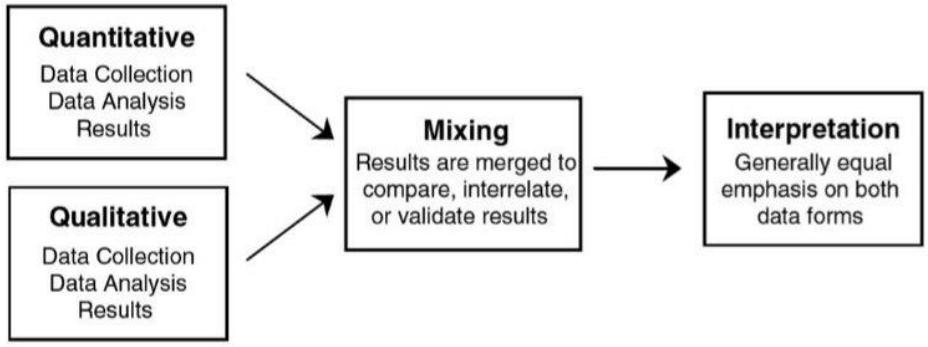


Figure 3.1. Triangulation mixed-methods deign. (Fielding, 2012).

This triangulation mixed method design allowed the researcher to weigh both the qualitative and quantitative data found during the study equally. The researcher had a chance to collect the data simultaneously but analyse the data differently and result it differently, then triangulate comparing and contrasting the results complementarity before a new interpretation is concluded with both data integrated.

Over a period of three weeks, the experimental group engaged in pedagogies inclusive of Sepedi, and English while the control group follows the standard English-only curriculum. The collected qualitative and quantitative data was gathered, analysed, and interpreted using a convergent parallel mixed-methods study design whereby the researcher collected the quantitative and qualitative data at the same time and analyse them separately. The lessons were observed over a three-week period, and any significant or useful information for the study was noted in a journal entry that was dated. Interviews were used to gather the learners' subjective viewpoints on learning in an additional language. The learners took a math test in the last week of the

intervention that gauged what they have learned over the previous two weeks, helping to better contextualize the effects of monolingual pedagogies. During the three-week period at the school the researcher collected both data, this was to ensure that no data is prioritised over the other.

3.5 Research Site.

According to Yin (2013), understanding the specific environment or context in which a study takes place is crucial for appreciating its depth and implications. This research took place within Drake Koka Primary School, located in the township of Kaalfontein, Midrand.

Drake Koka Primary serves as a microcosm, representing numerous schools in similar socio-economic conditions. The vast majority of learners at this school come directly from the Kaalfontein township, which is an under resourced township, consisting of Government RDP homes (Reconstruction and Development Programme) which is housing where the *South African government programme that ensures people from poor resource settings live in decent houses, this program mainly consists of the lower class and sometimes the working class* and informal settlements which are under resourced communities in squatter camps, waiting for help from the government (to receive these RDP homes). Their primary languages of communication are indigenous African languages, specifically Sepedi, IsiZulu, and Xitsonga.

A noteworthy characteristic of their educational journey is the introduction of English as the primary medium of learning and teaching often introduced formally only in the fourth grade to these black African 9-11year old's. This sudden linguistic transition presents both challenges and opportunities in the educational paradigm, as learners must navigate the complexities of learning in a language that was previously unfamiliar in their formal education. As the school consists of black African learners who are not exposed to English in their communities.

3.6 Population.

This refers to the entire group about which the researcher wishes to draw conclusions (Sekaran & Bougie, 2016). It encompasses the total collection of units or elements that possess the information sought by the researcher and about which inferences are to be made (Bhattacherjee, 2012). Understanding the population and target population is crucial as it determines the scope and relevance of the research. The school comprises over 2000 intermediate phase (fourth-grade-6) learners of which 340 are fourth-grade learners. This study focused on 9-11year old Sepedi and IsiZulu black learners, from two classrooms, which only consist of 140 learners of the 340. It is a subset of the larger population and represents the group to which the study's findings were intended to generalize. It is the specific group of entities from the overall population that the researcher aims to study (Creswell & Creswell, 2017). Identifying the correct target population

ensured that the research findings are applicable, relevant, and can provide specific insights or interventions for that particular group.

The focus was on approximately 141 Fourth-grade mathematics learners, 73 from the control group and the other 68 from the experimental group. This group represented the target from which the sample was derived.

3.7 Sampling Technique.

The Head of Department (HOD), having extensive knowledge about the unique attributes of each class, selected two classes ensuring a balanced representation from diverse linguistic backgrounds (Sepedi and IsiZulu). The selection is based on factors like prior academic performance, equitable distribution of learners from different language backgrounds, and similar prior exposure to English.

A subset of the population that is representative of the entire group (Bryman, 2012). The sampling technique used for this study is non-random sampling. Non-random sampling refers to a method where sub-set element was not randomly picked and not all members of the population (Drake-Koka primary school) had an equal chance of being included in the sub-set selection. The researcher employed purposive sampling which is a non-probability sampling technique for creating the sample for the current investigation. Although there are many other non-probability sampling methods, the current study will use purposive sampling, a method that deliberately chooses individuals based on the qualities they possess, in this case their medium of instruction being different from their home-language and level of study {fourth-grade} (Creswell & Clark, 2018).

Purposive sampling was used by the researcher to select participants from whom to collect both quantitative and qualitative data from the two fourth-grade mathematics classrooms, which were already set up in accordance with the administrative procedures of the school and are instructed by teachers who are fluent in the learner's mother-tongue and English. The rationale behind this was that the study was focused on the impact monolingual pedagogies have on fourth-grade learners' academic performance and how the employment of translanguaging and multilingual pedagogies can be used to improve their performance. Therefore, the use of two groups being the control group who carried on learning in the prescribed language of learning and teaching (English) and the experimental group who employed multilingual and translanguaging pedagogies, these two groups allowed the researcher to see if language plays a pivotal role in the

academic performance of fourth grade mathematics learners and if really monolingual pedagogies are the issue.

3.8 Sample.

Only two already constituted fourth grade mathematics classes participated in the study with approximately 70 learners in each class out of the five existing mathematics classes and this was done by the researcher as the study only needed two groups, being the experimental and control group. These two classes were chosen out of the 5 as the teachers were found to be the most competent out of the 5 to carry out the study, being a teacher who was most competent in English and a teacher who was able to code-switch and use multilingual pedagogies in the classroom. The class selection was done based on teacher competency and how well their learners would most likely adapt to the new way of learning. For the interviews only 10 participants were chosen from the 140 learners participating in the whole study, only 10 learners were chosen because the sample size is too big to interview all the learners and the 10 were chosen using non-random sampling, 5 from the experimental group and the other 5 from the control group. To answer the current study's research questions, this sampling strategy used non-random criteria such as participant availability, participant proximity to the research subject, participant understanding of the subject, and the behaviour the researcher might have seen during their observation. In the context of determining appropriate sample sizes for research, Krejcie and Morgan's (1970) table serves as a robust reference, particularly when ensuring a 95% confidence level with a 5% margin of error. The table recommends a sample size of 134 for a population size of 340. In this study, a sample size of 140 has been selected (2 out of 5 fourth grade classes), which is slightly larger than the recommended 134, thereby potentially offering even greater precision and confidence in the results obtained from the sampled data.

These classes were chosen by the researcher with the help of the HOD for mathematics as he had better knowledge on the classes and which ones were best suited for the study. The researcher found purposive sampling to be the best fit to the study as the researcher with the help of the HOD chose a group of learners who do not speak English at home or in their communities but they have to learn in the English language, they all shared this similar dilemma whereby they are not prepared for the abrupt switch from the use of their home-languages in grade one to three as a LoLT to English in fourth grade. The researcher chose to use two already constituted mathematics fourth grade classes who use an additional language (English) as a medium of instruction while the learners in the two classes have a different home language (Isizulu and Sepedi), both classes

were chosen by the divisions HOD, this allowed the researcher a chance to be non-bias and give a fair chance to the learners participating. All the learners in the school are grouped according to the home-languages, there are two Sepedi classes, two IsiZulu classes and one Xitsonga class. The IsiZulu class was used as the control group while the Sepedi group was used as the experimental group, these two groups were chosen according to the teacher skills to teach in both the learner's home-language and English. The chosen classes had an estimated number of 70 learners each giving the researcher a total of 140 learners.

Table 3.1: Breakdown of Population and Sample Size (Krejcie & Morgan, 1970).

Description	Number of Learners	Percentage of Target Population
Total Fourth-grade Learners	**340**	**100%**
Learners in Mathematics	**340**	**100% of Total Fourth-grade Learners**
Sample Size for Study	**140**	**41.2% of Mathematics Learners**

Utilizing a sample size close to or slightly above the recommendations of Krejcie and Morgan (1970) ensures that the research is grounded in well-recognized statistical guidelines. This practice enhances the credibility and reliability of the findings, as the sample provides a comprehensive representation of the broader population. In other words, the chosen sample size of 140 for a target population of 340 not only meets but marginally exceeds the recommendations, indicating rigorous methodological choices aligned with best practices in the field of research.

3.9 Data collection.

In this section, the data collection process for the study is outlined, providing a comprehensive overview of the methods employed to gather relevant information. The chapter delves into the specific strategies utilized to obtain both qualitative and quantitative data, ensuring a well-rounded and nuanced exploration of the research questions. This includes a detailed discussion of the selected sampling techniques, participant recruitment procedures, and the tools employed for data collection.

3.9.1 Mixed-methods research.

This method combined both the quantitative and qualitative methods (Kothari, 2012). This was to ensure a holistic understanding of the subject. The study employed a blend of both quantitative and qualitative methodological approach. Through this integration of quantitative and qualitative

research methods, the study sought to provide a comprehensive understanding of the complex interplay between academic proficiency and language proficiency.

Quantitative research.

This section focused on quantifying relationships between variables, providing an empirical foundation for understanding patterns and trends (Muijs, & Dunne 2010). The chosen approach facilitated the provision of objective measurements and offered statistical analysis for hypothesis testing, with the researcher utilizing standardized tests.

Standardized achievement tests:

Administering standardized achievement tests to Black African learners in monolingual classrooms provided valuable quantitative data on their academic performance, allowing for comparisons to national or international benchmarks to gauge academic progress (Anastasi & Urbina, 1997). These tests, administered and graded consistently, played a crucial role in the study, ensuring uniformity in questions and interpretations (Qassimi, & Wade 2021).

The test materials covered content from the mathematics classroom, with the researcher developing tests in English for the control group and in both English and their home language, Sepedi, for the experimental group. Despite both groups receiving the same test paper, one was written in English only, and the other in both English and Sepedi. The test focused on Fractions, time, distance and shapes, comprising three main questions.

Teachers from both groups were required to explain the test in the language used during the study. Consequently, the experimental group teacher utilized both English and Sepedi, while the control group teacher used English. The three questions, designed to assess reading ability and mathematical understanding, aimed to discern whether the challenges observed were rooted in mathematics itself or language-related issues.

Qualitative research.

This research method aimed to comprehend human behaviour and the underlying reasons influencing such behaviour (Denzin & Lincoln, 2011). Despite the potential influence of moods and emotions leading to biases in qualitative research (Kothari, 2012), it offered invaluable insights into participants' lived experiences and perceptions. The research employed observations and interviews to gather qualitative data.

For qualitative insights, semi-structured interviews were conducted in both English and the learners' home language. A total of 10 learners, five from the experimental group and five from the control group, were selected from the total participant pool of 141. These interviews delved into themes such as perceived ease of understanding, cultural representation, and classroom inclusivity.

In addition to interviews, the research method incorporated observations to further enrich the qualitative data. The study involved observing two classes, one from the experimental group and the other from the control group, during their mathematics periods over a three-week period. Each day consisted of two to three mathematics lessons, depending on the day's schedule.

The observations aimed to identify and understand behavioural patterns, potential language-related challenges, and overall classroom dynamics. The researcher focused on occurrences such as the frequency of behavioural infractions, expressions of confusion, disengagement, or zoning-out during lessons. This approach, influenced by Schensul, Schensul, & LeCompte (1999), not only helped identify relationships with informants but also guided the formulation of appropriate questions for subsequent interviews.

On **the quantitative side**, academic performance was gauged using standardized tests. Specifically, a tailored mathematical test was used, comprising: A comprehensive question requiring analytical reasoning, a multiple-choice question testing foundational knowledge and a question in number form assessing arithmetic skills.

The tests questions were weighted as follow:

Question 1: Comprehensive question with 8 sub-questions 13 points, question 2: multiple-choice question with 6 sub-questions for 6 points and Question 3: number form question with 6 sub-questions for 6 points. Total achievable score for the test 25 points.

Data collection entails the systematic approach used to gather and measure information on targeted variables in an established systematic fashion (Bryman, 2012). In this study, data was gathered through face-to-face structured interviews, direct observations, and standardized tests, with the latter serving as the primary instruments for evaluating learning outcomes.

In-depth interviews:

In a quest to understand the experiences of learners navigating monolingual classrooms where English held sway, the researcher conducted semi-structured, face-to-face interviews with ten students. Chosen through a random selection process to ensure unbiased perspectives, these students became guides on a journey into the complexities of their educational landscape. The

researcher's conversations delved into three key realms: the students' academic progress within the English-dominant environment, the dynamics of their relationships with teachers and peers, and any perceived barriers hindering their educational voyage. Six key questions served as compass points, but the true magic unfolded in the open conversations that followed, where students freely expressed their opinions and nuanced attitudes towards the language of instruction. Spanning between 5 and 10 minutes, these intimate dialogues, conducted in English with the participants' gracious consent, were meticulously recorded and later transcribed, ensuring faithful capture of every sentiment. This rigorous approach, guided by the Braun & Clarke (2019) framework for thematic analysis, promised a deeper understanding of the intricate tapestry woven within these classrooms. While the study's scope was limited by the sample size, the emphasis on in-depth interviews and meticulous data analysis offered a powerful lens through which to illuminate the complex realities faced by learners in such environments. The researcher embarked on this quest not only to understand their struggles but also to pave the way for more inclusive and responsive educational landscapes where every voice could flourish, regardless of its linguistic roots.

Observations:

Observations are instrumental, as outlined by Schensul, Schensul, & LeCompte (1999), not only in aiding the researcher to identify and establish connections with informants but also in shaping the formulation of appropriate questions and refining the overall research strategy. Throughout a three-week period, the researcher diligently observed learners during their mathematics classes in two classrooms, with the number of lessons varying each day.

The focus of the observations extended beyond mere quantification, incorporating both quantitative and qualitative lenses to capture the nuances of behavioural infractions, including instances of confusion, disengagement, or zoning-out during lessons. This dual approach aimed to comprehensively understand the dynamics at play in both multilingual pedagogies employed in the experimental group and the reception of monolingual pedagogy in the control group.

The research delved into assessing teacher competency in delivering content in different languages, shedding light on whether language of instruction or teaching proficiency posed potential challenges. Simultaneously, the researcher keenly observed and documented learner attitudes in both classrooms, recognizing their potential impact on the overall learning environment. The chosen topics of fractions and shapes served as specific points of focus during

these observations, allowing for a nuanced examination of the teaching and learning dynamics in both settings. Journal entries were meticulously crafted, providing a detailed and reflective record of observed behaviours, challenges, and interactions within the multilingual and monolingual educational contexts.

3.9.2 Unit of analysis.

This defines what the main element or entity of study will be, such as individuals, groups, artifacts, or events (Krippendorff, 2013; Babbie, 2013).

In this study, the primary objective revolves around discerning the influence of monolingual versus multilingual pedagogies on learners' academic progression and social assimilation. As such, the central entity under scrutiny is the learners' academic achievements and their encompassing experiences. Therefore, the *individual fourth-grade learners* emerges' as the unit of analysis.

***Justification**:* The study's core objective is to probe the repercussions of distinct pedagogies on learners. Evaluating each learner's scholastic outcomes, sentiments, and encounters under the varying pedagogical paradigms is central to fulfilling this objective.

3.9.3 Unit of observation.

In this study, the unit of observation, defined as the specific entity or source from which data is gathered (Punch, 2013), played a crucial role in adopting a mixed-methods approach. The diverse nature of the data collection process involved multiple avenues to ensure a comprehensive understanding.

Quantitative data were derived from the Learners' Test Scores, serving as a metric to gauge academic prowess. This aspect provided numerical insights into the academic performance of the Fourth-Grade Learners, contributing to the quantitative dimension of the study.

Concurrently, the study delved into the linguistic behaviours of the Fourth-Grade Learners through observations. These observations were designed to capture how learners interacted, expressed themselves, and comprehended information in both their native and additional languages. This qualitative data collection method aimed to unravel the intricate dynamics of language use among the participants.

Furthermore, the qualitative dimension was enriched by Interview Responses from the learners. These responses were instrumental in offering nuanced insights into the experiences and perceptions of the learners, contributing valuable qualitative data.

In summation, the test scores, linguistic behaviours, and interview responses collectively served as the units of observation, each playing a distinct yet interrelated role in capturing the multifaceted aspects of the study's research questions.

***Justification**:* The varied, mixed-method strategy mandates the harnessing of data from diverse channels. The empirical nature of test scores provided a concrete, measurable benchmark of scholastic achievement. Simultaneously, the linguistic behaviours revealed the real-time language dynamics of the learners, capturing their adaptability and proficiency. This is further complemented by the richness of insights from interviews, enabling a multifaceted perspective on the research topic and a holistic understanding.

3.9.4 Data analysis.

The process of inspecting, cleaning, transforming, and interpreting collected data, with the aim of discovering useful information, as outlined by Bryman (2012), guided the data analysis approach in this study. Both qualitative coding methods and quantitative statistical tests were employed to scrutinize the data comprehensively.

The study adopted statistical methods to compare outcomes between the control and experimental groups, providing a quantitative lens to assess the impact of tools and resources on learning. To ensure a robust and comprehensive analysis, a data triangulation design was implemented. This design involved the separate collection, analysis, and interpretation of both qualitative and quantitative data, which were later merged to compare and validate results from both perspectives. The rationale behind this approach was to foster an objective determination of the impact of tools and resources on the learning process, ensuring a holistic understanding of the study's findings.

Qualitative data analysis.

For the **qualitative data** collected through in-depth interviews and observations, a thematic analysis was used. After transcribing and familiarising with the data, codes were assigned to each significant statement or quote, and then the codes were assembled into categories, and themes eventually emerged (Braun & Clarke, 2019). This analysis focused on identifying themes related to the impact of monolingual classrooms on the academic and social inclusion of African learners. This data analysing approach was suitable for the current study because it can help the researcher uncover common themes and trends in the data gathered, meaning it will be easier to compare the data gathered and open up a door to different interpretations and themes. Through this method the researcher drew down patterns from their observations and interviews, and grouped them into

negatives and positives to reach a conclusion. The most common attitude from the learners during the class, engagement, understanding and the teacher's attitude, all of these were analysed to come up with themes and drafting patterns, this was also done for the interviews. The interviews focused more on how frequently the learners need translation when asked a question in English, are they able to respond in English, out of the 10 learners how many can actually speak English, what is the most common answer for the questions asked, all of these factors will be broken into themes by the researcher.

Quantitative data analysis.

For the **quantitative data** collected through standardised achievement tests, descriptive statistics and inferential statistics were used, respectively. Descriptive statistics, including measures of central tendency and dispersion, were computed to provide an overview of learners' academic performance (Anastasi & Urbina, 1997). The researcher then used Inferential statistics, such as correlation analysis and regression analysis, will be carried out to identify possible relationships and predictors of academic and social inclusion among African learners in monolingual classrooms (Field, 2013). This analysis method was most suitable as the current study worked with numbers and helped to interpret the data collected accurately. The tests were mainly written to test for understanding and to see how academic performance is linked to language. The researcher had a written record of the progress of the learners from both the control and experimental group pre-test till the post-test. Learners were either scored one for every correct answer or zero for every incorrect answer, and every blank answer space will be left open to indicate this. Thereafter, the researcher will include an excel spreadsheet which will be labelled 'Mathematics fourth-grade test' since it is an efficient way to collect and identify where the common incorrect points are and where the common correct points are in the PST across each learner – "spreadsheets improve learning outcome" (Barreto. 2015, p. 1). the researcher employed both descriptive and inferential statistics.

Descriptive statistics can be categorized as either univariate or bivariate (McMillan & Schumacher, 2010). Univariate analysis summarizes data on a single variable, while bivariate analysis is applied when there is a correlation among variables or when different groups are being compared (Cohen et al., 2011). Bivariate analysis encompasses various techniques such as correlation, comparing frequencies, comparing percentages, comparing means, and comparing medians (Cohen et al., 2011; McMillan & Schumacher, 2010).

In the context of this research, bivariate analysis was the chosen approach. The researcher compared frequencies, effect size indices, p-values, learning gain, and means obtained in different tests by the participating learners. This analysis included constructing a frequency distribution table to illustrate the occurrence of each option per question (McMillan & Schumacher, 2010). The utilization of bivariate analysis allowed for a nuanced examination of the relationships and differences between variables, offering a comprehensive understanding of the study's findings. Using this method, it will be easier for the researcher to compare the two results against each other. The patterns from the tests will also be recorded to help understand the common mistakes the learners made when it came to the test, this will then help record where exactly most learners could not comprehend, whether the direct translation of the experimental group helped or not, where there was consistency with the test results, where the results were far off, hence the use of the t-test for this data analysis is found to be fit by the researcher.

3.9.5 Quality assurance of Qualitative and Quantitative Data.

The quality criteria employed by this study is highlighted in the figure below. Thereafter, various aspects of the quality criteria are explained. The study shall be guided by these 4 concepts:

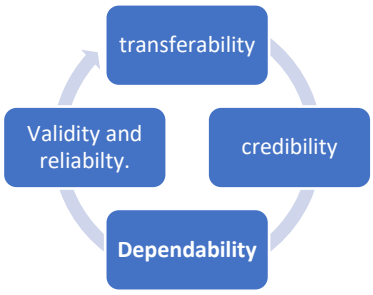


Figure 3.2: Credibility of Qualitative data.

Credibility raises questions regarding the accuracy of **qualitative research** findings (Bashir et al., 2008:39). Using a range of data collection techniques, or triangulation helps ensure credibility (Blanch, Durkheim & Painter, 2006). Peer debriefing and member evaluation of transcripts, according to Cohen, Manion, and Morrison (2011), can help assure trustworthiness. The researcher of the present study checked with participants to make sure that their statements are accurately recorded and properly analysed to ensure credibility. The use of audio tapes also helped the researcher maintain credibility for the interviews and journal entries were done after each observation to make sure accurate information is recorded. Moreover, the triangulation of data from semi-structured interviews and document analysis for each of the study topics assured trustworthiness.

The credibility of the **quantitative research** was ensured by the researcher by making sure that there was a prolonged engagement and triangulation with the data whereby consistent observations will be done, all tests were not tempered with and were marked by the researcher and only her, the results and data analysis was done in the most truthful, non-bias and most accurate way.

Transferability.

To prove the validity of the findings in both the qualitative and quantitative data, it may be possible to apply the research's conclusions in an environment different from the one in which it was conducted (Tashakkori & Teddlie, 2003). So, the question of my study's transferability is if the findings will remain the same if the study is carried out with a different group of people in a different environment. To ensure transferability, the study used data source triangulation.

The researcher collected data simultaneously but analysed it differently, resulting in distinct outcomes. Subsequently, the researcher employed a triangulation approach, comparing and contrasting the results for complementarity before arriving at a new interpretation with integrated data. This involved the concurrent collection of quantitative and qualitative data through observations, interviews, and a written mathematics test.

For a comprehensive understanding and to address the research questions effectively, the researcher analysed and presented quantitative and qualitative data separately. The triangulation process was then employed to compare and contrast the findings from both data sources before reaching conclusive interpretations. To ensure a nuanced portrayal of people's perceptions, data from semi-structured interviews and participant observations were triangulated. Providing an in-depth description of the phenomena under study was prioritized to ensure the transferability of qualitative data in the study. This approach aimed to enhance the reliability and credibility of the study's findings by considering multiple perspectives and sources of information.

Dependability.

To achieve dependability in mixed-method research, several strategies can be employed. Methodological triangulation, which involves using multiple sources of data and methods to enhance the credibility and confirmability of the findings. In this study 141 learners were observed and tested through a pre-test and post-test (on content they have already covered). More than one method was used for data collection, which include a written test, interviews and observations. The researcher also used detailed documentation process of research methods,

procedures, and analysis to ensure transparency and enable replication. The use of peer review, where other researchers review the study, and provide feedback on the methodology, data collection, analysis, and interpretation also played a role in ensuring the dependability of the data.

Reliability and Validity of Quantitative data.

Concepts like validity and reliability are utilised to assess the calibre of research (Yin, 2018). The two ideas describe how well an approach, method, or test measure's something. Validity is concerned with a measure's correctness, whereas reliability is concerned with its consistency. Reliability is defined by Leedy and Ormrod (2010) as the consistency with which a measuring tool produces a certain result when the thing being measured has not changed. Item-to-total correlation, split-half reliability, Kuder-Richardson coefficient, and Cronbach's alpha are used to evaluate internal consistency (reliability) (Lobiondo-Wood & Haber, 2013).

Validity.

The researcher created two tests (a pre-test and a post-test) meticulously designed to cover all content related to shapes, time, distance and fractions in mathematics, ensuring content validity for the assessments used during the classes given to participants. The aim was to encompass the entire domain associated with the variable that the developed instruments were intended to measure, aligning with the principles outlined by Leedy, and Ormrod (2010) for comprehensive content coverage.

To ascertain whether the assessments effectively measured the intended notions, the researcher sought validation from the Head of the Department for mathematics and other intermediate phase teachers. This process involved consultation with subject matter experts to ensure that the test accurately reflected the targeted content and effectively evaluated the participants' understanding of shapes and fractions in mathematics.

Reliability.

The researcher calculated the correlation between the results of their measurements and the outcomes of the criterion measurement, employing this approach to ensure reliability in the study. To validate the reliability, a week-long observation of both classes and interviews with 10 different learners were conducted. The test administered to the learners focused on the material covered in their mathematics lessons, specifically shapes and fractions.

The rationale behind these measures was to assess whether a high correlation existed, serving as a reliable indicator that the tests effectively measured the intended construct—namely, the effects of language on academic performance. By employing these methods, the researcher sought to establish the consistency and dependability of the measurements undertaken in the study.

3.10. Ethical considerations.

Are paramount in any research study to ensure the rights and welfare of participants are protected, and to maintain the integrity of the research process. In this mixed-method study, several key ethical concerns will be addressed:

Informed Consent: All participants in the study, including teachers, learners, and any other stakeholders, were provided with an informed consent form. This form detailed the purpose of the study, the procedures involved, any potential risks, and their rights as participants. They were informed that their participation is voluntary and they can withdraw at any time without any repercussions.

Confidentiality: Personal information and responses from participants were kept confidential. Pseudonyms or code numbers were used to identify participants in any data presentation. Any identifying information was stored separately from the collected data, ensuring anonymity.

Protection from Harm: The researcher ensured that no harm, whether physical, psychological, or emotional, comes to participants as a result of their participation in the study. Given that this study deals with language and potentially sensitive topics related to identity and belonging, it was crucial to approach participants with sensitivity and empathy.

Transparency: The researcher was transparent about the goals and methods of the study. There was no deception involved, and participants were informed of the study's true purpose from the beginning.

Data Handling: All collected data, whether qualitative or quantitative, was stored securely. Digital recordings are password-protected, and any paper-based materials was kept in a locked cabinet, accessible only to the researcher.

Feedback: Once the study is concluded, participants had the option to receive a summary of the findings, allowing them to understand the outcomes and implications of the research they contributed to.

Beneficence: The researcher approached the study with the intent of benefitting the educational community, particularly in areas of language teaching and learning. There was no intentional biases or manipulation of results.

Respect for Persons: Recognizing the autonomy and dignity of all participants, the researcher treated all participants with respect, acknowledging the individual experiences and perspectives they bring to the study.

Avoidance of Plagiarism: The researcher ensured that all sources of information, including literature and data, are properly cited and credited. This maintains the integrity of the research process.

Approval from Institutional Review Board (IRB): Before starting the research, approval was sought from the institution's review board to ensure that all ethical guidelines are being adhered to, with the protocol number "1-123/07/64"

3.11. Conclusion.

The researcher endeavoured to conduct an ethical study, prioritizing the well-being of participants both physically and emotionally. The imperative to investigate the effects of monolingual classrooms in South Africa arose from a significant disparity between written policies and their actual implementation in the classroom setting. This research sought to address the existing gaps in understanding why enacted policies deviate from those outlined by the Department of Education. The overarching objectives were to scrutinize whether language serves as a contributing factor to the subpar performance of fourth-grade learners and to assess the effectiveness of employing multilingual pedagogies in fostering academic improvement. By delving into these aspects, the researcher aimed to contribute valuable insights that could inform educational practices and policy implementation.

CHAPTER 4: DATA PRESENTATION, INTERPRETATION AND ANALYSIS.

This chapter details the data collected during the study, how it was analysed by the researcher as well as the results that emanated from the analysis.

4.1. introduction.

The exploration into the impact of monolingual pedagogies on the academic success of grade 4 learners navigating a foreign language as the medium of instruction unveils a critical examination of the complexities within our increasingly linguistically diverse educational landscape. As societies worldwide witness an influx of learners entering classrooms with home languages divergent from the language of instruction, understanding the effects of such dynamics becomes imperative for educational practitioners and policymakers.

This study is positioned within the intermediate phase educational setting, to specifically delve into the experiences of grade 4 learners with the home languages isiZulu and Sepedi, who learn in a language different from their home language (additional language), English. The investigation encompasses the administration of a pre- and post-test, capturing learners' academic progress over the intervention period. The resulting data-set, is then meticulously recorded and organized, providing a rich foundation for an in-depth quantitative analyses and qualitative insights.

Utilizing a comprehensive array of statistical measures, including mean scores, pass rates, standard deviations, learning gains, effect size indices, and p-values, the researcher employed R-computing to unravel patterns and trends within the quantitative data. The presentation of findings through performance tables, bar graphs, and charts facilitates a clear visualization of the academic trajectory of learners subjected to distinct pedagogical approaches.

Beyond numerical assessments, the study incorporated qualitative dimensions by conducting classroom observations and interviews with learners and their teachers from both the experimental and control groups. These interviews aimed to unearth the learners' and teachers' perspectives on the interventions they experienced during the study. The combination of written responses, tape-recorded reflections, and subsequent transcription and analysis provides a holistic understanding of the nuanced factors influencing learners' and teachers experiences in monolingual classrooms.

The overarching goal of this research is to address three interconnected questions:

1. How do monolingual classrooms impact the academic performance of intermediate phase grade 4 African learners learning in an additional language?

2. How do language policies and curriculum frameworks intersect with monolingual classroom practices to impact the learning outcomes of intermediate phase grade 4 African learners?

3. How do the historical and cultural contexts of African learners influence their experiences in monolingual classrooms, and what implications does this have for teaching and learning practices?

The research was guided by specific hypotheses that aimed to be either confirmed or refuted through the analysis of the data.

Research Hypothesis: The language of instruction significantly impacts the academic performance of Grade 4 learners who are acquiring knowledge in an additional language distinct from their home-language.

Null Hypothesis: there is no substantial difference in the academic performance of grade 4 mathematics learners post intervention in the experimental group.

By navigating these questions, the study aims to contribute nuanced insights to the broader discourse on language education, providing actionable implications for both pedagogical approaches and educational policies within the unique context of an increasingly diverse and dynamic educational landscape.

4.2. Data presentation and analysis.

The examination of data within this study was meticulously executed, utilizing a dual methodology that seamlessly integrated quantitative and qualitative analyses. Quantitatively, the study drew upon the outcomes of the two tests administered to participants, offering a quantitative lens through which to gauge academic performance and discern measurable learning outcomes. Concurrently, a qualitative dimension was introduced through a multifaceted approach. In-depth interviews were conducted with participants from both the experimental and control groups, providing a nuanced exploration of their perspectives on the interventions and pedagogical strategies experienced during the study. Additionally, valuable insights were derived from

classroom observations, affording a real-time lens into interactions, instructional methodologies, and learner engagement within the monolingual classroom setting.

4.3 Quantitative Analysis.

One of the widely employed statistical methodologies in the analysis of quantitative research data is the t-test, a tool designed for comparing means between two groups. Within research, three common types of t-tests are utilized: the single-sample t-test, the two-sample t-test with different groups, and the two-sample t-test with the same group. In each instance, a comparison is made between two values to assess whether they exhibit similarities or differences (McMillan & Schumacher, 2010).

In the context of this study, the chosen statistical procedure was the two-sample t-test, also known as the independent samples t-test (Leedy & Ormrod, 2010). The objective of employing this statistical tool was to ascertain if a statistically significant difference existed in the dependent variable between the two groups under investigation (McMillan & Schumacher, 2010). To execute the analysis, the researcher utilized R-computing to calculate the mean and standard deviation for each sample, as outlined by Rubin and Babbie (2010) in Charamba, (2017). Subsequently, these values were employed to compute the t-statistic, representing the difference between the sample means divided by the standard error of the mean (McMillan & Schumacher, 2010). The resulting t values, typically three- or four-digit numbers with two decimal places, were subjected to a significance test. This involved a comparison of the calculated t values with theoretical t values obtained from the t distribution table (McMillan & Schumacher, 2010). The decision on statistical significance was made based on the degrees of freedom (df) and the predetermined level of significance (McMillan & Schumacher, 2010).

4.3.1. Null hypothesis.

The null hypothesis posited in the study asserted the absence of a distinction between the population means of the two groups under examination (Tuckman, 2011) as cited in Charamba, 2017. Essentially, it presumed that the population means were equivalent/ no substantial difference. Employing inferential statistical tests, the researcher sought to assess the likelihood that the null hypothesis was untrue, as indicated by Gray (2011) as cited in Charamba, 2017. A rejection of the null hypothesis would suggest a heightened probability of a discernible difference between the compared groups (McMillan & Schumacher, 2010). The rationale behind the utilization of null hypotheses in conjunction with inferential statistics within this study stemmed from the researcher's objective not to affirm the truth of a particular phenomenon but rather to

test its falsifiability, aligning with the perspective elucidated by McMillan and Schumacher (2010).

4.3.2. Alternative hypothesis.

The alternative hypothesis, as articulated by Punch (2011) as cited in Charamba, 2017, serves as the antithesis to the null hypothesis and encapsulates the research or experimental proposition within the statistical framework. This hypothesis may manifest as either directional or nondirectional. In the context of a directional hypothesis, it asserts that one population mean is either greater or less than the other population mean, as delineated by McMillan and Schumacher (2010). Given its single-minded projection, a directional alternative hypothesis is commonly denoted as one-tailed or one-sided. Conversely, the nondirectional alternative hypothesis, postulating potential differences in either direction, is labelled as a two-tailed or two-sided hypothesis (McMillan & Schumacher, 2010). Whether directional or nondirectional, the alternative hypothesis plays a crucial role in the determination of whether the null hypothesis can be rejected, as underscored by Cohen et al. (2011).

In this investigation, the research hypothesis posited a conjectured association between language and the academic performance of Grade 4 learners studying in an additional language distinct from their home-language. Conversely, the null hypothesis articulated the absence of any significant difference in the academic performance between the control and experimental groups subsequent to the intervention. To assess the veracity of the null hypothesis, the researcher employed R-computing software, employing the two-sample t-test with independent groups formula to calculate the means for all tests undertaken by the two groups. The calculation of the t-value was followed by the determination of degrees of freedom, a mathematical concept denoted as df, signifying the number of independent observations free to vary (McMillan & Schumacher, 2010). Subsequently, the computed value was juxtaposed against corresponding values on the distribution of a t-table to ascertain whether to accept or reject the null hypothesis.

In the process of determining whether to accept or reject the null hypothesis, the researcher proceeded to compute the p-value, also referred to as the level of probability. Expressed as a decimal, the p-value denotes the likelihood of the researcher making an error in rejecting the null hypothesis, assuming it is true. If the calculated p-value is equal to or less than 0.05 ($p \leq 0.05$), the researcher rejects the null hypothesis, signifying a statistically significant difference. This decision is grounded in the understanding that there is a high probability of the observed results occurring by chance.

P-value between 0.05 and 0.10 is generally considered marginally significant, while anything exceeding 0.10 is deemed a non-significant difference (McMillan & Schumacher, 2010). In instances where the p-value surpasses 0.10 ($p > 0.10$), the researcher accepts the null hypothesis, indicating a lack of statistical significance. For the analysis of qualitative data, the researcher adopted Glăser and Laudel's (2010) model. The data reduction process commenced by generating categories and codes from the interview responses. The transcribed textual data were segmented into codes, which were successively condensed until the researcher could amalgamate them into four overarching themes. This process of data reduction yielded four main themes, further unravelling into sub-themes during the thematic discussion of findings.

4.4. Pre-test Analysis.

Participant selection was achieved through purposive sampling, drawing upon the pre-established control and experimental group within the school's administrative structure. Given the shared characteristics of these groups, including fluency in both English and participants' mother-tongue by their respective teachers, the initial hypothesis suggests minimal performance discrepancies. However, the study's primary aim is to investigate whether the implemented intervention will introduce measurable differences between the groups, thereby challenging this initial assumption. The pre-test consists of four main questions out of 25 altogether. Question 1 consists of 4 multiple choice questions, question 2-4 are answer in questions where the learners need to show all workings.

The two group's performances are represented in the following graphs:

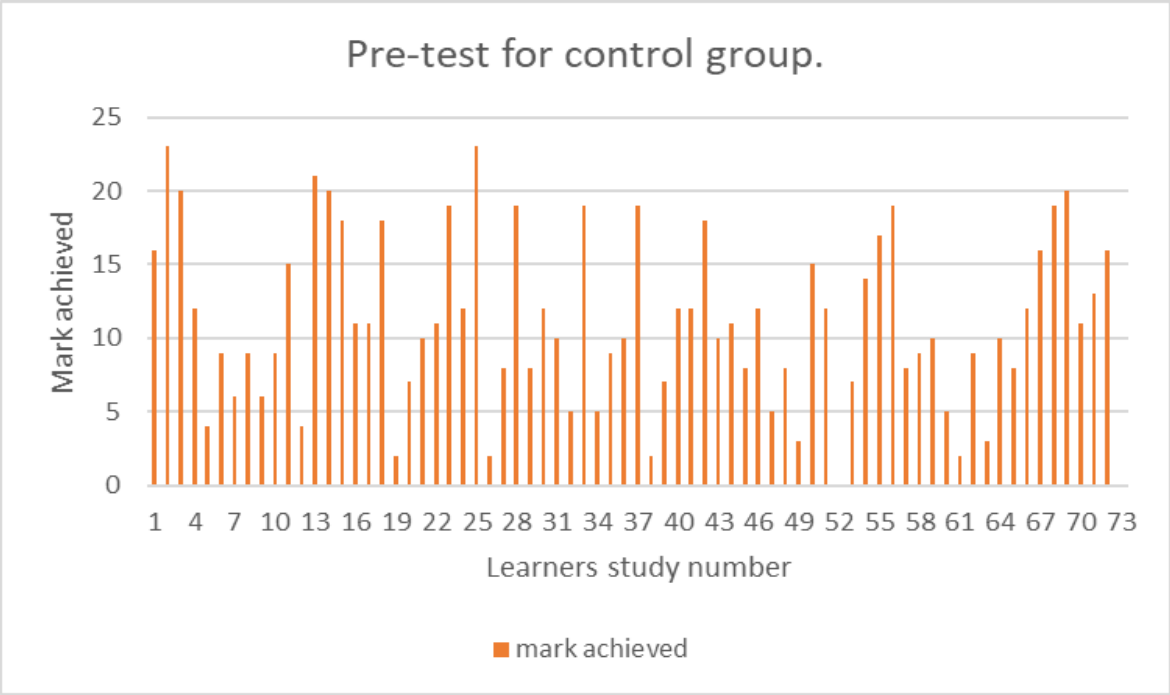


Figure 4.1: Control group Pre- test marks (N = 73).

The graph depicts a concerning disparity in performance across the class. While 73.9% of the learners (54) achieved the minimum passing score of 40% as per CAPS grade 4 promotion requirements (DBE, 2016), only 31.5% out of the 73,9% (23) surpassed the 50% mark. This disparity is further highlighted by the wide range of scores, with two learners achieving an outstanding 92% (23/25) and one learner scoring 0 despite attempting the test. Overall, the control group demonstrated a more consistent performance, with an average score of 45.76% exceeding the pass requirement. This suggests a potential need for further investigation and targeted interventions within the control group to address the performance gap and promote higher student achievement.

There was a wide range of scores within the control group, with some learners achieving very high scores while others scored very low. This suggests the instructional approach may not be catering to the diverse needs of all learners. Further investigation is needed to understand the factors contributing to this disparity, such as prior knowledge, learning styles, or motivation. This could guide targeted interventions to improve outcomes for struggling learners.

Figure 4.2. below shows the pre- test marks attained by learners in the experimental group.

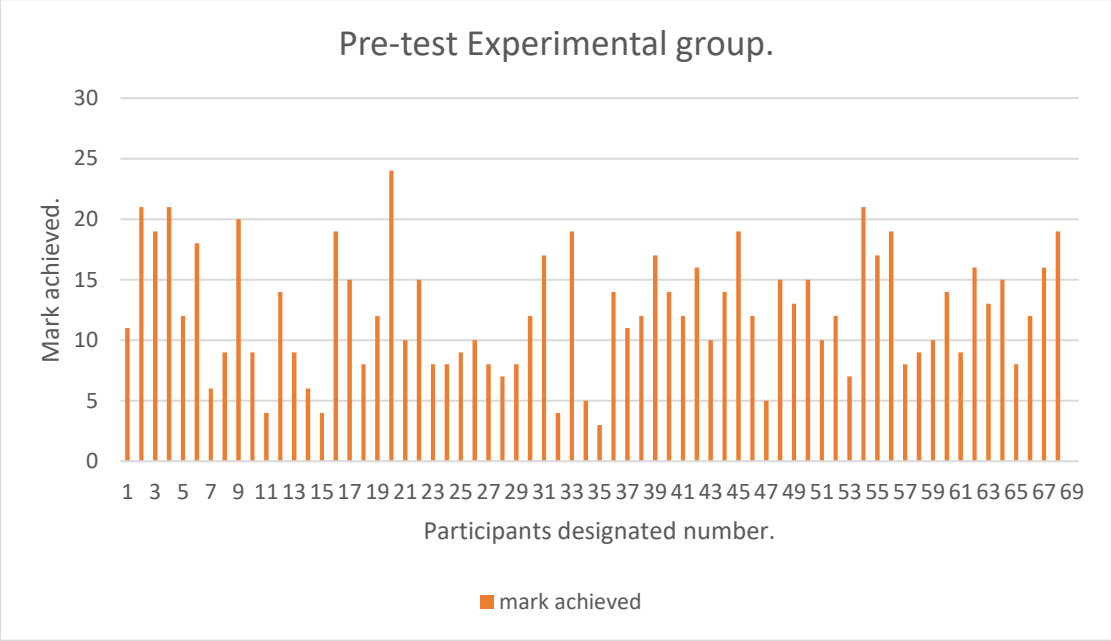


Figure 4.2: Experimental group Pre- test marks (N = 68).

An analysis of the graph reveals that only 30 out of 68 learners (44.1%) in the experimental group surpassed the 50% mark, while 44 learners (64.7%) met the minimum pass requirement of 40% as stipulated by CAPS requirements for grade 4 (DBE, 2016). The individual scores exhibited significant variability, ranging from a near-perfect 24/25 (achieved by one learner) to a 3 being the lowest mark achieved. Notably, the experimental group demonstrated a higher average score of 49.28% with a 3,52% difference from the control groups average, comfortably exceeding the pass benchmark. This discrepancy in group performance warrants further investigation to identify potential factors influencing learning outcomes in the experimental group.

Figure 4.3. below shows the pre- test marks attained by learners in both the experimental group and control group side by side.

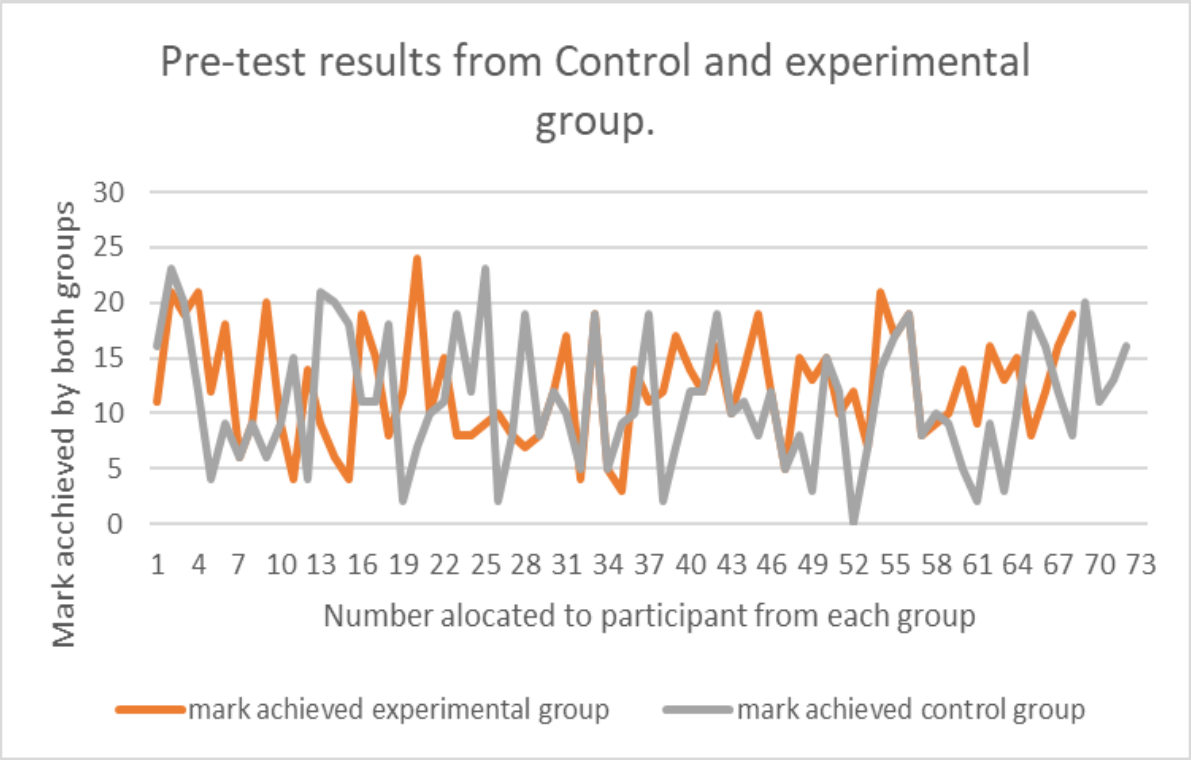


Figure 4.3: Experimental group and Control group Pre- test marks (N = 141).

An analysis of the data between the two groups reveals a complex picture of the pre-test's impact. While both the experimental and control groups met the minimum pass requirement, with 73.9% and 64.7% of learners passing respectively, the proportion achieving mastery level differed significantly. Only 31.5% of learners in the experimental group reached the 50% mark compared to 44.1% in the control group. With further investigation, both groups exhibited substantial score variability, ranging from near perfect scores to struggling learners, highlighting the need for differentiated instructional approaches. Although the experimental group's average score of 49.28% was higher than the control group's 45.76%, this could be inflated by a few high performers and mask disparities in the majority's achievement. These findings underscore the need for further investigation into the intervention's influence on individual performance and its effectiveness in enhancing mastery levels alongside basic competence. Additional analyses incorporating pre-test data and learner perspectives could shed light on the intervention's nuanced impact and inform potential refinements for improving its efficacy.

Table 4.1. A statistical Analysis of Experimental group and Control group Pre-test result:
Dependent t-test statistics

Pre-test	Mean	SD	P-value	Effect size	Gain
Experimental	**49,28%**	**4,92%**	**0,4727**	**0.66**	**0.00**
Control	**45,76%**	**5,69%**			

The statistical analysis presented in Table 2.1 reveals minimal differences in performance between the experimental and control groups. Both groups exhibited similar gain scores, as evidenced by the p-value, effect size, and learning gain values. This aligns with the observed means and standard deviations, which showed a negligible difference of 3.52% in means and 0.77% in standard deviations. Notably, the experimental group, achieved a slightly higher mean score (49.28%) compared to the control groups performance of 45.76%. However, the control group demonstrated a marginally higher standard deviation of 5.69% vs. the 4.92% from the experimental group. These statistical analyses were performed using R- computing software.

Based on the aforementioned results, the null hypothesis stating no significant difference in performance between the groups cannot be rejected. This suggests that the multilingual intervention to be implemented in the experimental group shall not produce a statistically significant impact on learning outcomes compared to the traditional English-only approach employed in the control group. While the null hypothesis cannot be rejected, it's important to interpret these findings within the context of the study design, sample size, and potential limitations. Further analysis, including exploring specific sub-groups or disaggregating the data based on individual language backgrounds and an intervention, might reveal additional insights.

4.5. Intervention.

The experimental group participated in a multilingual intervention, where their mathematics lessons were conducted in both English and Sepedi. This approach employed a translanguaging pedagogy, seamlessly integrating both languages to support comprehension, knowledge construction, and meaningful engagement. The main focus on their lessons were fractions, time and shapes as per ATP so they do not fall behind or repeat any topics. Translingual communication was employed in the experimental group, with questions and answers dynamically code-switched between English and Sepedi to optimize comprehension and enhance learner participation. The teacher strategically deployed various tools and techniques such as:

Code-switching: Transitioning between languages to clarify concepts, provide additional examples, or connect to students' prior knowledge in their home language (Sepedi).

Culturally relevant materials: Utilizing resources and examples that resonated with students' cultural backgrounds and experiences, often drawn from Sepedi-language sources.

Scaffolding and differentiation: Providing differentiated instruction and support based on individual students' language needs and strengths, leveraging their Sepedi proficiency where appropriate. This dynamic and responsive approach aimed to capitalize on the linguistic richness of the classroom, empowering students to draw upon their full language repertoire and fostering a more inclusive learning environment. The control group followed the prescribed curriculum and received conventional English-only instruction, adhering to the CAPS guidelines. This meant that all lessons and interactions were conducted solely in English, without incorporating Sepedi or utilizing translanguaging strategies. This comparison between the two groups allowed for a rigorous evaluation of the specific effects of the multilingual intervention on students' learning outcomes. By observing any differences in academic performance, engagement, and language development between the groups, the study aimed to provide insights into the potential benefits of incorporating multilingual approaches in classrooms with diverse language backgrounds.

4.6. Post-test analysis.

To gauge learning outcomes across both groups, a synchronized post-test was administered, encompassing the same content domain. However, to align with the experimental group's learning environment, their test instrument incorporated bilingual presentation of both English and Sepedi, while the control group had an English only post-test.

The post-test comprised three distinct question types: Question 1 was an open-ended response question requiring students to demonstrate their understanding of a key concept by formulating their own answer. Questions 2 and 3 were multiple-choice questions designed to assess factual knowledge and comprehension through a selection of pre-defined response options. The test had a total of 25 points. The post-test primarily repurposed items from the pre-test, administered prior to the intervention, to ensure consistent assessment of learning outcomes across both phases of the study. Recognizing the potential influence of question order on learning outcome assessments, the research implemented several countermeasures to safeguard the study's internal validity. Notably, question placement was randomized across the pre- and post-tests. For instance, Question 1 from the pre-test shifted to Question 3 in the post-test and the sub-questions were

further shuffled. This jumbling aimed to minimize the impact of potential memorization or order-based biases on student performance.

4.7. Test reliability.

The internal consistency of the post-test was examined for both the control and experimental groups using Cronbach's alpha, a commonly employed coefficient for estimating the lower bound of psychometric test reliability. The deductions regarding test reliability were based on comparing the calculated alpha values against established interpretation guidelines, such as:

$\alpha \geq 0.90$ excellent test

$0.80 \leq \alpha < 0.90$ Good test

$0.70 \leq \alpha < 0.80$ Acceptable

$0.60 \leq \alpha < 0.70$ Questionable

$0.50 \leq \alpha < 0.60$ Poor

$\alpha < 0.50$ Unacceptable (Creswell, 2014; McMillan & Schumacher, 2010).

This approach ensured a systematic and standardized evaluation of the post-test's reliability, providing valuable insights into the consistency and coherence of the instrument across both groups.

To gauge the post-test's internal consistency for both groups, the researcher initially employed Cronbach's alpha. However, the analysis faced a potential hurdle: Question 1, unlike the other items, consisted of five sub-questions demanding step-by-step calculations. These "fill-in-the-blank" elements introduced a distinct type of challenge, potentially skewing the overall reliability estimate due to their unique nature, therefor the researcher saw it fit to remove question 1 from the calculations.

To provide a nuanced understanding of learning gains in the experimental group, the table below dissects individual question outcomes for each learner, comparing their performance on identical items in the pre- and post-tests.

Questions 2 to 3, broken down into 6 MCQ's for question 2 and 5 MCQ's for question 3: Experimental group.

Table 4.2.

Pre-test and Post-test results of 2D Dimensional shapes questions per question (Experimental group) QUESTION 2.																	
Question 2.1 Pre-test			Question 2.1 Post-test			Question 2.2 Pre-test			Question 2.2 Post-test			Question 2.3 Pre-test			Question 2.3 Post-test		
	Frequen	Valid %		Frequen	Valid %		Frequen	Valid %		Frequen	Valid %		Frequen	Valid %		Frequen	Valid %
A	3	4%	A	0	0	A	1	1%	A	2	3%	A	1	1%	A	1	1%
B	26	38%	B	64	94%	B	19	28%	B	3	4%	B	4	6%	B	3	4%
C	28	41%	C	3	4%	C	20	30%	C	1	1%	C	11	16%	C	8	12%
D	11	16%	D	1	1%	D	28	41%	D	63	93%	D	52	76%	D	56	82%
TOTAL	68	100%		68	100 %		68	100%		68	100 %		68	100%		68	100 %

An in-depth examination of Question 2 reveals intriguing patterns of learning gain within the experimental group. In the pre-test, a significant portion of learners (41%) erred on sub-question 2.1, opting for option C ("Hexagon") instead of the correct answer B ("Pentagon"). This suggests a potential confusion between the two shapes. Notably, the post-test paints a vastly different picture. With a remarkable 94% of learners selecting the correct answer B, the intervention evidently clarified the distinction between pentagons and hexagons, leading to a substantial improvement in understanding.

Sub-questions 2.2 to 2.3 exhibit a different, yet equally informative, trend. While the majority of learners in the pre-test selected the correct answers, the post-test saw a noticeable jump in accuracy. For instance, the number of correct responses for sub-question 2.2 surged from 41% in the pre-test to 93% in the post-test, demonstrating a clear gain in proficiency. Similarly, question 2.3 showed a moderate but impactful increase, with the number of correct responses rising from 76% to 82%.

This granular analysis of specific question performance offers valuable insights into the nature and extent of learning gains achieved through the intervention. It highlights the intervention's effectiveness in addressing specific misconceptions (as seen in 2.1) and solidifying existing knowledge (as seen in 2.2-2.3). By exploring individual sub-questions, we gain a nuanced understanding of the learning process and the targeted impact of the intervention.

Table 4.3: Individual question analysis.

Question 2.4 Pre-test			Question 2.4 Post-test			Question 2.5 Pre-test			Question 2.5 Post-test			Question 2.6 Pre-test			Question 2.6 Post-test		
	Frequency	Valid %		Frequency	Valid %		Frequency	Valid %		Frequency	Valid %		Frequency	Valid %		Frequency	Valid %
A	0	0%	A	0	0	A	35	51%	A	5	7%	A	50	73%	A	68	100%
B	30	44%	B	8	12%	B	1	1%	B	0	0	B	5	7%	B	0	0
C	28	41%	C	60	88%	C	30	44%	C	63	93%	C	7	10%	C	0	0
D	10	15%	D	0	0	D	2	3%	D	0	0	D	5	7%	D	0	0
TOTAL	68	100%		68	100%		68	100%		68	100%		68	100%		68	100%

Question 2 continues to be a treasure trove of insights into the learning journey of the experimental group. Similar to the initial stumble on sub-question 2.1, confusion reared its head again in 2.4. A sizable 44% of learners in the pre-test mistook B for the correct answer D, highlighting a potential lingering struggle with differentiating pentagons and hexagons. However, the post-test paints a much brighter picture. With a resounding 88% of learners nailing the question, the intervention clearly proved its mettle in clearing up this conceptual hurdle.

Moving on to sub-questions 2.5 and 2.6, the trend shifts to consistent grasp of the material. While majority of the learners already answered correctly in the pre-test, post-test scores revealed a commendable upward trajectory. For instance, question 2.6 witnessed a stunning leap from 73% to a perfect 100%, showcasing the intervention's ability to solidify existing knowledge and propel understanding to new heights.

Table 4.4: QUESTION 3. Experimental group.

Pre-test and Post-test results of 2D Dimensional shapes questions per question (Experimental group) Question 3.																	
Question 3.1 Pre-test			Question 3.1 Post-test			Question 3.2 Pre-test			Question 3.2 Post-test			Question 3.3 Pre-test			Question 3.3 Post-test		
	Frequency	Valid %		Frequency	Valid %		Frequency	Valid %		Frequency	Valid %		Frequency	Valid %		Frequency	Valid %
A	30	44%	A	16	23%	A	22	32 %	A	13	19 %	A	28	41 %	A	19	28 %
B	17	25%	B	10	15%	B	19	28 %	B	9	13 %	B	40	59 %	B	48	71 %
C	21	31%	C	42	62%	C	24	35 %	C	44	65 %	C	0	0%	C	1	1%
D	0	0%	D	0	0%	D	3	4%	D	2	3%	D	0	0%	D	0	0%
TOTAL	68	100 %		68	100 %		68	100 %		68	100 %		68	100 %		68	100 %

Table 4.5. Continuation.

Question 3.4 Pre-test			Question 3.4 Post-test			Question 3.5 Pre-test			Question 3.5 Post-test		
	Frequency	Valid %		Frequency	Valid %		Frequency	Valid %		Frequency	Valid %
A	59	87%	A	62	91%	A	11	16%	A	6	9%
B	4	6%	B	2	3%	B	8	12%	B	8	12%
C	3	4%	C	3	4%	C	23	34%	C	43	63%
D	2	3%	D	1	2%	D	26	38%	D	11	16%
TOTAL	68	100%		68	100%		68	100%		68	100%

While questions 3.2 to 3.4 in the post-test reveal consistent mastery by the experimental group, a closer look at questions 3.1 and 3.5 unveils a fascinating tale of overcoming misconceptions and solidifying understanding. In the pre-test, question 3.1 exposed a prevalent misunderstanding concerning fractions. A resounding 44% of learners mistakenly marked option A, indicating that 2/4 was greater than ½. This suggests a conceptual gap in recognizing equivalent fractions, often a stumbling block for young learners. However, the post-test painted a dramatically different picture. With 62% selecting the correct answer, the intervention evidently bridged this conceptual gap, leading to a significant increase in students who successfully navigated the equivalence of fractions.

A similar pattern of misconception-turned-mastery unfolds with question 3.5, focusing on measuring distance. In the pre-test, a dominant 57% of learners opted for option D, seemingly unaware that distance is typically measured in kilometers (km), not centimeters (cm). This highlights a potential confusion regarding appropriate units for different quantities. However, the post-test witnessed a remarkable shift. With 63% of learners choosing the correct answer C (km), the intervention effectively equipped students with the necessary knowledge to navigate unit measurement with greater accuracy. The nuanced analysis of questions 3.1 and 3.5 transcends mere statistics. It showcases the intervention's ability to not only impart new knowledge but also actively address and rectify pre-existing misconceptions. This targeted approach to tackling conceptual hurdles paves the way for a more robust and sustainable understanding of the subject

matter. By delving into individual questions, we gain valuable insights into the learning process and the targeted impact of the intervention. Below is a graph analysis showing the overall scores achieved in the post test by the experimental group.

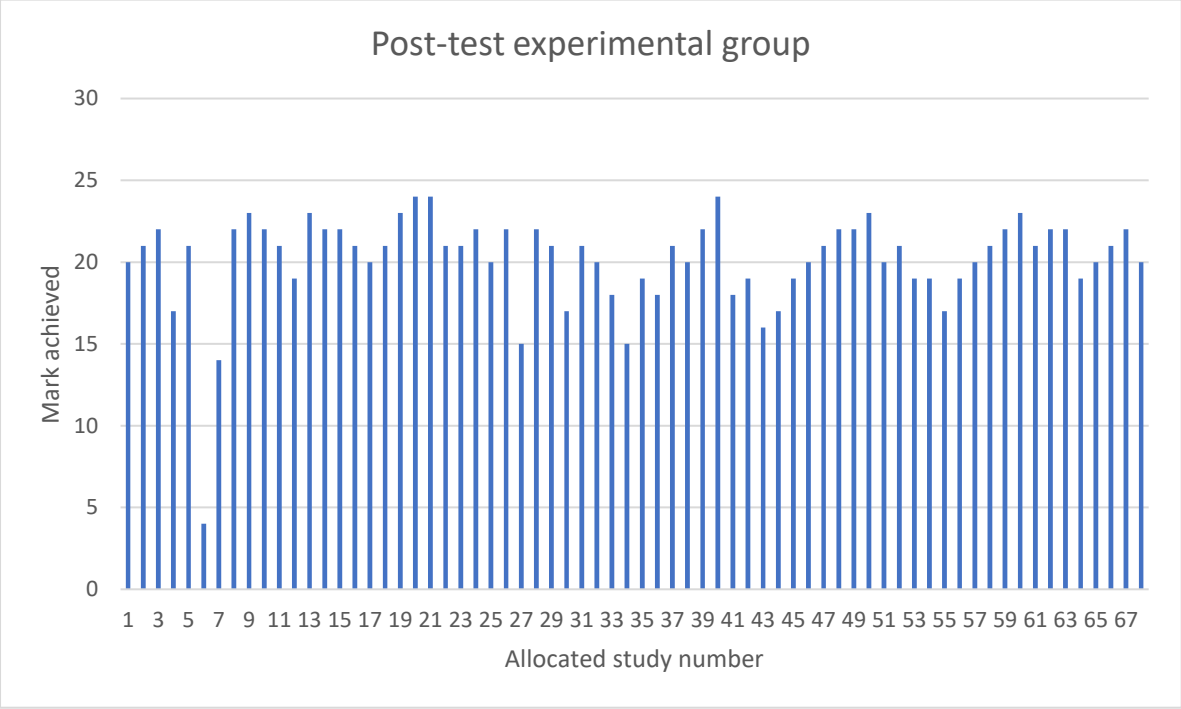


Figure 4.4: Experimental group post-test marks (N = 68).

The overall post-test score data for the experimental group paints a multifaceted picture of student performance, showcasing both high levels of achievement and an area for potential intervention. Notably, three learners achieved near-perfect scores, scoring 24 out of 25 on the test. This remarkable feat exemplifies the effectiveness of the intervention in solidifying understanding and promoting mastery among high-performing students.

However, a closer look reveals a stark contrast at the other end of the spectrum. One learner, mirroring their pre-test score, obtained a low score of 4 out of 25. This outlier highlights the need for individualized support and targeted interventions to cater to diverse learning needs within the group. Overall, the average score of 81% significantly exceeds the minimum benchmark of 40% set by the CAPS requirements. This commendable achievement demonstrates the intervention's overall effectiveness in boosting student understanding and proficiency. Furthermore, 67 out of 68 learners secured scores above 50%, indicating that a vast majority of the group grasped the subject matter at a satisfactory level. Even more impressive, 57 learners exceeded the 75%

average mark, solidifying their mastery of the learning objectives. Below the researcher provides a side-by-side analysis of the pre and post test results for the experimental group.

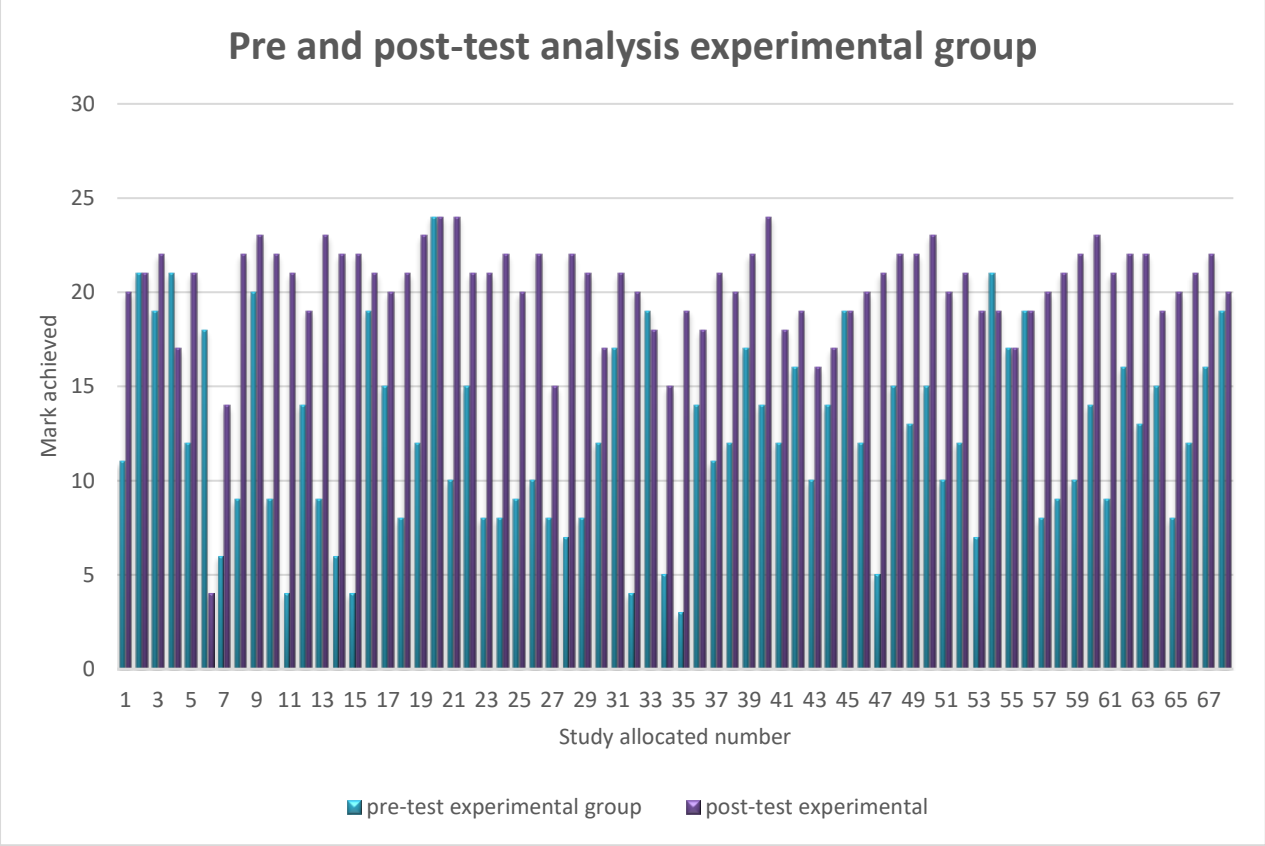


Figure 4.5: Experimental group pre and post-test marks (N = 68).

A juxtaposed analysis of the pre- and post-test scores for the experimental group reveals a noticeable and statistically significant surge in performance following the intervention. The average score jumped from 49.28% in the pre-test to a remarkable 81% in the post-test, showcasing a stark difference of 31.72%. This robust improvement is further validated by the graphical representation, vividly depicting the upward trajectory of student scores across the board. Delving deeper into the distribution of scores, we observe a clear shift towards higher achievement levels. In the pre-test, only 30 out of 68 learners (44%) managed to secure 50% or above, indicating a need for improvement for a sizeable portion of the group. However, the post-test witnessed a remarkable turnaround. A staggering 67 out of 68 learners (99%) attained scores exceeding 50%, demonstrating a near-universal grasp of the material. This impressive feat underscores the intervention's efficacy in raising the floor of understanding and propelling students towards higher levels of proficiency in mathematics while using both English and their mother-tongue as a LoLT.

It's worth noting the presence of just one outlier in the post-test, mirroring their low score from the pre-test. This single case highlights the complex dynamics of learning and the potential need for individualized support strategies to cater to diverse needs within the group. While celebrating the overall success of the intervention, acknowledging the outlier offers an opportunity for further investigation and targeted interventions to ensure inclusive learning outcomes.

Table 4.6: A statistical Analysis of the Experimental groups Pre and post-test results*: Dependent t-test statistics.*

Experimental group	**Mean**	**SD**	**P-value**	**Effect size**	**Gain**
Pre-test	**49,28%**	**4,9%**	**0**	**7.8**	**31.72**
Post-test	**81%**	**2,9%**			

A critical examination of the p-value reveals a compelling outcome: it approximates zero. This result holds profound implications for our study, as it decisively rejects the null hypothesis which claims that there will be no substantial difference in the academic performance of grade 4 mathematics learners post intervention in the experimental group and with considerable confidence, embraces the alternative hypothesis. The null hypothesis posits the absence of any meaningful relationship or difference between the variables we investigated (Language and academic performance). However, the p-value of approximately zero signifies that the observed results are highly unlikely to be due to mere chance. This statistical triumph paves the way for accepting the alternative hypothesis, which contends that a significant relationship or difference indeed exists between our variables. The significance level (α) of 0.05 serves as a crucial benchmark in our statistical analysis. It represents the threshold below which we can reject the null hypothesis with confidence. In this case, the p-value falling well below this threshold ($0 < 0.05$) provides a robust basis for accepting the alternative hypothesis and acknowledging the existence of a statistically significant relationship or difference. This outcome carries substantial weight for our research. It suggests that the findings of our study are not mere coincidences but rather reflect genuine patterns or associations within our data. This conclusion strengthens the validity of our research and lends credence to our theoretical framework or research question.

However, it's crucial to remember that statistical significance is not synonymous with practical significance. While the p-value confirms the presence of a statistically relevant relationship or difference, it doesn't necessarily translate to a strong or impactful effect in real-world terms.

Therefore, further analysis of the effect size and its implications will be vital in comprehensively interpreting the findings of our study. The near-zero p-value represents a significant milestone in our research journey. It unequivocally rejects the null hypothesis, granting legitimacy to the alternative hypothesis and signifying the presence of a statistically meaningful relationship or difference between the variables under investigation. This outcome paves the way for further exploration of the observed phenomenon and its implications within the context of our research objectives and theoretical framework. Looking at the below graph, it displays an analysis of the post-test for the control group.

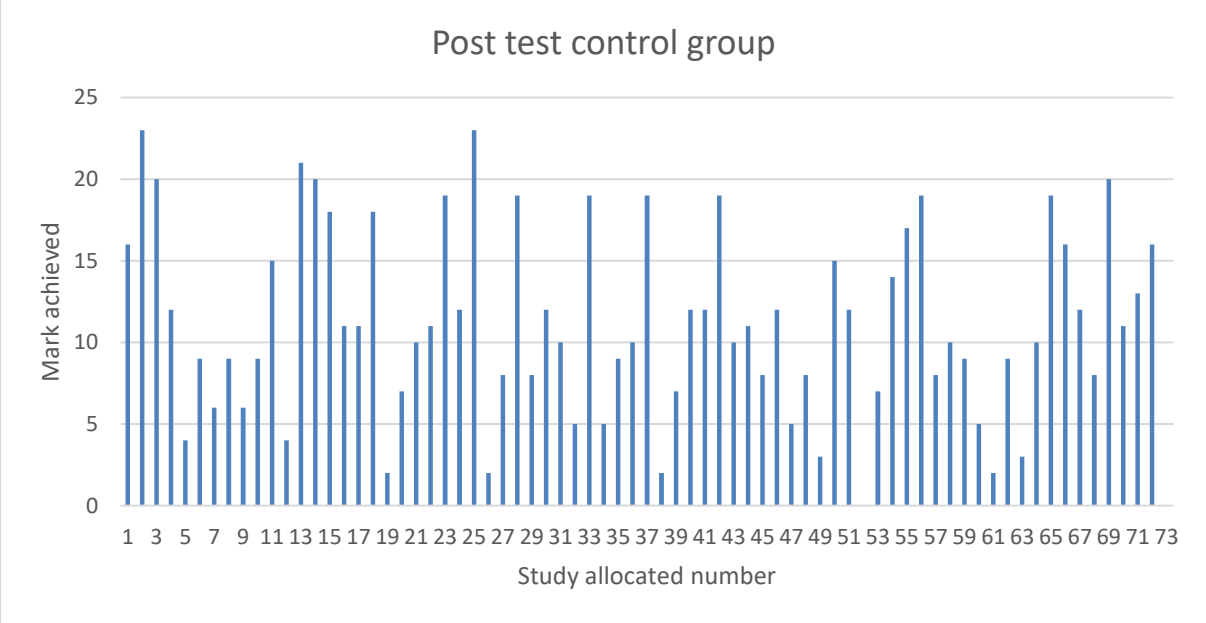


Figure 4.6: Control group post-test marks (N = 73).

A closer look at the post-test results of the control group reveals a diverse picture of student performance, characterized by both areas of relative strength and potential gaps requiring further attention with the group average score of 44.76% falling just above the 40% benchmark stipulated by the CAPS. Diving deeper into the distribution of scores within the group further clarifies the nuances of performance. On the positive side, a commendable 33 learners (45%) managed to secure 50% or above, demonstrating satisfactory levels of comprehension and proficiency in the subject matter. Additionally, 13 learners (18%) exceeded the 75% mark, showcasing a mastery of key concepts and skills. These top performers provide valuable insights into effective learning strategies and potential benchmarks for the group. However, the presence of 16 learners (22%) scoring below 40% raises concerns about potential learning obstacles and the need for tailored interventions. The three learners who secured the lowest score of 4/25 require particularly close

attention to determine the underlying factors hindering their understanding. Analysing specific item responses and student work samples can illuminate areas of difficulty and inform targeted instructional strategies. The range of performance observed in the control group underscores the importance of differentiated instruction and personalized learning approaches. While standardized curriculum elements are essential, incorporating flexible instructional methods and targeted support can cater to diverse learning needs and ensure that all learners have the opportunity to reach their full potential. A side-by-side analysis of the pre and post test of the control group is presented by the researcher below:

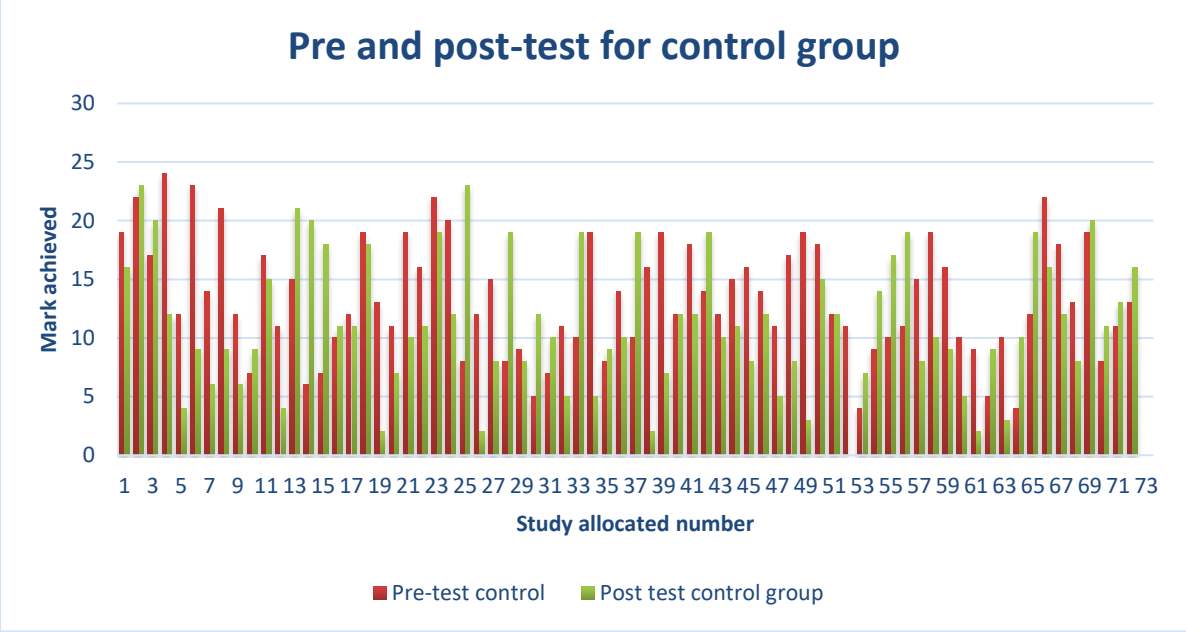


Figure 4.7: Control group pre- and post- test marks (N = 73).

While a comparison of the pre- and post-test scores for the control group reveals a slight decrease in the average score, from 45.76% to 44.76%, a closer examination reveals a more intricate picture. Attributing this change solely to student performance would be simplistic without considering the substantial disruption to their learning environment, namely the abrupt shift from translanguaging and a multilingual classroom setting to an English-only setting. Several factors suggest that this environmental shift may have played a significant role in the observed score fluctuation. Translanguaging, the dynamic use of multiple languages during learning, can be a powerful tool for scaffolding understanding and supporting cognitive development. Its sudden removal could have disorientated learners and hindered their ability to access and process information effectively. Additionally, the transition to an English-only environment might have

posed challenges for learners whose primary language is not English. This could explain the observed decrease in scores, particularly for those who relied heavily on translanguaging strategies for comprehension in the pre-test. Therefore, rather than solely attributing the score change to learner performance, we should consider it within the context of this significant ecological shift. Analysing specific item responses and student work samples could shed light on whether the observed fluctuations are primarily due to difficulties with content or language access issues arising from the environment change. It is crucial to acknowledge the positive trends within the control group as well. The increase in the number of learners scoring 50% or above, went from 23 to 33, showcases continued learning and progress even amidst the environmental disruption. Identifying the characteristics or learning styles of these high-performing students could offer valuable insights into how some learners managed to adapt and succeed despite the changes. Interpreting the performance of the control group requires a nuanced approach that goes beyond looking solely at score changes. The substantial environmental shift and its potential impact on language access and learning strategies must be considered in any meaningful analysis.

Table. 4.7: A statistical Analysis of the control groups Pre and post-test results: Dependent t-test statistics

Experimental group	**Mean**	**SD**	**P-value**	**Effect size**	**Gain**
Pre-test	**45.76%**	**4,88%**	**0.73**	**0.19**	**-1**
Post-test	**44.76%**	**5.69%**			

The statistical analysis, employing a t-test with a 144 degrees-of-freedom, yielded a p-value of approximately 0.734352. When juxtaposed against the predetermined significance level of $\alpha = 0.05$, this p-value falls considerably short of the threshold required for statistical significance. Therefore, the researcher is unable to confidently reject the null hypothesis. In essence, the data, as it currently stands, does not provide compelling evidence to support the existence of a statistically significant effect within the parameters of our investigation. However, it is crucial to avoid overinterpreting this outcome. While the null hypothesis cannot be definitively "proven," the observed lack of statistically significant difference aligns with the expected outcome for the control group. Their learning environment remained unchanged, adhering to the recommended Language of Learning and Teaching (LoLT) – English – throughout the study. Therefore, it is reasonable to expect no substantial change in their performance as they continued with their

established learning methods. The observed decrease in the control group's average score from 45.76 to 44.76, though statistically insignificant, warrants further exploration. This decrease could be attributed to several factors, including:

- Regression to the mean: If some control group individuals scored unusually high on the pre-test due to chance, their scores might have regressed closer to their average on the post-test.
- Test anxiety or fatigue: The post-test may have coincided with external factors like increased anxiety or fatigue, impacting the group's performance.
- Other external influences: Unrelated events or changes in the learning environment could have unintentionally affected the control group's performance.

It is crucial to acknowledge these potential explanations and avoid attributing the decrease solely to the absence of an intervention. Additionally, claiming that the null hypothesis is "proven" implies absolute certainty, which is rarely achievable in statistical research. Instead, emphasizing the observed lack of a statistically significant difference and acknowledging the possible contributing factors to the slight decrease provides a more nuanced and accurate interpretation of the results. This study opens avenues for further investigation. Exploring the observed decrease in the control group through qualitative methods or analysing individual score variations could provide deeper insights and inform future research design.

In conclusion, while the lack of statistically significant difference supports the null hypothesis, it is essential to avoid oversimplification. The control group's learning environment and potential external influences contribute to the observed decrease in their scores. Further research is necessary to fully understand these findings and their implications for educational practices. To show the effectiveness of the intervention, the researcher provided an analysis of both the control group and experimental groups results side by side below:

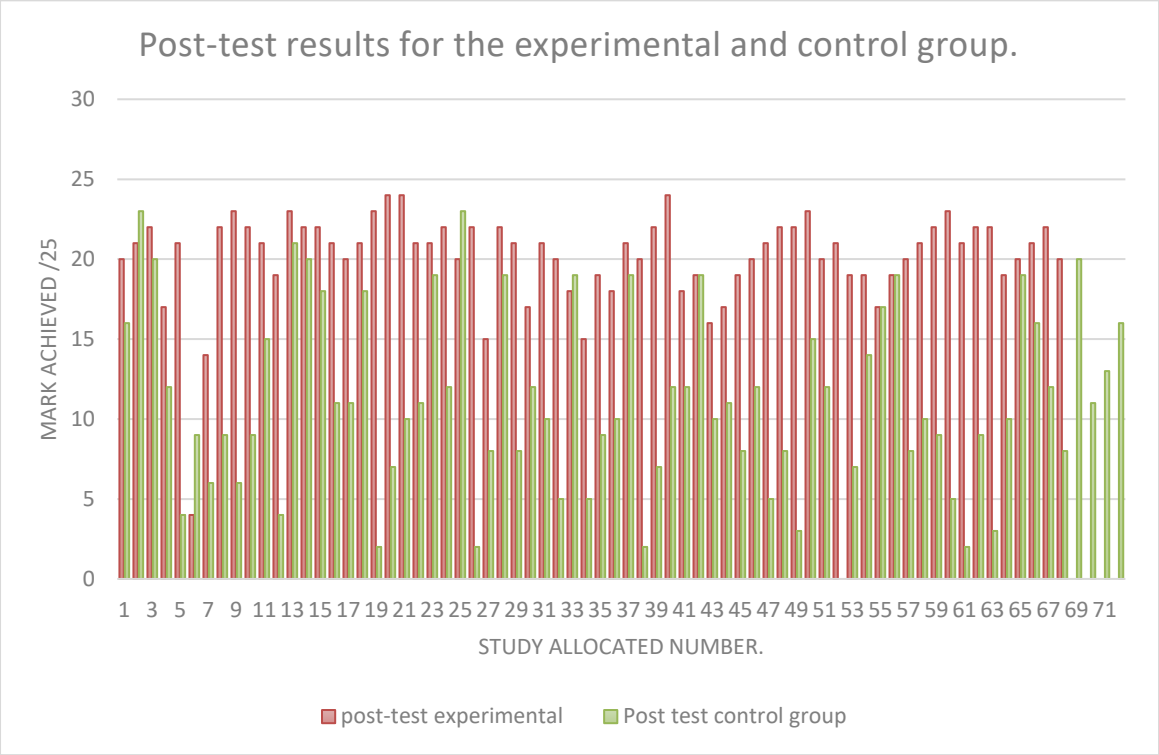


Figure 4.8: Experimental and control group post- test marks (N = 140).

A thorough analysis of the post-test scores unveils a striking divergence in the learning outcomes between the experimental and control groups. The experimental group, exposed to the intervention employing multilingual and translanguaging pedagogies, achieved a remarkable average score of 81%, significantly surpassing the control group's average of 44.76%. This difference of 36.24 percentage points paints a compelling picture of the effectiveness of translanguaging approaches in fostering deeper understanding and comprehension. The stark contrast becomes even more evident when we examine the performance of learners falling below the expected benchmark. In the experimental group, only one learner scored below 40%, demonstrating the intervention's success in raising the floor of understanding and ensuring near-universal engagement with the material. In stark contrast, the control group, confined to an English-only setting, witnessed 16 learners scoring below average, highlighting the potential limitations of adhering strictly to CAPS recommendations without considering the diverse linguistic realities of students.

These findings provide strong evidence to support the claim that learners who employ multilingual pedagogies, including translanguaging, demonstrate superior understanding and comprehension compared to those confined to monolingual learning environments. By leveraging

their existing linguistic repertoires, students in the experimental group were able to construct meaning, engage in deeper analysis, and navigate complex concepts more effectively. The low number of struggling learners in the experimental group further underscores the potential of translanguaging to foster inclusivity and cater to the diverse learning needs within a classroom. It Is crucial to acknowledge that these findings are based on a single study and warrant further investigation to solidify the generalizability of these results. Nevertheless, the observed statistically significant difference in performance between the two groups provides a compelling argument for reconsidering the prevailing monolingual pedagogical models and exploring the transformative potential of translanguaging and multilingual pedagogical practices in contemporary educational settings.

Table 4.8: Statistical Analysis of Experimental and control groups post-test results: Dependent t-test statistics.

Pre-test	**Mean**	**SD**	**P-value**	**Effect size**	**Gain**
Control group	**44,76**	**5.7%**	**0**	**8**	**36.24**
Experimental group.	**81%**	**2,9%**			

A rigorous examination of the p-value in our study delivers a resounding outcome: it approaches zero. This statistically significant result carries profound implications, decisively rejecting the null hypothesis and, with unwavering confidence, embracing the alternative hypothesis which claims that the language of instruction does have a significant influence on the academic performance of grade 4 learners learning solely in an additional language different from their mother-tongue. The null hypothesis, in its stoic neutrality, posited the absence of any meaningful relationship or difference between the variables investigated being, language and academic performance in our grade 4 mathematics learners. However, the p-value, hovering near zero, shatters this notion. The observed results are unlikely, to an exceptional degree, to be mere products of chance. This statistical triumph paves the way for wholeheartedly accepting the alternative hypothesis, which contends that a significant relationship or difference, in fact, exists between these variables. The significance level (α) of 0.05 serves as a crucial benchmark in our analysis. It represents the threshold below which we can confidently reject the null hypothesis. In this case, the p-value, residing well below this threshold ($0 < 0.05$), provides a robust foundation for accepting the alternative hypothesis and acknowledging the existence of a statistically

significant relationship or difference. This outcome carries substantial weight for our research. It suggests that the findings of our study are not fleeting coincidences but rather reflect genuine, replicable patterns and associations within our data.

This conclusion strengthens the validity of our research and lends significant credence to our theoretical framework and research question. The implications of this statistical triumph are profound. It demonstrates that our intervention, with its focus on language, has demonstrably unlocked a pathway to improved mathematical performance for young learners. This is not merely a numerical abstraction; it holds the potential to be a transformative force in the field of education. The present study paints a compelling picture of the transformative potential of translanguaging and multilingual pedagogical practices in promoting academic excellence within grade 4 mathematics classrooms. The experimental group's resounding success, with an average score soaring from 49.28% to 81% post-intervention, stands as a powerful testament to this approach's effectiveness. This remarkable advancement in the experimental group's performance is further underscored by the control group's slight decline in average score, from 45.76% to 44.76%. While statistically insignificant, this difference highlights the potential limitations of traditional monolingual instruction. The control group, confined to English-only learning, saw their performance stagnate, while the experimental group, empowered by translanguaging and multilingual pedagogical practices, experienced a significant and sustained improvement.

This study's findings offer crucial insights for future educational practices. By valuing and integrating students' diverse linguistic repertoires through translanguaging and multilingualism, educators can unlock a potent force for academic success. The observed increase in the experimental group's performance suggests that translanguaging and multilingual pedagogies fosters deeper engagement with mathematical concepts, facilitates more effective problem-solving strategies, and ultimately cultivates a more robust understanding of mathematical principles. Of course, this study is not without its limitations. The sample size and the potential influence of external factors necessitate further research to confirm and solidify the generalizability of these findings. However, the present study's robust statistical evidence and compelling practical outcomes provide a strong foundation for advocating for the integration of translanguaging-based pedagogies into grade 4 mathematics curriculum. This study offers a compelling case for embracing translanguaging and multilingual pedagogies as a transformative force in grade 4 mathematics education. By empowering students to leverage their diverse

linguistic resources, educators can unlock a pathway to academic excellence, fostering a more inclusive and enriching learning experience for all students, regardless of their primary language.

4.8 Qualitative data analysis: Observations.

In the pursuit of understanding the dynamics of language instruction in Grade 4, the researcher conducted observations in the two distinct mathematics classroom groups consisting of approximately 70 learners each. The first group was conducted exclusively in English being the control group, while the second utilized a bilingual approach, incorporating both Sepedi and English which was the experimental group. The objective was to discern the impact of these language modalities on the learners' comprehension and overall academic performance.

Contrary to the initial assumption of an English-only instructional environment, pre-intervention classroom observations unveiled the teachers' spontaneous integration of multiple languages into their pedagogical practices, drawing upon the linguistic repertoires of their learners, and adopting a multilingual pedagogical stance. As the research unfolded, the stark contrast between the learners' pre-existing language environment and the English-only classroom became a palpable reality. Stepping into the monolingual landscape, the learners found themselves grappling with uncharted waters, their accustomed multilingual compass failing to guide them. The struggle was evident, etched in furrowed brows and hesitant responses.

The subject concepts, once familiar friends in the tapestry of their diverse languages, now loomed like distant islands, shrouded in the mist of English. Comprehension, once a seamless dance, became a laborious climb, each word a treacherous step. The atmosphere, once vibrant with the hum of multiple tongues, now vibrated with a tense silence punctuated by hesitant whispers and the rustle of frustration. Reduced participation, a testament to the invisible barrier erected by a single language, painted a picture of learners adrift, their voices yearning for the familiar shores of their home languages. This initial observation, though disheartening, offers a crucial window into the impact of transitioning from a multilingual environment to a monolingual one. It highlights the importance of acknowledging and respecting the richness of learners' linguistic landscapes, rather than forcing them to navigate unfamiliar waters alone. It points to the potential benefits of scaffolding instruction, building bridges between existing knowledge and new concepts through the familiar pathways of their native tongues.

One student's raw, unfiltered exclamation, "thina asisazi isilungu miss," cracked open a window into the hidden language landscape of these young learners. "We don't understand English, miss,"

it echoed, not just a simple statement, but a powerful testament to their pre-existing language experiences. This spontaneous declaration wasn't just a confirmation of their multilingual classrooms; it was a ripple of apprehension, a whisper of unease at the prospect of diving into an English-dominant sea. It painted a picture of learners navigating a familiar ocean of diverse tongues, suddenly confronted with the uncharted waters of a single language.

This cry across tongues served as a beacon, illuminating two crucial needs. Firstly, it highlighted the importance of scaffolded support. These learners, accustomed to the buoyant support of their various languages, might require a life raft of bridges and translations to navigate the unfamiliar terrain of English-only instruction. Secondly, it underscored the potential value of bridging activities. Building bridges between their home languages and the new English world could ease the transition, creating a sense of security and familiarity in the midst of the unknown. This student's voice, amplified by the silence of others, became a powerful reminder that language is more than just words; it's a lifeline, a bridge, a home. In their apprehension, we see not just a challenge, but an opportunity to create a learning experience that honours the richness of their multilingual tapestry, one where every tongue finds its voice and every learner finds their way.

Contrastingly, in the bilingual classroom, where both Sepedi and English were seamlessly integrated, a more dynamic and engaging learning environment unfolded. The learners exhibited a higher level of comfort and participation. The transition between languages appeared fluid, and the learners demonstrated a more robust understanding of the instructional content. The multilingual approach seemed to facilitate a more inclusive and comprehensible learning experience with higher learner participation.

4.8.1.: Emerging themes for observations.

Language Dissonance and Cognitive Struggle in Monolingual Settings.

Confined within the walls of an English-only classroom, students from diverse linguistic backgrounds found themselves grappling with a paradoxical reality. While surrounded by the familiar echoes of their home languages, they were adrift in a sea of English, isolated from their accustomed tapestry of tongues. This dissonance, this linguistic chasm, became the crucible where their cognitive struggles were forged. The control group, immersed solely in English instruction, faced the brunt of this dissonance. Their multilingual minds, accustomed to weaving through a vibrant tapestry of languages, stumbled in the face of monolingual instruction.

Comprehension became a hurdle, engagement a distant mirage. The very tools that had previously empowered their learning – their rich linguistic heritage – became obstacles in the sterile landscape of a singular tongue.

This theme of linguistic disorientation delves into the complexities faced by students transitioning from multilingual environments to monolingual classrooms. It exposes the hidden hardships of navigating a world where their inherent linguistic richness is rendered invisible, even invalidated. It challenges us to reconsider the often-overlooked realities of students who code-switch seamlessly between languages in their daily lives, only to find themselves struggling within the confines of a monolingual classroom.

Seamless Multilingual Integration and Enhanced Learner Participation.

In the experimental group which was exposed to both Sepedi and English, a notable theme emerged—seamless multilingual integration leading to enhanced learner participation. The fluid transition between languages positively influenced students' willingness to actively engage in classroom activities. As Sepedi and English danced hand-in-hand, a symphony of learning unfolded. This wasn't a simple juxtaposition of tongues, but a vibrant tapestry woven with threads of understanding and connection. The fluidity with which students navigated between languages was more than linguistic agility; it was a passport to deeper participation. The classroom walls seemed to dissolve as Sepedi and English became bridges, not barriers. Students' voices, once hesitant in the unfamiliar terrain of a single tongue, now resonated with confidence and enthusiasm. They raised questions, challenged ideas, and engaged in lively discussions, their multilingual tapestry forming the very foundation of their learning journey. This theme, multilingual synergy, transcends mere language acquisition. It delves into the heart of how interconnected languages can empower students, nurturing their curiosity and igniting their passion for learning. It challenges the notion of a singular "dominant" tongue, celebrating the richness and diversity that multilingualism brings to the classroom.

Socio-Cultural Inclusivity and Positive Classroom Dynamics.

The implementation of multilingual pedagogies in the classroom transcended the mere acquisition of languages; it blossomed into a tapestry of socio-cultural inclusivity. This theme delves into the transformative power of multilingual approaches to education, highlighting how they nurture positive social dynamics among students from diverse backgrounds. Within these classrooms, the

very act of engaging with multiple languages became a bridge, connecting students to each other's cultures and identities. The exchange of ideas and experiences, often facilitated through native languages, fostered a sense of empathy and understanding. Learners no longer viewed their cultural differences as barriers; they embraced them as threads weaving a richer learning fabric. This inclusivity manifested in a myriad of ways. Positive interactions became the norm, characterized by collaboration, respect, and mutual support. Students engaged in lively discussions, drawing upon their diverse cultural backgrounds to enrich their understanding. Traditional hierarchies based on language proficiency dissolved, replaced by a shared sense of belonging and ownership of the learning space.

This theme of multilingual-driven inclusivity challenges the notion of a monolingual classroom as the sole path to academic success. It demonstrates how embracing cultural and linguistic diversity through multilingual pedagogies can foster positive social dynamics, transforming classrooms into vibrant communities of learners where every voice is valued and every experience contributes to a richer understanding of the world.

Teacher Adaptability and Strategies for Multilingual Instruction.

This theme delves into the crucial role of teacher adaptability in navigating the dynamic landscape of multilingual classrooms. It examines how educators navigate the challenges and leverage the opportunities inherent in catering to diverse language backgrounds. By analysing the contrasting approaches of the experimental and control groups, we gain valuable insights into effective strategies for creating inclusive and language-rich learning environments.

In the experimental group, teachers demonstrated a profound understanding of integrating multiple languages into their instruction. This involved weaving a tapestry of translanguaging techniques, where languages organically interacted to support comprehension and knowledge construction. They employed culturally relevant materials and content, fostering connections between students' home languages and academic domains. This responsive curriculum design provided scaffolding for language development while simultaneously valuing students' cultural backgrounds. In contrast, the control group teacher's struggles with an English-only approach highlight the limitations of a monolingual model. The occasional code-switching, while showcasing the natural fluidity of language in real-world interactions, ultimately pointed to the rigidity and exclusivity inherent in a single-language environment.

This comparison underscores the importance of moving beyond mere language acquisition and embracing a more holistic approach that celebrates linguistic diversity and empowers students to leverage their multiple language skills as strengths. Several key lessons emerge from this analysis. Firstly, effective multilingual pedagogy demands flexibility and responsiveness. Teachers must adapt their strategies to cater to the specific needs and linguistic profiles of their students. Secondly, translanguaging and culturally relevant content are invaluable tools for fostering inclusion and promoting learning across languages. Finally, professional development programs should equip educators with the skills and knowledge necessary to navigate the complexities of multilingual instruction with confidence.

This theme emphasized the essential role of teacher adaptability in fostering enriching and inclusive language-rich learning environments for multilingual students. By embracing diverse linguistic voices and employing flexible and culturally responsive pedagogy, educators can unlock the full potential of all learners in multilingual classrooms.

Cultural Relevance and Its Influence on Learning.

In a classroom pulsating with multiple languages, a deeper rhythm resonated – the beat of cultural relevance. More than just acknowledging linguistic diversity, this theme explored how weaving cultural elements into the learning environment could be the key to unlocking deeper engagement and comprehension for students. It delved into the transformative power of culturally-grounded knowledge, where students saw themselves and their experiences reflected in the tapestry of learning.

Imagine a classroom where folktales in students' native languages intertwine with scientific concepts, where traditional music becomes the soundtrack to mathematical equations, and where local heroes inspire historical explorations. This wasn't just education; it was a homecoming, a journey where students could learn not just about the world, but also from their world. This cultural inclusivity bore tangible fruit. Engagement, once a flickering flame, flared with newfound passion. Students, previously hesitant in unfamiliar landscapes of learning, now navigated the terrain with confidence, their cultural compass guiding them. Comprehension wasn't just about decoding words; it was about connecting knowledge to lived experiences, about finding meaning in the echoes of their own cultures within the classroom walls. This theme of cultural resonance extends beyond the individual student. It fosters a classroom where diversity isn't just tolerated, but celebrated. Cultural knowledge becomes a shared currency, fostering

empathy and understanding across linguistic and ethnic boundaries. The classroom transforms into a vibrant marketplace of experiences, where stories, songs, and traditions are exchanged, enriching the learning journey for all.

The significance of multilingual education with cultural relevance lies not just in academic achievement, but in empowering students to be active participants in shaping their own learning. It challenges the notion of a universal knowledge base, recognizing that knowledge is woven from the diverse threads of human experience. In essence, it is a call to celebrate the symphony of cultures that students bring to the classroom, using it as the very foundation for building a more inclusive and meaningful learning experience.

Bridging the Gap Between Policy and Practice.

This theme delves into the complex interplay between existing educational policies, the vibrant realities of multilingual classrooms, and the observed impact of multilingual approaches on Grade 4 learners. It exposes the critical need to bridge the chasm between policy pronouncements and on-the-ground execution, ensuring that language policies acknowledge and embrace the linguistic diversity that defines South African classrooms. Central to this theme is the crucial concept of policy-practice alignment. The observed challenges faced by teachers and students highlight the discrepancies between the ideals enshrined in language policies and the practical realities of implementing them. The lack of flexibility and inclusivity in some policies hinders the effective utilization of multilingual approaches, potentially undermining the potential of such approaches to benefit learners.

This theme, however, also shines a light on the tremendous opportunities presented by embracing linguistic diversity. Recommendations for effective policy reform, informed by the data collected, could pave the way for the development of flexible and responsive language policies. These policies would empower educators to tap into the richness of their students' multiple languages, utilizing translanguaging strategies and culturally relevant content to create inclusive and enriching learning environments. By bridging the gap between policy and practice, we can foster a more nuanced understanding of the challenges and opportunities inherent in multilingual education. This, in turn, can inform the development of context-specific strategies that empower teachers to harness the power of linguistic diversity to unlock the full potential of all learners in South African classrooms.

This blended methodology sought to synergize the strengths of quantitative precision and qualitative depth, enriching the analysis and ensuring a holistic interpretation of the impact of monolingual pedagogies on learners navigating a foreign language in the intermediate phase. By triangulating data from these diverse sources, the study aimed to unveil a comprehensive understanding that goes beyond numerical metrics, capturing the essence of the learners' experiences and the dynamic dynamics within the educational context.

4.9. Analysis of qualitative data: Interviews.

To complement the quantitative analysis, the researcher incorporated semi-structured, phenomenological interviews with ten participants (five from each group) to delve deeper into their experiences during the study. This qualitative approach, as elaborated by McMillan & Schumacher (2010), aimed to uncover the meanings and interpretations attributed to the intervention for the experimental group or its absence in the control group. Phenomenology, as described by Cohen et al. (2011), prioritizes capturing the essence of lived experiences from the participants' perspective. By focusing on their subjective interpretations and perspectives rather than objective facts, the researcher sought to understand how participants made sense of their engagement with the intervention or its absence within the study context.

This focus on multiple interpretations, as emphasized by Tuckman (2011) as cited in Charamba 2017, acknowledges the inherent subjectivity of human experience. Ten participants, through their unique lenses, could contribute diverse and enriched perspectives on the intervention, potentially revealing nuances missed by purely quantitative methods. By incorporating this phenomenological component, the research broadened its scope beyond statistical outcomes to encompass the rich tapestry of subjective experiences. This qualitative dimension offers invaluable insights into the participants' thoughts, feelings, and motivations, potentially enriching the understanding of the overall impact of the intervention. This research employed personal, in-depth interviews as its primary data collection method. These interviews, structured with open-ended questions, aimed to delve into participants' meanings and interpretations of the intervention they received during the study (McMillan & Schumacher, 2010). While the core of the interviews resided in the verbatim accounts of the conversations, audio recording served as a valuable tool for ensuring completeness and accuracy. Recordings not only provided material for reliability checks but also allowed the researcher to be more attentive and focused during the interview itself (McMillan & Schumacher, 2010). It is important to note, however, that audio recording was not

intended as a substitute for active note-taking, which remained an essential step in the data collection process (Cohen et al., 2011). The value of audio recording was multifaceted. It facilitated faithful transcription of the interviews, enabling the researcher to capture the full richness of the participants' voices and expressions. Additionally, it functioned as a source of legitimacy for the research insights gleaned during the interview (McMillan & Schumacher, 2010). This, in turn, allowed for a more nuanced and accurate representation of the participants' experiences in the final analysis. Following each interview, the researcher followed a rigorous data analysis workflow.

Immediately after the interview, the handwritten notes were completed and typed, ensuring fresh memory and capture of details. The audio recordings were then transcribed, meticulously capturing every nuance of the conversation. Finally, the researcher embarked on the in-depth analysis of the collected data, seeking to uncover the underlying themes, patterns, and meanings embedded within the participants' narratives. The use of personal, in-depth interviews, complemented by careful note-taking and audio recording, provided a robust foundation for understanding the participants' subjective experiences in this research. The rigorous data analysis process, involving immediate transcription and in-depth exploration of the collected materials, ensured the generation of reliable and insightful findings that captured the essence of the participants' engagement with the intervention. To fully understand the impact of the intervention, the researcher delved beyond the quantitative data, incorporating semi-structured, one-on-one interviews with ten participants (five from each group). These interviews, conducted after the post-test, aimed to triangulate findings by weaving together the quantitative results with the rich tapestry of participants' subjective experiences and linguistic preferences. The interviews served a multi-faceted purpose, offering a platform for participants to:

- Evaluate the intervention: Participants shared their perspectives on the intervention's effectiveness, highlighting its perceived strengths and areas for potential improvement. This provided valuable insights into the intervention's real-world impact beyond the statistical analysis.
- Interpret their performance: Beyond the cold numbers of the test scores, the interviews allowed participants to make sense of their own performance, identifying factors beyond statistics that may have contributed to their results. This unveiled the subjective interpretations and internal struggles that quantitative data often fails to capture.

- Share language preferences: Participants' preferred languages for comprehending and expressing mathematical concepts emerged as a crucial theme in the interviews. This provided valuable guidance for future language-based instructional practices in mathematics education, ensuring that students can access and engage with mathematical concepts in ways that resonate with their linguistic strengths.

By employing this qualitative approach, the researcher aimed to establish a convergence of evidence. By triangulating findings from both quantitative and qualitative methods, the researcher sought to paint a more comprehensive picture of the intervention's impact, encompassing not only the statistical outcomes but also the subjective experiences and linguistic preferences of the participants (Cohen et al., 2011). The one-on-one format, lasting approximately 10 minutes each, offered a personalized space for participants to voice their unique perspectives and interpretations. The carefully designed set of seven questions, administered in the same order for each participant, ensured consistency and facilitated comparative analysis across the groups.

To ensure accurate and comprehensive capture of participants' perspectives, the researcher employed a multifaceted approach to data collection during the interviews. Pre-written semi-structured questions guided the conversation, prompting participants to share their experiences with the study, their evaluations of the intervention (or its absence), and their interpretations of their performance on the three tests. The researcher thoughtfully combined dual data collection methods to minimize potential for error and misinterpretation. Audio recordings, obtained with participants' consent, served as a primary record of the interviews. Simultaneously, the researcher engaged in meticulous note-taking, capturing key points and nonverbal cues that might be missed solely through audio recording. This dual approach ensured fidelity and completeness in capturing the nuances of participants' responses. Furthermore, the researcher prioritized immediate transcription of the audio recordings. Transcribing data while it is fresh in mind minimizes the risk of forgetting details or misinterpreting subtle elements of participants' speech. This commitment to temporal proximity enhanced the accuracy and reliability of the data for subsequent analysis. By focusing on participants' experiences, evaluations, and interpretations, the interviews generated rich qualitative data that complemented the quantitative findings from the tests.

This multi-layered approach allowed the researcher to gain a deeper understanding of the intervention's impact, going beyond numerical scores to explore the subjective and contextual factors influencing participants' learning. The researcher's meticulous data collection and transcription practices ensured the integrity and richness of the qualitative data obtained from the interviews. This approach provided valuable insights into participants' perspectives and experiences, complementing the quantitative findings and enriching the overall understanding of the research study.

The researcher uses the figure below to analyse and record the data from the interviews.

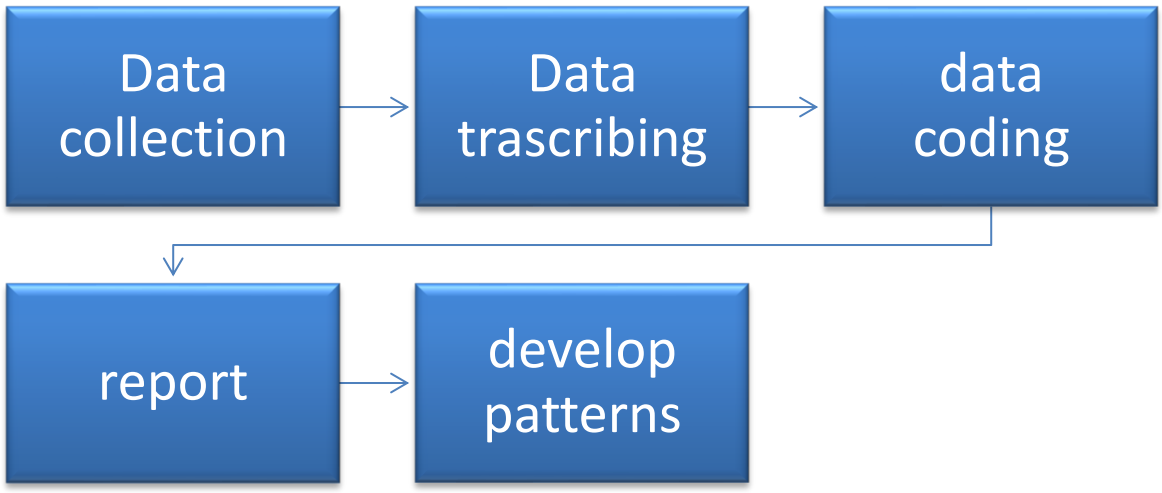


Figure 4.9: Summary of data collection process, (McMillan & Schumacher, 2010).

The data analysis embarked on a journey of uncovering meaning within the rich tapestry of interview responses. Charamba, (2017) suggests, the initial step involved identifying significant data segments. These segments, as described by McMillan & Schumacher (2010), functioned as building blocks, carving the data set into manageable units focused on singular ideas, episodes, or relevant information. While segment size can vary, ranging from individual words to entire pages, this research, with its concise interview format, typically employed segments spanning one to three sentences (McMillan & Schumacher, 2010). With the data segmented, the researcher embarked on a meticulous process of code development. Each segment, imbued with potential meaning, was assigned a code, a label serving as a shorthand representation of its core idea (McMillan & Schumacher, 2010). This codebook, a collection of these assigned labels, transformed the raw data into a system of organized and interpretable categories. Opting for a

manual, software-free approach in this study resonated with the size and nature of the data. With ten concise interviews, the researcher was able to engage in a personal and thorough analysis, immersing themselves in the participants' voices and meticulously crafting codes that captured the essence of their experiences. This bespoke approach allowed for flexibility and sensitivity to the nuances of the data, enabling the researcher to tailor the codebook to the specific themes and insights emerging from the interviews.

By taking on manual coding, the researcher embraced a space for deep engagement with the qualitative data. This in-depth approach promised to unlock the inherent meanings within the participants' experiences, providing a window into their perspectives on the intervention, their interpretations of their performance, and their preferred language use in mathematics learning. The decision to manually analyse the interview data through a segment-and-code approach offered a bespoke and nuanced methodology for this research. This in-depth engagement with the participants' voices held the potential to reveal the hidden meanings and rich insights embedded within the qualitative data, enriching the understanding of the study's central themes and informing future research and educational practices.

This research employed a powerful two-pronged approach to analyse the qualitative data. Leveraging the strengths of both qualitative content analysis and pure coding, the researcher extracted and refined key themes, ultimately answering the research question and generating rich insights into participant experiences. By combining the precision of content analysis with the flexibility of pure coding, this approach ensured comprehensive and nuanced understanding, further enriched by prototypical participant voices. This methodological fusion offers a valuable strategy for future qualitative research.

4.9.1 Emerging themes for interviews.

Theme 1: Language Fluidity and Enhanced Understanding:

This theme delves into the interplay between language and academic performance in mathematics among the experimental group learners. The findings reveal a profound positive impact of using both home language (Sepedi) and English on their learning experiences and understanding of mathematical concepts as well as the direct translation of their materials and post-test.

The interviews with five participants from this group highlights a consistent message: facilitated learning and comprehension through bilingual instruction. The seamless translation of materials in Sepedi, familiar from their early education (Grade R-3), instilled a sense of comfort and confidence.

Learner 14:

Learner 14's quote captures this sentiment elegantly: *"I felt like I was participating more and could understand the teacher better."* Moreover, the participants reported improved performance in the post-test. This suggests that the bilingual approach empowered them to grasp the nuances of mathematical concepts in both languages. Learner 14 explicitly mentions being able to cross-reference the Sepedi translation for clarification when encountering difficulties with the English section in the post-test, exemplifying the synergistic effect of bilingual comprehension. This theme underscores the potential of leveraging multiple languages as instructional tools in mathematics education. By catering to learners' existing linguistic strengths and offering additional language support, educators can facilitate deeper understanding and potentially bridge the gap between language and academic performance. Further research would be valuable to explore the long-term impact of such bilingual approaches on mathematics learning outcomes and student confidence.

Learner 19:

Learner 19's experience vividly paints a picture of the transformative power of bilingual instruction in mathematics. Their narrative reflects a journey from initial struggle to increased comprehension and ultimately, improved performance. Their statement, *"I did not really understand what the teacher was saying"* suggests that the reliance solely on English, a language unfamiliar to them, created a barrier to accessing mathematical concepts. However, the introduction of Sepedi, their home language, proved to be a game-changer. Learner 19 highlights the value of dual explanations in achieving deeper understanding: *"after using both Sepedi and English to explain the work I understood better."* This suggests that by leveraging the familiar linguistic landscape of Sepedi, they were able to bridge the gap between abstract mathematical concepts and their own cognitive framework.

This personal transformation is further illustrated by Learner 19's remarkable performance improvement between the first and second tests. Jumping from 12/25 to 23/25 underscores the efficacy of the bilingual approach in boosting academic achievement. Their concluding remark, *"I really enjoyed learning in my home-language,"* adds a powerful emotional dimension, revealing the intrinsic value and sense of ownership that comes with learning in one's familiar linguistic space. This single interview excerpt stands as a testament to the potential of language-sensitive pedagogical practices in nurturing mathematical understanding and academic success. Learner 19's experience serves as a compelling case study for further research into the diverse and effective ways of incorporating learners' home languages into the mathematics curriculum.

This research builds upon a robust body of literature highlighting the intimate connection between the Language of Learning and Teaching (LoLT) and academic achievement, particularly in mathematics and science subjects. This emphasis on language transcends its role as a mere tool for communication and delves into its fundamental role in shaping our very cognitive processes. As eloquently stated by Nieman & Monyai (2013), *"language is the medium of much of human thought,"* implying that our ability to think critically and acquire knowledge is inextricably linked to our proficiency in the LoLT.

To appreciate the gravity of this link, consider the interdependent nature of language and learning. As Cummins (2008) emphasizes, the home language or primary language serves as the cornerstone for individual thinking, learning, and identity, nurtured within the rich tapestry of social interaction and cultural experiences. Depriving learners of this bedrock language in the educational setting creates a fundamental disconnect, impeding their ability to access study materials, engage with concepts, and fully develop their cognitive skills. This research, therefore, positions itself within the critical discourse surrounding LoLT and its impact on science education. By acknowledging the profound interdependence of language and learning, it paves the way for pedagogical approaches that not only acknowledge the learners' linguistic realities but also leverage them as springboards for academic success. Further research in this domain holds immense potential for optimizing mathematics instruction through language-sensitive practices that empower learners to think, learn, and thrive in diverse linguistic environments.

This excerpt delves into the complex relationship between language diversity and academic achievement, particularly in the context of mathematics education. Specifically, it highlights the challenges faced by language minority learners when transitioning from informal daily language

use to the demands of academic contexts. This can be seen in how the learners' misconception of a pentagon being a hexagon is changed, the teacher had to associate the word pentagon as "*Penty*" which is an underwear garment in English but her saying *"penti enale ma thlakore ama 5"* translating to "an underwear has 5 sides" helped the learners associate a 5-sided shape to a pentagon as their panties/underwear have 5 sides. Drawing upon the work of Aarts et al. (2011), Hornberger and Link (2012), Madiba (2014), and Makalela (2015), the passage emphasizes the disparity between conversational fluency and academic proficiency. While language minority learners may demonstrate appropriate communication skills in everyday situations (Lemmer, 2010; Gu, 2015), navigating the complexities of academic language presents significant hurdles. The concept of Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP), as proposed by Cummins (2008), provides a valuable framework for understanding this discrepancy. BICS refers to the language skills used for everyday social interaction, while CALP encompasses the specialized language required for academic success. This distinction is crucial for educators working with language minority learners.

As Baumann and Graves (2010), Janks and Makalela (2013) point out, learners may struggle to manipulate language effectively in decontextualized academic situations. Mathematical concepts, terminology, and problem-solving require a higher level of linguistic sophistication than casual conversation. Therefore, the research presented in this excerpt highlights the need for pedagogical approaches that bridge the gap between BICS and CALP. By incorporating learners' home languages and cultural contexts into the curriculum, educators can create a more inclusive and supportive learning environment. This, in turn, can empower language minority learners to develop the necessary academic language skills and achieve their full potential in mathematics.

Cummins (2008) posits that Cognitive Academic Language Proficiency (CALP) equips learners for success in contexts that rely heavily on abstract or decontextualized oral explanations, in contrast to Basic Interpersonal Communicative Skills (BICS). This scenario is frequently encountered in intermediate phase grade 4 classrooms, where unfamiliar concepts or events are often presented through lessons with limited opportunities for collaborative meaning-making, as there is a poor transition from using the mother-tongue as a LoLT to using an additional language, English (Fang, 2006; Miller, 2009).

This analysis of interview data points towards a clear association between language proficiency and academic achievement. The learners' experiences highlight how language skills can serve as either a barrier or a bridge to understanding and successful performance.

Theme 2: Bridging the Understanding Gap: Direct Translation as a Catalyst for Conceptual Clarity.

Learner 62

Learner 62's experience exemplifies the transformative power of direct translation within bilingual learning environments. Their statement, *"I would read the English part first and whenever I did not understand I would read the Sepedi part for clarity,"* underscores the synergistic relationship between two languages in facilitating comprehension and boosting confidence. The immediate availability of a Sepedi translation served as a critical safety net, mitigating confusion and enabling Learner 62 to decode complex concepts. By seamlessly switching between languages, they could leverage their strong base in Sepedi (BICS) as a springboard to access the cognitive academic language proficiency (CALP) demands of the mathematics test (Cummins, 2008). This cross-referencing empowered them to grasp the nuances of the material, fostering deeper understanding and improved performance.

This experience speaks to the potential of direct translation to bridge the gap between language and knowledge domains in STEM education. Learners like Learner 62 often face challenges navigating abstract concepts presented solely in a non-native language similar to their own. Providing immediate access to familiar linguistic frameworks through direct translation can alleviate anxiety, enhance engagement with the material, and ultimately, improve academic outcomes (Makalela, 2015; Janks & Makalela, 2013). Learner 62's positive reaction sheds light on the psychological benefits of directly translated materials. The ability to readily seek clarity and confirmation in their home language can enhance a sense of ownership and empowerment, fostering a more positive learning experience. This emotional dimension further strengthens the case for incorporating direct translation as a valuable pedagogical tool in diverse classrooms.

Learner 8

While Learner 62's experience highlights the transformative potential of direct translation to materials, Learner 8's perspective offers a valuable counterpoint, illustrating the need to critically address potential challenges associated with this approach. Their statement, *"I did not know which*

sentence to read as the question, I was confused with what I had to read," reveals the potential for ambiguity and cognitive overload in dual-language materials. The presence of parallel translations within the same text space might create confusion for some learners, particularly when navigating complex syntax or nuanced meaning. Learner 8's experience of not knowing which sentence constitutes the actual question suggests a distracting effect of the dual presentation, leading to decreased comprehension and ultimately, a decline in performance.

This highlights the importance of careful design and implementation of bilingual learning materials. Simply providing direct translations may not suffice for all learners. Factors such as layout, font size, colour coding, and clear demarcation of original and translated texts can significantly impact the effectiveness of such materials. Research suggests that visual clarity and organized presentation can mitigate confusion and enhance cognitive processing in bilingual learning environments (Mayer, 2005; Magana, 2017). Furthermore, Learner 8's experience underscores the need for individualized support and pedagogical strategies to accompany bilingual instruction. Learners may require targeted guidance in navigating and interpreting dual-language texts, particularly when encountering complex concepts or unfamiliar vocabulary. Additional practice in decoding meaning across languages and identifying key information within dual-language formats can help mitigate confusion and build confidence.

Learner 16

In contrast to the polarized opinions regarding direct translation expressed by other learners, Learner 16 presents a different perspective, highlighting the individuality of learning preferences and the influence of external support. Their statement, *"I am okay with reading the material in just English or in both English and Sepedi, I understand both languages just fine. My parents help me with reading at home,"* suggests a flexible and pragmatic approach to language in learning.

This experience underscores the importance of understanding learner diversity when implementing strategies like direct translation. While some learners like Learner 62 thrive on the immediate support of their home language, others like Learner 16 may possess sufficient proficiency and confidence in both languages to navigate English-only materials effectively. Learner 16's mention of parental support sheds light on the crucial role of external factors in shaping language learning outcomes. Their access to additional guidance and clarification at home empowers them to bridge any gaps in understanding, regardless of the material's language.

This highlights the need for collaborative efforts between educators and families to foster language development and create supportive learning environments that cater to individual needs. Therefore, Learner 16's case reminds us that the impact of direct translation is not a monolithic phenomenon. Individual linguistic proficiency, learning preferences, and external support structures all play a role in shaping how learners engage with and benefit from different pedagogical approaches. Recognizing this diversity requires educators to adopt a flexible and nuanced approach to language instruction, incorporating a variety of strategies and acknowledging the valuable contributions of families and communities.

Learner 16's experience adds another layer to the multifaceted theme of translation in bilingual learning environments. Their independent stance emphasizes the importance of understanding individual learner needs and highlights the potential of collaborative efforts between schools and families to support language development and academic success. As educators navigate the complex landscape of bilingual education, recognizing and catering to learners like Learner 16 will be crucial in fostering inclusive and effective learning experiences for all.

Theme 3: Navigating Linguistic Landscapes: Parental Support and the Complexities of Identity.

Learner 62

Learner 62's experience illuminates the entwined threads of language, family, and identity in bilingual learning environments. Their statement, *"when I am with my family and friend's I only use Sepedi and a bit of IsiZulu to communicate"* reveals the dynamic linguistic landscapes navigate by many language minority learners. While English dominates the school space in the classroom, Sepedi and isiZulu reign supreme in the comfort and community of family and friends.

This dichotomy highlights the crucial role of parental support in fostering language development and cultural identity. Learner 62's access to a strong foundation in Sepedi, nurtured within the family unit, empowers them to access academic content translated into their home language. This support transcends simple translation, providing a sense of belonging, confidence, and connection to their cultural heritage. However, Learner 62's experience also reveals the challenges of navigating multiple linguistic spaces. The mention of friends reacting negatively to English use outside of school, with the derogatory term *"ehh ashu motho ke le kgowa,"* translating she is a white person wannabe speaks to the complex social dynamics and potential pressure to conform

within peer groups. This highlights the need for schools to go beyond academic instruction and create inclusive environments that value and celebrate diversity, including learners' home languages and cultural backgrounds.

Learner 62's story underscores the interconnectedness of language and identity. Using English at school may be perceived as distancing themselves from their family and community, potentially leading to internal conflicts and struggles with belonging. Therefore, educators must be mindful of these complexities and provide support for learners navigating these diverse linguistic and cultural spaces.

Learner 16.

Learner 16's experience adds another layer to the complex tapestry of navigating diverse linguistic spaces in bilingual learning environments. Their agreement with Learner 62's experience of being labelled *"legowa"* by peers illuminates the shared challenges faced by language minority learners who code-switch in African communities. Similar to Learner 62, their exposure to both English and Sepedi through parental support leads them to switch languages fluidly, which in turn can trigger negative social reactions within their community. This shared experience highlights the intersections of identity and language. For Learners 62 and 16, the ability to seamlessly navigate between Sepedi and English marks them as individuals who bridge cultural and linguistic boundaries. However, this very agility can be weaponized against them, with the derogatory term *"legowa"* serving as a social marker of difference and alienation. This reflects the complex dynamics of power and belonging within communities, where linguistic choices can become intertwined with issues of identity and acceptance.

Learner 16's statement, *"My parents have always exposed me to books and made sure I am able to communicate in English,"* sheds light on the crucial role of parental agency in fostering bilingualism and combating negative stereotypes. Their parents' proactive approach in providing access to diverse reading materials and promoting English proficiency empowers Learner 16 to navigate various linguistic landscapes with confidence. This proactive family support can serve as a buffer against external pressures and promote a positive linguistic identity. However, the persistence of the *"legowa"* label underscores the need for broader societal efforts to challenge linguistic prejudice and cultivate inclusive environments. Schools have a key role to play in fostering awareness and appreciation for diversity, promoting acceptance of code-switching as a valuable skill, and dismantling negative stereotypes associated with language use.

Theme 4: Bridging the Gap: Addressing the Need for Academic Support in Grade 4

Across both the control and experimental groups, a strong theme emerges: the lack of adequate academic support for Grade 4 learners. This transition, marked by a shift from home-language instruction in Grade R-3 to English-only classrooms in grade 4, presents significant challenges for many students.

Learner 70.

Learner 70's poignant statement, *"I was confused most of the time in class and I would turn to my friend for help, but the teacher would rasela (shout at) me saying that I am making a noise,"* captures the frustration and isolation experienced by many learners. This lack of support can be attributed to several factors. The sudden shift in LoLT from a familiar language to English can create a significant cognitive barrier for learners who are still developing their academic language proficiency (CALP) in English. This barrier can lead to confusion, frustration, and disengagement, as Learner 70's experience exemplifies.

The pedagogical approach employed in some classrooms may not be adequately tailored to address the needs of diverse learners. Learner 70's encounter with a teacher who discourages peer collaboration highlights the potential for traditional methods to further isolate and disadvantage struggling learners. However, this theme also reveals the resilience and resourcefulness of learners like Learner 70. Their attempt to seek help from peers, even in the face of reprimand, demonstrates their active engagement in their learning process. This highlights the importance of acknowledging and fostering student agency in the classroom, creating an environment where collaboration and peer support are encouraged and valued.

Therefore, Theme 4 underscores the urgent need for enhanced academic support in Grade 4 classrooms. This support should encompass multiple facets, linguistically responsive teaching, employing pedagogies that bridge the gap between BICS and CALP, utilizing home languages when appropriate, and providing differentiated instruction to cater to diverse learning needs. Culturally sensitive practices, creating inclusive classrooms that value and celebrate linguistic diversity, recognizing and combating linguistic prejudice, and fostering a sense of belonging for all learners. Collaborative learning environments, encouraging peer collaboration and interaction, promoting the use of language as a tool for learning, and providing opportunities for learners to support and learn from each other.

Learner 52

Learner 52's emotive statement, *"I wish I was part of the experimental group, my friend told me they were learning in both their home-language and English. With us ma'am was just doing revision saying that we did this work already. I was doing it for the second time but I still did not understand,"* paints a vivid picture of the imbalance and potential inefficacy of traditional, monolingual instruction for language minority learners. Their experience highlights two key themes: 1. Frustration and alienation, learner 52's desire to be in the experimental group, coupled with their repeated struggle to grasp content in English, underscores the potential for academic disengagement and frustration in monolingual settings. When learners lack access to their home language as a learning tool, they may feel lost and alienated from the curriculum, hindering their ability to understand and engage with the material. This reinforces the argument for language-sensitive pedagogies that acknowledge and leverage learners' linguistic strengths.

2. Ineffectiveness of rote revision, learner 52's experience of revisiting material they already struggled with in English further reveals the potential limitations of traditional repetition-based approaches. Simply revisiting content in the same language may not lead to deeper understanding for struggling learners, particularly those navigating unfamiliar concepts through a non-native language. This highlights the need for differentiated instruction, including scaffolding, code-switching, and alternative learning activities, to cater to diverse learning needs and promote deeper conceptual understanding.

Learner 52's voice resonates with research on the potential benefits of bilingual instruction for language minority learners. Cummins (2008) posits that utilizing learners' home languages as instructional tools can bridge the gap between Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP), empowering them to access and process complex academic content. Therefore, Learner 52's experience serves as a powerful reminder of the need for innovative and responsive educational approaches that cater to the diverse linguistic needs of learners.

Learner 2

While the majority of learners in the study expressed challenges with the sudden shift to English-only instruction in Grade 4, Learner 2 presents a contrasting perspective. Their statement, *"I went to a white school in grade R-3, I therefore struggle more with learning in my home-language*

Sepedi than in English, I understand everything ma'am says, as you can see I got 22 for the first test and 23 for the second one," highlights the individuality and complexity of language learning experiences. Learner 2's prior exposure to English in a different school context has equipped them with sufficient proficiency to navigate the Grade 4 curriculum effectively. This experience underscores the influence of past linguistic experiences on present learning outcomes. Learners like Learner 2 who have had prior exposure to non-native languages (English) may possess a stronger foundation in that language, potentially leading to better performance in classrooms where it is used as the LoLT.

The assertion by Reynolds, Altmann, and Allen (2020) that proficiency in English communication significantly impacts academic test performance echoes a well-established theme in language acquisition and educational assessment research. This intricate link unfolds through a confluence of factors. Firstly, in numerous educational contexts, English reigns supreme as the primary language of instruction. As a consequence, students' grasp of the subject matter, their ability to decipher instructions, and their capacity to articulate their knowledge hinge inextricably on their command of English. Imagine navigating a dense forest armed only with a rudimentary map; stumbling over unfamiliar words and struggling to decipher complex instructions can feel akin to that disorientation. Yet, English fluency delves far beyond mere comprehension. It equips students with the sophisticated tools of critical thinking, problem-solving, and effective communication – all core competencies for academic success. Imagine the nimble climber who not only deciphers the map but also uses it to strategize, adjust course, and communicate effectively with fellow explorers. English language proficiency equips students with these very tools, enabling them to dissect information, grapple with abstract concepts, and articulate their understanding in a clear and nuanced manner.

However, a crucial caveat emerges, the relationship between English proficiency and academic performance is a tapestry woven with diverse threads. Prior academic achievement, cultural background, socioeconomic status, and access to quality educational resources contribute significantly to shaping test outcomes. Imagine the climber's journey – while a detailed map is invaluable, treacherous terrain, limited daylight, or inadequate supplies can still hinder progress. Similarly, students' academic journeys are shaped by a constellation of factors beyond language proficiency alone. Therefore, while Reynolds et al.'s (2020) statement illuminates a key factor influencing academic performance, it should not be construed as a simplistic equation. Educators

and policymakers are tasked with weaving a more inclusive assessment tapestry, one that acknowledges language diversity, minimizes bias, and fosters robust English language skills in multilingual learners. By crafting assessments that celebrate diverse linguistic landscapes and prioritize authentic understanding over mere linguistic fluency, we can create a learning environment where all students, regardless of their linguistic background, can confidently navigate the intricate terrain of academic success.

However, it's crucial to avoid overgeneralizing from Learner 2's experience. While some learners like them may thrive in monolingual classrooms, others, even with prior exposure to the LoLT being English, may still face challenges due to individual differences in learning styles, cultural backgrounds, and academic preparedness. Therefore, it's important to acknowledge the diversity of learner needs and avoid assuming a singular approach to language instruction will be universally effective. Furthermore, Learner 2's statement raises questions about the long-term benefits of prioritizing one language over another. While their current performance in English seems positive, the implications for their home language development and cultural connection remain unclear. Research suggests that neglecting a learner's home language can have detrimental effects on their overall identity development and future educational opportunities (Cummins, 2008; Janks & Makalela, 2013).

Theme 4 highlights the need for nuanced understanding of individual learner experiences in multilingual educational settings. Learner 2's case, while representing a valid perspective, should not overshadow the potential challenges faced by other language minority learners transitioning to an English-only instruction. Educators must remain mindful of the diverse linguistic needs and backgrounds of their students, striving to create inclusive learning environments that cater to individual strengths and promote the development of all language's learners bring to the classroom. By incorporating their home languages and employing engaging, differentiated pedagogies, educators can create inclusive learning environments that bridge the gap between languages and knowledge domains, fostering deeper understanding and empowering all learners to reach their full potential.

The echoes of this study's findings resonate through the vast chambers of translanguaging research, amplifying a familiar yet powerful refrain: embracing learners' diverse linguistic repertoires is not just a pedagogical strategy, but an act of profound validation. When we weave

the threads of home languages into the tapestry of learning, we create a haven where students can shed the restrictive cloaks of "linguistic tribes" (Makalela, 2014a) and embrace their authentic, multilingual selves. This act of linguistic inclusivity nourishes the blossoming of vibrant, multifaceted identities, identities that were once muted by the monolingual limitations of traditional classrooms (Makalela, 2014a; 2015). But the transformative power of translanguaging and the use of multilingual pedagogies transcends individual identity formation. When employed in subjects like Mathematics, it aligns seamlessly with the spirit of Ubuntu, an African cultural and epistemological concept that celebrates the interconnectedness of all human existence (Makalela, 2014a; 2014b; Msimanga & Lelliott, 2014). In this context, translanguaging becomes more than mere translation; it becomes a bridge, a conduit for sharing diverse perspectives, pooling collective knowledge, and navigating the intricacies of complex scientific phenomena together. By embracing the continuum of social, linguistic, and cultural resources championed by Ubuntu, translanguaging in grade 4 classrooms reframes learning as a collaborative tapestry woven from the rich threads of diverse lived experiences.

This shift away from isolated "linguistic tribes" and towards Ubuntu-inspired, translanguaging-driven learning spaces holds the promise of a multitude of benefits. Deeper understanding emerges as students leverage their home languages as cognitive tools, unlocking nuanced comprehension of abstract scientific concepts. Engagement flourishes as learning becomes a vibrant tapestry of shared meanings and diverse perspectives, sparking intellectual curiosity and fostering a sense of ownership over the knowledge being constructed. Academic outcomes soar, as studies have shown that translanguaging can lead to improved performance, particularly for students from linguistically diverse backgrounds (Flores & García, 2013). Most importantly, multilingualism is celebrated, dismantling the artificial walls separating languages and identities, and promoting a more inclusive and equitable learning environment for all.

In conclusion, this study adds another vibrant thread to the rich tapestry of translanguaging and multilingual research. By showcasing its transformative potential in grade 4 education, it opens the door to learning spaces that not only embrace Ubuntu's communal spirit but also empower students to flourish in their academic pursuits and in their multilingual identities as well as have a smooth transition from foundation phase into intermediate phase. As we move away from the isolation of "linguistic tribes" and embrace the interconnectedness of language, knowledge, and culture. The results of the post-test from the intervention has proven how effective the use of

multilingual pedagogical practices can be and they should therefore be employed across all grade 4 classes.

4.10. Summary of research findings:

4.10.1 Pre-test.

Control group

The pre-test scores present a compelling narrative of both promise and perplexity. On the one hand, the data reveals pockets of excellence, with the highest score soaring to 23 out of 25.

However, the presence of a stark zero casts a shadow, reminding us that some learners are facing significant challenges. While the group average of 45.76% surpasses the recommended benchmark by CAPS for grade 4 mathematics of 40%, it remains a close call, highlighting the persistence of a performance gap within the group. Further analysis revealed a more nuanced picture. With 54 learners (74%) exceeding the passing mark of 40%, it's evident that the majority navigated the test successfully. This positive trend is reinforced by the low standard deviation of 5.69%, indicating a tightly clustered distribution of scores around the average.

Experimental group

The pre-test results from this group offer a captivating glimpse into the interplay between language and learning. While the raw data paints a picture of success, with the highest score soaring to 24/25 and an average exceeding the recommended pass mark of 40% (49.28%), student interviews reveal a more nuanced reality. The wide range of scores, spanning from 24 to 3 out of 25, hints at a divergent learning experience. While some students seem to have grasped the concepts with remarkable clarity, others encountered significant hurdles. This is further corroborated by the relatively high standard deviation of 4.92%, suggesting a spread in performance beyond the immediate vicinity of the average. The interviews shed light on a potential explanation for this disparity: the absence of code-switching/translation. Students expressed difficulty comprehending certain concepts without the teacher employing these strategies. This suggests that relying solely on English as the medium of instruction may have created language barriers for some learners, hindering their ability to fully access and engage with the material.

4.10.2. Post-test.

Control group.

The post-test results from the control group presented a puzzling narrative, punctuated by contradictory signals demanding deeper investigation. Notably, the group's average declined from 45.76% to 44.76%, resulting in a negative learning gain. This dip below the initial average paints a concerning picture, seemingly suggesting that the continuation of the monolingual instructional approach may not be yielding the desired outcomes. However, a closer look reveals a more nuanced reality. The presence of a maximum score of 23/25, alongside a minimum of 4/25, indicates substantial variation in individual performance. While certain members of the group thrived under the normal approach, others encountered significant difficulties. This is further underscored by the relatively high standard deviation of 5.69%. Furthermore, while 16 learners (22%) scored below the 40% pass mark, suggesting challenges for a sizeable portion of the group, it's crucial to note that 57 learners (78%) still managed to pass the test.

Experimental group.

The post-test results for the experimental group paint a picture of remarkable progress, offering a compelling case for the power of multilingual instruction. The average score skyrocketed from 49.28% to 81%, a staggering increase that surpassed the researcher’s expectations. This dramatic leap suggests that the intervention, which provided instruction, and the post-test in both English and Sepedi (post-test had a direct translation), the students' home language, yielded significant and transformative learning outcomes.

The data further reveals the breadth and depth of this improvement with the maximum score being 24/25, demonstrating that the top performers continued to excel. However, the minimum score was 4/25, highlighting a remarkable upward shift for the previously struggling students of 1%. This is further corroborated by the decreased standard deviation of 2.92%, indicating a tighter clustering of scores around the new, much higher average. Perhaps the most significant indicator of success is the fact that only one learner (1%) scored below the 40% pass mark, a stark contrast to the 24 students who fell short in the pre-test. This dramatic reduction in failing grades signifies that the multilingual approach effectively addressed the language barriers that previously hindered some students' learning.

4.11. Discussion of research findings: Quantitative and Qualitative.

The state of literacy in South Africa paints a concerning picture, with alarming statistics like over 80% of grade 4 learners struggling to read for meaning (Howie et al., 2023). This, coupled with South Africa's dismal ranking last in the 2021 PIRLS, underscores the urgency of addressing the country's literacy crisis. One critical factor playing a crucial role is the relationship between language of learning and teaching (LoLT) and assessment performance. Extensive research, such as studies by Lyon et al. (2012) and Van Laere et al. (2014), establishes a compelling link between learners' proficiency in the LoLT and their success on content-based assessments. This raises a fundamental question: are we adequately addressing the language needs of our young learners to optimize their learning potential?

The increasing cultural and linguistic diversity of our society often sees learners entering classrooms with home languages that differ from the established LoLT, typically English. As Maerten-Rivera et al. (2010) and Martin et al. (2012) highlight, this is particularly critical in early education, where the abrupt shift from using one's mother tongue as the LoLT to an unfamiliar language like English can create significant barriers to learning. For grade 4 students, navigating this complex linguistic transition while simultaneously grappling with demanding academic content creates a challenging and potentially disadvantageous learning environment. Therefore, tackling the literacy problem in South Africa necessitates a nuanced approach that acknowledges the role of language as a fundamental tool for learning. Moving beyond a one-size-fits-all LoLT model and exploring alternative strategies, such as incorporating elements of learners' home languages into instruction or implementing multilingual education models, might hold promise in improving reading comprehension and overall academic performance. By critically examining the current LoLT approach in early education through the lens of research and acknowledging the diverse linguistic landscapes of our classrooms, we can begin to pave the way for a more inclusive and effective learning environment for all learners, regardless of their linguistic backgrounds. This, in turn, can contribute to closing the literacy gap and fostering a generation of proficient and confident readers in South Africa.

Guided by the desire to understand the relationship between language and academic performance, this research delved into the following pivotal questions:

1. How do monolingual classrooms impact the academic performance of intermediate phase grade 4 African learners learning in an additional language?

2. How do language policies and curriculum frameworks intersect with monolingual classroom practices to impact the learning outcomes of intermediate phase grade 4 African learners?

3. How do the historical and cultural contexts of African learners influence their experiences in monolingual classrooms, and what implications does this have for teaching and learning practices?

The research was guided by specific hypotheses that aimed to be either confirmed or refuted through the analysis of the data.

Research Hypothesis: *The language of instruction significantly impacts the academic performance of Grade 4 learners who are acquiring knowledge in an additional language distinct from their home-language.*

Null Hypothesis: *there will be no substantial difference in the academic performance of grade 4 mathematics learners post intervention in the experimental group.*

This study delves into the intricate tapestry of language and literacy, exploring their interwoven influence on learner achievement in grade 4 mathematics. Employing a multilevel hierarchical regression analysis, it sheds light on the significant roles played by both home language and literacy in the language of instruction (English), alongside factors like gender and socioeconomic status. The findings resonate with established research, such as Van den Branden's (2010) work, which highlights the challenges faced by learners whose home language differs from the language of instruction, particularly in STEM subjects like mathematics and science. This study further strengthens this understanding by demonstrating the direct impact of home language and English literacy on academic performance. In essence, the analysis reveals a multifaceted picture, where each thread of language and literacy contributes to the overall fabric of learner achievement. This complexity necessitates a nuanced approach to education, one that acknowledges the diverse linguistic landscapes of classrooms and actively seeks to bridge the gap between home languages

and the language of instruction. The study's findings paint a compelling picture of language's powerful influence on academic performance, particularly evident in the pre- and post-test results. In the control group, clinging to an additional language as the sole medium of instruction proved ineffective. The scores from both tests revealed minimal progress, even dipping marginally by 1%. This stagnation underscores the limitations of a monolingual approach in diverse classrooms.

In stark contrast, the experimental group embraced the transformative potential of multilingual pedagogies. With instruction delivered in both Sepedi, their home language, and English, the results were nothing short of remarkable. The average score soared, and the number of passing students skyrocketed to a staggering 99%. This dramatic shift offers a resounding testament to the efficacy of translanguaging, where learners seamlessly navigate and leverage their diverse linguistic repertoires to enhance learning.

The success of the experimental group can be attributed to several factors. Firstly, utilizing Sepedi as a medium of instruction created a sense of familiarity and comfort, allowing students to engage with the material on a deeper level. This linguistic bridge facilitated access to complex concepts that might have otherwise remained opaque through the lens of an unfamiliar language. Secondly, translanguaging empowered students to draw upon the strengths and nuances of both Sepedi and English, enriching their understanding and fostering critical thinking skills. The study's findings have profound implications for educational practices. It challenges the traditional paradigm of monolingual instruction and advocates for a more inclusive approach that recognizes and celebrates the diverse linguistic assets of learners. By incorporating translanguaging and multilingual pedagogies into the classroom, educators can unlock the full potential of their students, regardless of their linguistic backgrounds, and pave the way for a more equitable and enriching learning experience for all.

The resounding success of the experimental group, as evidenced by both their post-test performance and insightful interview responses, paints a vibrant picture of the transformative power of home language in education. By anchoring instruction and learning materials in Sepedi, the students' native tongue, the classroom transformed from a potential site of exclusion to a space of empowerment and accelerated learning. The post-test results serve as a powerful testament to this shift. The sharp increase in average scores and the near-universal passing rate stand in stark contrast to the stagnation observed in the control group, clinging to an exclusively English medium of instruction. These divergent outcomes point to the inherent limitations of monolingual

approaches in diverse classrooms, where students grapple with navigating complex concepts through the filters of an unfamiliar language.

However, the benefits of home language extend beyond mere comprehension. The interview responses reveal a deeper, social and cognitive advantage gained by the experimental group. Students shared how utilizing Sepedi fostered a sense of confidence and engagement, allowing them to express themselves authentically and connect with the material on a more personal level. This linguistic inclusivity fostered a sense of belonging and community, transforming the classroom into a collaborative space where diverse voices and perspectives could thrive. Further, translanguaging, the seamless movement between languages, emerged as a powerful tool for deepening understanding. Students described drawing upon the unique nuances of both Sepedi and English to clarify concepts, engage in critical thinking, and ultimately construct rich and interconnected knowledge networks. This linguistic agility challenges the traditional boundaries of monolingual classrooms, showcasing the immense potential of leveraging students' diverse linguistic repertoires to enrich and enhance learning.

The success of the experimental group offers compelling evidence for the need to shift educational paradigms and embrace multilingual pedagogies. By recognizing and celebrating the diverse linguistic assets of learners, educators can create inclusive and equitable learning environments where all students have the opportunity to reach their full potential. This study serves as a call to action, urging educators to break down language barriers and unlock the hidden treasures of home languages for the benefit of all students. The experimental group's enthusiastic embrace of the multilingual classroom extended beyond mere comprehension and into the realm of emotional connection and inclusivity. Interview responses revealed a profound shift in their relationship with the learning process.

Learner 19

Beaming with excitement, exclaimed, "It was a fun lesson! The teacher used Sepedi and English, and it wasn't just about explaining things, she used examples we could relate to. It felt like I was included in the lesson.”

This simple statement carries a profound weight. It speaks of a classroom transformed from a space of passive absorption to a vibrant tapestry woven with the threads of diverse languages and shared experiences. By incorporating Sepedi into the instructional fabric, the teacher bridged a

crucial gap, dismantling the invisible walls of linguistic exclusion and fostering a sense of belonging and community.

The student's use of the word "fun" is particularly telling. It suggests that learning, once potentially arduous and alienating, had become a source of joy and engagement. The relatable examples, delivered in the comforting embrace of their home language, opened doors to deeper understanding and sparked a sense of ownership over the material. This shift in perception underscores the powerful role of language in shaping not just cognitive but also emotional engagement with learning. Furthermore, the student's comment highlights the transformative potential of translanguaging, the seamless movement between languages. The teacher's ability to navigate both Sepedi and English, weaving them into the fabric of the lesson, created a dynamic and enriching environment. This linguistic agility fostered a sense of intellectual confidence in the students, empowering them to draw upon their diverse linguistic repertoires to engage with the material on their own terms.

The resounding success of the experimental group in the post-test paints a vivid picture of translanguaging as a powerful engine for academic growth in multilingual classrooms. When teachers strategically leverage students' home languages alongside the language of instruction, the results speak for themselves: improved academic performance, enhanced engagement, and a flourishing sense of belonging. The data is clear: translanguaging, the seamless movement between languages, holds immense potential for boosting performance, particularly when the language of instruction differs from students' home languages. By incorporating familiar linguistic anchors, teachers bridge the comprehension gap, allowing students to access complex concepts on a deeper level. This removes potential barriers to understanding and empowers them to engage with the material authentically.

Makalela's (2015) work resonates with this finding, highlighting the positive impact of affirming students' multilingual identities on their academic success. In multilingual classrooms, breaking down rigid linguistic boundaries and celebrating the spectrum of language resources available creates a welcoming and inclusive environment. This, in turn, fosters confidence, engagement, and a sense of ownership over the learning process, all of which contribute to higher academic achievement.

This study offers compelling evidence for the value of rethinking traditional monolingual approaches and embracing the strengths of translanguaging. By weaving students' home

languages into the fabric of instruction, educators can create equitable learning spaces where all learners, regardless of their linguistic backgrounds, have the opportunity to reach their full potential. However, it's crucial to acknowledge that while the post-test results clearly demonstrate a positive correlation between translanguaging and academic performance, further research is needed to control for potentially confounding variables. Investigating the impact of individual learning styles, access to resources, and socioeconomic factors will provide a more holistic understanding of the complex interplay between language and academic achievement in multilingual classrooms.

The control group in this investigation encountered a persistent hurdle as they were instructed in English, a language they struggled with according to the pre and post-test given, despite the two tests being the same. This presented a significant challenge, considering the demands of the subject matter and literacy development. As Cummins (2000) aptly highlighted, there's a crucial distinction between basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP). While BICS equips us for everyday conversations, CALP delves into the complex, abstract worlds of academic subjects like mathematics.

Van Laere et al. (2014) further emphasize this divide, noting that academic settings feature "context-reduced" communication, demanding not just understanding specific words but also navigating complex concepts and intricate relationships between those concepts. As Van den Branden (2010) describes, it's about deciphering phenomena, grappling with abstract reasoning, and applying knowledge to new situations – all through the lens of a potentially unfamiliar language and this is seen with the confusion between a hexagon and pentagon for question 2.3. For the control group, this mismatch between language proficiency and academic demands created a barrier to learning and as a result the poor scores in both tests. Imagine trying to decipher the intricacies of fractions, time, and 2D shapes while wrestling with basic understanding of the language itself. It's no surprise then that their progress remained limited. This underlines the critical role of considering a learner's language proficiency, particularly CALP, when setting the stage for academic success especially for grade 4 learners who just transitioned.

Through the stark contrast between the control and experimental groups, brings this disparity to light. By employing translanguaging strategies and leveraging students' home languages in the experimental group, we witnessed a dramatic shift in understanding and engagement. This reinforces the argument that bridging the language gap, acknowledging the complexities of

CALP, and creating an inclusive learning environment are crucial steps towards unlocking the full potential of all learners, regardless of their linguistic backgrounds.

This study highlights the crucial intersection of language and learning in STEM education, specifically comparing the post-test performance of an experimental group instructed in both Sepedi and English to a control group receiving instruction solely in English. The stark difference in their results sheds light on the profound impact of language of instruction on academic achievement, particularly in demanding subjects like mathematics.

This investigation resonates with Taboada's (2012) assertion that learners' proficiency in the language of instruction plays a pivotal role in their academic performance. When students grapple with understanding basic vocabulary and sentence structures, the intricacies of scientific concepts remain shrouded in obscurity. The control group, facing this very challenge, struggled to demonstrate significant progress. In contrast, the experimental group, empowered by the inclusion of their home language, Sepedi, experienced a dramatic shift. Translating key concepts and utilizing familiar linguistic frameworks created a bridge to understanding. This aligns with the notion that proficiency in CALP, cognitive academic language proficiency (Cummins, 2000), is crucial for success in STEM subjects. Mathematics, with its abstract formulations and complex problem-solving demands, requires students to navigate a nuanced linguistic landscape. The experimental group, equipped with both BICS (basic interpersonal communicative skills) and CALP in their home language and English, were better prepared to embark on this intellectual journey.

The significance of this research extends beyond individual student success. STEM subjects, as Taboada aptly points out, are the crucible of societal progress and cultural advancement. Ensuring equitable access to these fields necessitates acknowledging the linguistic diversity of our classrooms and implementing instructional strategies that bridge the gap between students' home languages and the language of instruction. By replicating and expanding upon this research, we can pave the way for a future where language becomes a tool for inclusion and empowerment, not a barrier to learning. Only then can we truly unlock the full potential of all students, regardless of their linguistic backgrounds, and propel them towards success in the STEM fields that drive our world forward.

The global educational landscape is marred by a persistent and troubling disparity: a gulf in academic achievement in STEM subjects, often separating learners instructed in their home

language from those grappling with an unfamiliar language of instruction (LoLT) (Bellens & De Fraine, 2012; OECD, 2010). This study echoes and amplifies this concerning trend, with the experimental group, instructed in both their home language and English, significantly outperforming the control group limited to English instruction.

These findings align with a growing body of research that identifies the relationship between home language and LoLT as a key factor influencing STEM achievement (Van Laere et al., 2014). When students grapple with basic comprehension of the language itself, accessing the complex and nuanced concepts of STEM becomes an insurmountable hurdle. The control group, navigating unfamiliar linguistic terrain, struggled to bridge this gap, hindering their progress.

However, the experimental group's success paints a different picture. By incorporating their home language, Sepedi, into the instructional fabric, we created a bridge of understanding. Key terminology and abstract concepts were translated, rendered familiar, and woven into the tapestry of their cognitive landscape. This aligns with Cummins' (2000) distinction between basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP). While BICS equips us for everyday conversations, CALP delves into the specialized language of academic domains like STEM. By leveraging both BICS and CALP in their home language, the experimental group gained a critical advantage, navigating the intricate linguistic terrain of mathematics with greater confidence and efficacy. The implications of this research extend far beyond individual student performance. STEM subjects, as Taboada (2012) argues, are the engine of societal progress and cultural advancement. Closing the achievement gap in these fields necessitates a paradigm shift, one that acknowledges the crucial role of language in learning and embraces the diverse linguistic landscapes of our classrooms.

This study adds to a growing tapestry of research exploring the intricate relationship between language proficiency, reading abilities, and academic achievement, particularly in learners navigating an unfamiliar language of instruction (LoLT). The findings resonate with Van Laere et al.'s (2014) assertion that proficiency in the LoLT, and specifically reading skills, serve as pivotal threads woven into the fabric of academic success.

These threads become even more critical for learners whose home language differs from the LoLT. When grappling with limited comprehension, particularly in reading, key concepts remain shrouded in obscurity. Vocabulary knowledge and reading comprehension become crucial tools for unlocking the complexities of academic excellence, and abruptly switching the instructional

language without addressing these deficiencies only exacerbates the challenge (Cremer & Schoonen, 2013; Van Laere et al., 2014).

This study serves as a stark reminder of this intricate interplay. The control group, solely instructed in English, faced a formidable obstacle in their lack of adequate reading skills and limited vocabulary in their non-native language. Consequently, their progress remained constrained. In contrast, the experimental group, empowered by the inclusion of their home language Sepedi alongside English, experienced a notable shift. This multilingual approach provided scaffolding for understanding, allowing them to bridge the gap between unfamiliar concepts and their own linguistic base. By weaving their native language into the fabric of instruction, we equipped them with the necessary tools to access the complexities of the subject matter.

The implications of this research extend beyond individual student outcomes. In a world increasingly interconnected and diverse, acknowledging the role of language proficiency and reading skills in academic achievement becomes imperative. Educational practices must evolve to address the needs of learners navigating unfamiliar linguistic landscapes, providing them with the support and scaffolds they need to bridge the gap between home languages and the LoLT. Only then can we ensure equitable access to academic success for all students, regardless of their linguistic backgrounds. By delving deeper into the intricate threads of language proficiency, reading abilities, and instructional approaches, we can continue to unravel the tapestry of academic achievement and weave a future where language empowers, not hinders, learning.

4.12. Chapter Summary.

This study followed 140 students in grade 4 as they learned mathematics. The experimental group (68 students) received instruction in both their home language, Sepedi, and English, while the control group (72 students) learned solely in English. Both groups took pre- and post-tests, but the experimental group had the unique opportunity where the post-test was written in both languages (English and Sepedi), unveiling the benefits of translanguaging.

The results were clear as the experimental group soared, significantly outperforming their English-only counterparts. This suggests that the employment of multilingual pedagogies and translanguaging, the seamless movement between languages, offered cognitive advantages. Interviews with these students from the experimental group revealed a deeper understanding of the concepts presented, hinting at a richer learning experience facilitated by the familiar linguistic

bridges as the benefits went beyond the cognitive. The interviews also showcased social and emotional advantages for the experimental group. They expressed feeling more confident, engaged, and included in the classroom. Conversely, the control group's responses painted a picture of exclusion and confusion, highlighting the potential negative impact of using a non-native language as the sole medium of instruction.

These findings paint a compelling picture for embracing multilingual pedagogies in grade 4 classrooms. By acknowledging and leveraging students' home languages, we can create inclusive learning environments where all students, regardless of their linguistic backgrounds, have the opportunity to thrive. This study is a call to action for educators, urging them to develop and implement multilingual teaching strategies that unlock the full potential of their diverse classrooms.

4.13. Conclusion.

The assertion that language minority learners can achieve better academic results and foster social inclusion through the use of multilingual and translanguaging pedagogies (Janks, 2017) finds resounding support in the compelling outcomes of the experimental group in this study. By employing translanguaging – the seamless movement between languages – and multilingual pedagogies, these learners demonstrated not only enhanced academic performance but also increased social engagement and inclusion. This study investigated the potential impact of the exclusive use of English, a non-native language for many learners, on academic performance of grade 4 learner. The hypothesis posited that incorporating students' home language, Sepedi, alongside English into instruction could mitigate these challenges and improve learning outcomes.

To test this hypothesis, the researcher divided 140 students into two groups: the experimental group with 68 students who received instruction in both Sepedi and English, while the control group with 72 students were taught solely in English. Both groups completed pre- and post-tests in mathematics. To further illuminate the potential benefits of translanguaging, the experimental group's post-test was offered in both Sepedi and English.

The results were striking. The experimental group demonstrated a significant improvement in performance, with their average score soaring from 49.28% on the pre-test to a remarkable 81% on the post-test. This substantial gain stands in stark contrast to the control group, whose average score remained relatively stagnant, decreasing from 45,76% to 44,76%.

This dramatic shift in the experimental group suggests that translanguaging, the flexible utilization of multiple languages, played a crucial role in facilitating deeper understanding and improved academic performance. By weaving their home language into the fabric of instruction, we provided students with a familiar linguistic bridge to access complex concepts and navigate the intricacies of grade 4 and mathematics. This aligns with current research highlighting the importance of Cognitive Academic Language Proficiency (CALP) in academic success, and how leveraging students' home language resources can strengthen CALP development (Cummins, 2000).

The post-test offered in both languages provided valuable insights into the cognitive processes at play. Analysing student responses in both Sepedi and English revealed a nuanced understanding of concepts expressed with greater depth and clarity in their home language. This suggests that translanguaging not only facilitated comprehension but also empowered students to articulate their knowledge with greater confidence and precision.

The implications of this study extend beyond the immediate classroom. These findings provide compelling evidence for the need to re-evaluate traditional monolingual approaches in education, particularly in diverse classrooms where students navigate unfamiliar languages of instruction. Embracing multilingual pedagogies and acknowledging the strengths of students' home languages hold immense potential to bridge the achievement gap and create inclusive learning environments where all students thrive.

Further research is needed to explore the long-term impact of translanguaging on academic achievement and to refine multilingual teaching strategies across different subjects and grade levels. Nevertheless, this study paves the way for a future where language becomes a tool for empowerment and inclusion, not a barrier to learning, enabling all students to reach their full potential, regardless of their linguistic backgrounds.

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

This chapter encapsulates a synthesis of the research findings, presenting a comprehensive interpretation of its implications, and propounds actionable recommendations derived from the study's outcomes. Within this chapter, a succinct recapitulation of the research endeavor is posited, delineating the pivotal discoveries that emanated from the rigorous examination of the collected data. Providing possible recommendations.

5.1. Introduction.

This study delved into a crucial question: does the mismatch between a child's home language and the language of instruction in grade 4 impact their academic performance? It specifically focused on learners who experienced foundation phase, where their mother tongue was the sole language of learning, and transitioned to grade 4 with a different language as the medium of instruction.

In essence, the researcher investigated if this language shift acts as a stumbling block in their learning journey, hindering their ability to grasp concepts and achieve their full potential. By exploring this connection, the researcher hoped to gain valuable insights into improving educational practices and ensuring equitable learning opportunities for all students, regardless of their linguistic backgrounds.

Guiding this research were these essential questions:

1. How do monolingual classrooms impact the academic performance of intermediate phase grade 4 African learners learning in an additional language?

2. How do language policies and curriculum frameworks intersect with monolingual classroom practices to impact the learning outcomes of intermediate phase grade 4 African learners?

3. How do the historical and cultural contexts of African learners influence their experiences in monolingual classrooms, and what implications does this have for teaching and learning practices?

To address the research questions and explore the potential of translanguaging in grade 4 classroom instruction, this study employed a quasi-experimental design with two distinct groups. The control group, representing the traditional monolingual approach, received instruction solely in English, the official language of instruction in South Africa. In contrast, the experimental group, embracing the spirit of the country's multilingual policy, benefitted from a bilingual

approach. They received instruction in both English and Sepedi, their home language. Notably, their pre-test was also translated into both languages, acknowledging the potential cognitive scaffolds multilingualism can offer.

The prevalence of English-only policies in "black schools" stands in stark contrast to the documented low literacy rates among their student populations (Makalela, 2013). This study aimed to challenge this trend by granting the experimental group the freedom to engage in translanguaging, or the flexible movement between languages, throughout their learning. Unlike the control group, confined to a monolingual environment, the experimental group could seamlessly switch between English and Sepedi, their home language. This bilateral classroom dynamic allowed both teachers and students to code-switch for clarity, emphasizing key concepts, definitions, and explanations of scientific phenomena. This flexibility enabled them to leverage their linguistic strengths, potentially fostering deeper understanding and promoting more nuanced engagement with the material.

This chapter culminates the journey of this research, illuminating the impact of language on academic achievement in a multilingual context. Following the intervention phase, where the researcher explored the potential of a bilingual approach in Grade 4 classroom instruction. The study arrived at the pivotal moment: the post-test. This assessment served as the key to unlocking the truth – did incorporating home languages truly contribute to enhanced learning?

The hypothesis, driven by the concerns surrounding low literacy rates and the disconnect between home and school languages (Makalela, 2013), proposed that the language of instruction plays a significant role in the academic performance of learners acquiring knowledge in a second language. The post-test results stand as a resounding affirmation of this proposition. The bifocal language policy championed in this study, where schools embrace the rich tapestry of languages woven into their communities, emerges as a potent tool for maximizing learning potential. By employing both English, the language of instruction, and Sepedi, the home language of the experimental group, the researcher witnessed a remarkable transformation. The data sings of substantial gains in content knowledge, comprehension, and retention among these students. This suggests that leveraging home languages not only provides cognitive scaffolds but also fosters a deeper connection to the learning material, leading to more meaningful and lasting understanding.

However, the commitment to inclusivity extended beyond the experimental group. Recognizing that knowledge should be shared, the researcher and teachers ensured that the control group

received access to the same lessons and learning resources after the intervention. This ethical approach ensured that all students, regardless of their participation in the study, benefited from the insights gained.

This chapter now stands as a bridge, connecting the discoveries of our research to the future of education. It presents a succinct summary of the investigation, delves into the profound conclusions drawn from the data, and offers concrete recommendations for educators, policymakers, and researchers alike. We believe that by embracing the power of home languages and implementing bifocal language policies, we can empower learners, bridge the achievement gap, and pave the way for a future where every child has the opportunity to thrive, regardless of their linguistic background.

5.2 Chapters overview.

Chapter 1.

This chapter delved into the fascinating interplay between language, education, and national policy in South Africa. While the notion of embracing multilingual classrooms in higher grades, particularly as a bridge between Foundation Phase and Intermediate Phase, has gained traction in several countries, its implementation in most Africa remains limited. Within this context, South Africa occupies a unique position. The Eleven Official Language Policy and the Education Language Policy present fertile ground for the transformation of schools into truly multilingual spaces, where students' home languages can find resonance within the academic fabric. However, research paints a contrasting picture, one where the potential of these policies remains largely untapped.

Here, the researcher embarked on a critical exploration of this discrepancy. Examining the existing research landscape, the researcher dissected the challenges and opportunities associated with integrating home languages into South African classrooms, particularly in Grade 4. This analysis provided a crucial foundation for the subsequent investigation, where the researcher aimed to illuminate the potential benefits of a bifocal language policy in enhancing academic achievement and bridging the language gap for young learners.

Literacy development, a cornerstone of academic success, appears to cast a long shadow across the early years of schooling in South Africa. Yet, learners face a daunting shift into Grade 4 – from the familiar learning comfort of their home languages in Foundation Phase (Grades R-3) to navigating English as the sole Language of Instruction (LoLT) with minimal support from

translanguaging and multilingual pedagogies. This abrupt transition creates a significant hurdle, especially considering that less than 10% of learners in township and African schools are native English speakers (Howie et al., 2023). Consequently, the struggle to comprehend English hinders their ability to read for meaning, jeopardizing their literacy development and impacting their overall academic journey.

This stark reality underscores the need for a critical re-evaluation of current language policies in education. The reliance on a predominantly English-based curriculum, without acknowledging the diverse linguistic landscapes of South African classrooms, creates a system that disadvantages a significant portion of learners. The lack of multilingual pedagogies further exacerbates this issue, failing to provide learners with the necessary scaffolds to bridge the gap between their home languages and the LoLT. The historical roots of the monolingual orthodoxy that continues to pervade many school curricula, even in diverse multilingual contexts like South Africa. Its origins lie in the dominant ideology of "one-ness" that emerged during the 18th century in Europe, shaping the very foundation of nation-states. As Baker (2011) and Makalela (2014a) argue, this ideology championed notions of unification through standardization: one language for one nation, one language for one classroom.

The legacy of this Enlightenment-era thinking continues to cast its shadow on educational practices. Schools often inadvertently recreate situations where languages are perceived as competing entities, rather than recognizing their potential for synergy. Consequently, teachers, acting as gatekeepers of standardized language forms, tend to adopt a protectionist stance, aiming to prevent any "cross-contamination" between languages (Makalela, 2013). This stance, while well-intentioned, can inadvertently stifle the natural fluidity and adaptability that characterizes multilingualism. the complex landscape of language policy in South African education, highlighting both the aspirations and realities surrounding mother tongue and multilingualism in classrooms. While the 1997 National Language in Education Policy (LiEP) established two laudable intentions: guaranteeing access to mother tongue education throughout schooling and fostering additive multilingualism, the actualization of these ideals remains incomplete.

The LiEP recognized the crucial role of home languages in maximizing educational access and success for all learners. By enshrining the right to learn in one's mother tongue and advocating for the retention and development of native languages alongside the acquisition of a second language (Department of Education, 1997), the policy sought to create an equitable and inclusive

learning environment. However, two key qualifications tempered these ambitions: first, the right to mother tongue education rests on parental choice, which introduces potential disparities based on school selection; second, the onus of translating the LiEP principles into practice falls on individual schools, leading to varied interpretations and implementations (Reid, 2016). Two decades after its inception, the LiEP's promise remains unfulfilled. Despite its noble objectives, a persistent need exists to advocate for the more widespread and effective incorporation of mother tongue and multilingualism into classroom spaces. This requires a multifaceted approach that addresses the limitations inherent in the current system.

While traditional models often relied on a single Language of Instruction (LoLT) different from learners' home languages, recent scholarship on super-diverse schooling communities' casts doubt on this approach. As argued by Creese and Blackledge (2010), relying solely on an unfamiliar LoLT proves ineffective in supporting the academic and social development of multilingual learners, particularly those struggling to keep up.

The emergence of super-diverse settings, characterized by a multitude of intersecting languages and cultures, demands a paradigm shift in education. Traditional, monolingual approaches simply fail to acknowledge the vibrant linguistic landscapes these classrooms represent. Instead, effective pedagogies and policies must build upon the multiple linguistic repertoires that students bring to the table, recognizing the fluidity and interconnectedness of their languages (Creese & Blackledge, 2010; Garcia, 2011; Wei, 2011).

This chapter explored the theoretical frameworks and practical strategies that inform multilingual and translanguaging pedagogies for diverse classrooms. The researcher examined successful models from across the globe that leverage students' linguistic strengths and promote learning through multiple languages. By actively engaging with the complexities of language in 21st-century education, research can strive to create inclusive and enriching learning environments where all students, regardless of their linguistic backgrounds, can thrive.

Chapter 2.

Drawing upon a comprehensive selection of academic resources, this chapter illuminates the current state of knowledge surrounding the research problem, laying the groundwork for further exploration. This chapter delved into the intricate tapestry of language and literacy development in the context of South African primary schools. The focus laid on the potentially detrimental

impact of neglecting mother-tongue development within the classroom, drawing insights from both local and international research. Studies paint a concerning picture for students whose home language differs from the language of instruction (LoLT) in academic proficiency. Research by Martin et al. (2012) and the OECD (2010) highlights their struggle to excel in STEM subjects and academics as a whole, interestingly, a closer look reveals the intricate interplay between language proficiency and academic success. O'Reilly and McNamara (2007) and Taboada (2012) demonstrate a positive correlation between self-assessed LoLT proficiency and reading comprehension, acting as stepping stones to higher academic achievement. This raises a crucial point: proficiency in the LoLT undoubtedly plays a significant role in academic success, as emphasized by Maerten-Rivera et al. (2010) and Taboada (2012). However, it would be a false step to view it as the sole determinant, particularly for learners navigating the complexities of a non-native LoLT.

The researcher navigated a path illuminated by empirical findings that showcase the transformative potential of translanguaging, a pedagogical approach embracing the fluidity and interconnectedness of learners' diverse linguistic repertoires. The chapter unfolds in two distinct but complementary movements. First, the researcher critically analysed the existing landscape of reading comprehension research in South African primary schools, highlighting the challenges associated with underdeveloped mother-tongue skills. This examination paved the way for the central exploration – the transformative power of translanguaging and multilingual pedagogies.

Translanguaging, unlike traditional monolingual approaches, recognizes and celebrates the dynamic interplay between languages in classrooms. By embracing the full linguistic arsenal that learners bring into the classroom, it fosters deeper comprehension, enhances engagement, and empowers students to navigate complex academic concepts with greater ease. The researcher delved into the theoretical underpinnings of this approach, showcasing its potential to bridge the achievement gap and foster a truly inclusive learning environment. The exploration extends beyond theoretical frameworks, drawing on compelling empirical evidence from across the globe. An examination of successful models of translanguaging and multilingual pedagogies implemented in diverse contexts, showcasing their efficacy in boosting reading comprehension, literacy skills, and overall academic performance. This comparative lens allows us to identify best practices and adapt them to the unique needs of South African classrooms was done.

The contemporary landscape of multilingualism has profoundly challenged the rigid conceptualization of languages as self-contained, static entities with well-defined boundaries. Instead, current scholarship, exemplified by Garcia (2011), Garcia and Wei (2014), Hornberger and Link (2012), Makalela (2015), and Wei (2011), embraces a more nuanced perspective. Languages are seen as dynamic, interconnected systems, forming intricate webs of communication that overlap and influence each other. This paradigm shift, often referred to as the "multilingual turn" (May, 2013), recognizes multilingualism as the starting point for understanding language practices and their impact on learning.

This shift away from the monoglossic orthodoxy, characterized by an emphasis on single languages, is particularly relevant in today's globalized, fluid, and mobile communicative spaces (Makalela, 2015). A rigid focus on monolingualism, as Makalela (2015) argues, hinders learners' potential for success in diverse content areas. As your literature review underscores, language undeniably plays a significant role in shaping academic achievement across various subjects.

This chapter delved deeper into the complex relationship between language and learning. The researcher critically examined the limitations of monolingual approaches and explore the transformative potential of embracing multilingualism in education. By drawing on theoretical frameworks and empirical evidence, demonstrating how leveraging students' diverse linguistic repertoires can enhance their understanding, engagement, and overall academic performance. By recognizing the interconnectedness of languages and building upon students' linguistic strengths, we can empower them to navigate the complexities of knowledge acquisition and thrive in a world where diverse voices and perspectives enrich the learning landscape.

Chapter 3.

This chapter unravels the meticulous research design, methodological framework, ethical considerations, and data analysis procedures that underpin this investigation. Here, the researcher illuminated the instruments and procedures employed to answer the research questions and rigorously examine the validity of the research hypothesis.

The chosen methodology embraced a mixed-methods approach, a symphony where quantitative and qualitative methods intertwine to offer a comprehensive understanding of the research subject. This multifaceted approach acknowledged the inherent complexity of the research question, requiring both the precision of quantitative data and the richness of qualitative insights.

Quantitative methods provided a robust foundation for this inquiry. Through meticulously constructed rigorous statistical analyses, and systematic data collection, the researcher gathered empirical evidence that quantified and measured key variables. The quantitative lens allowed the researcher to discern patterns, trends, and correlations, offering a powerful overview of the research landscape. Yet, the narrative deepened through the evocative lens of qualitative methods. Interviews, observations, and documented analysis become the instruments for delving deeper, capturing the subjective experiences and perspectives that numerical data alone could not convey. This qualitative tapestry allowed the researcher to weave together the voices and interpretations of participants, revealing the human dimensions and intricacies of the research question. The study adopted a sequential explanatory design, a two-phase approach where quantitative and qualitative data, acting as complementary threads, were woven together to illuminate the research question. Each phase, a distinct act in the research play, involved separate data collection and analysis (Tuckman, 2011).

Rigorous data collection methods were employed, yielding numerical threads that captured the essence of the research phenomenon. Statistical analysis, the microscope of this act, then meticulously examined these threads, revealing patterns and trends that formed the foundation for further exploration. In the second analyses, the focus shifted to qualitative inquiry. Interviews, observations, and other methods became the tools of exploration, delving deeper into the lived experiences and subjective perspectives that quantitative data alone couldn't capture. This qualitative tapestry, woven from rich narratives and interpretations, enriched the understanding of the research question, adding depth and nuance to the findings.

The intricate relationship between language and academic performance demands a comprehensive research approach. Triangulation, the convergence of multiple perspectives, proves invaluable in this endeavor (Gray, 2011). By drawing upon diverse theories (Cohen et al., 2011), research methods (de Vos et al., 2011), and data collection techniques, triangulation equips the researcher with a multifaceted lens to illuminate the complexities of the phenomenon under investigation.

In this study, exploring the potential of Sepedi, the home language of Grade 4 learners, as a contributor to academic performance necessitated such a multifaceted approach. To delve deeply into this intricate relationship, data was collected from a rich tapestry of sources:

Learner performance, both pre- and post-tests provided quantitative insights into the impact of language integration on learning outcomes.

Classroom observations, observing teaching practices allowed for a nuanced understanding of how language was utilized in the learning environment and its influence of learning.

Learner interviews, provided the voices of the learners themselves, through interviews with both the experimental and control groups, revealed their perspectives, feelings, and experiences regarding the use of Sepedi in the classroom.

Pre-test effectiveness: Examining the effectiveness and relevance of the English-Sepedi pre-test used with the experimental group offered further insights into the role of language in assessment. This triangulation of data, encompassing quantitative and qualitative sources, allows for a more robust and holistic understanding of the research question. It moves beyond solely measuring academic performance to illuminate the subjective experiences and perceptions of the learners themselves. By weaving together these diverse threads, the research strives to reveal the intricacies of how language can act as a bridge to or a barrier in the learning process for Grade 4 learners.

This investigation employed qualitative content analysis as its primary tool for unlocking the nuances and complexities within the qualitative data. This approach, akin to pure coding in its initial stages, focuses on systematically classifying and categorizing textual data without imposing pre-determined theoretical frameworks (Glaser & Laudel, 2010). Unlike other qualitative methods that explicitly incorporate techniques for pattern recognition and integration, qualitative content analysis prioritizes the emergent nature of meaning, allowing themes and insights to organically arise through the iterative process of coding and analysis.

Following the meticulous steps outlined in Glăser & Laudel's (2010) model, the researcher embarked on a rigorous journey through the qualitative data. Each piece of text was meticulously examined and coded, capturing its key concepts and meanings. Through a cyclical process of coding, memo-writing, and theoretical reflection, the researcher continually refined and honed the emerging categories, ensuring their coherence and relevance to the research question. This inductive approach, grounded in the data itself, allowed for the emergence of novel and unexpected insights, enriching the understanding of the phenomenon under investigation. By eschewing pre-determined frameworks and embracing the emergent nature of meaning,

qualitative content analysis served as a powerful tool for exploring the subjective experiences and perspectives captured in the data. This journey through the qualitative landscape, guided by the principles of Glăser & Laudel's (2010) model, unveiled a wealth of insights that would have remained hidden within the raw text, ultimately contributing to a deeper and richer understanding of the research question.

Chapter 4.

This chapter delves into the intricate world of data, where the findings of this research are presented and meticulously analysed. At the heart of this exploration lies the interplay between learners' home languages, their proficiency in the Language of Learning and Teaching (LoLT), and their academic performance. To illuminate this relationship, two achievement tests, a pre-test and a post-test, were administered to the learners, generating a rich tapestry of quantitative data. The analysis of this data employed a bivariate approach, focusing on the interactions between two variables: language and academic performance. This approach yielded a diverse array of measures, including frequencies, percentages, learning gains, p-values, standard deviations, effect size indices, and means, for each group of learners (control and experimental) participating in the study.

To delve deeper into these measures and compare the performance of the two groups, the powerful tool of the two-sample t-test was employed. This test, also known as an independent samples t-test (Leedy & Ormrod, 2010), is a cornerstone of statistical analysis, allowing researchers to determine whether statistically significant differences exist between two independent groups on a particular variable (McMillan & Schumacher, 2010). Utilizing a R-computing software, the two-sample t-test was applied to each measure obtained from the tests, meticulously comparing the control and experimental groups. This in-depth comparison aimed to reveal whether integrating learners' home language into the teaching-learning process had a measurable impact on their academic performance in grade 4 classrooms. By rigorously navigating the landscape of quantitative data, this chapter not only presented the findings of the research but also provided a clear-insights into the complex relationship between language and learning. The detailed explanation of the analysis procedures, particularly the two-sample t-test, ensured transparency and allows the readers to follow the journey of data transformation into meaningful evidence. Ultimately, this chapter unveiled the quantitative story of the research,

laying the groundwork for a deeper understanding of its implications and contributions to the field.

In the qualitative data analysis of this study, the researcher adhered to the methodological framework outlined by Glӑser and Laudel (2010). This involved a systematic analysis of the data, wherein it was meticulously segmented into words or categories, forming the foundation for the emerging narrative elucidating the phenomenon under investigation. Throughout the data collection phase, it was imperative to employ codes that anonymized the learners by replacing their real names, a practice primarily guided by ethical considerations. Each learner was identified by a numerical assignment ranging from 01 to 73 to preserve confidentiality and uphold ethical standards in the research process. The researcher summarised and broke the data into the following themes for the observations:

Theme 1: Language Dissonance and Cognitive Struggle in Monolingual Settings.

Theme 2: Socio-Cultural Inclusivity and Positive Classroom Dynamics.

Theme 3: Teacher Adaptability and Strategies for Multilingual Instruction.

Theme 4: Cultural Relevance and Its Influence on Learning.

Theme 5: Bridging the Gap Between Policy and Practice.

The analysis of the interview responses, given the relatively small sample size of 10 participants, was conducted manually. In order to generate a comprehensive information base, the researcher employed a combined approach of coding and qualitative content analysis following the guidelines outlined by Glӑser & Laudel (2013). Integrating both methods, the researcher adopted a reductionist strategy, iteratively revisiting the data multiple times to identify and refine emergent themes until reaching saturation points. Simultaneously, classroom observations were conducted in both classes to gain insights into the learning and teaching methods employed in each educational setting. This multi-faceted approach aimed to enhance the depth and breadth of the research findings by triangulating data from interviews and classroom observations.

The majority of the interviewed learners highlighted that the incorporation of multiple languages during their lessons, particularly when one of those languages corresponds to their home language, facilitated a better understanding of conceptual material compared to conventional monolingual interactions while those who did not receive the intervention expressed their

confusion during the study. These insights align with a recurring theme in diverse literature on translanguaging, suggesting that the utilization of multiple languages, particularly those spoken by the learners in the classroom, authenticates their social identities. Furthermore, this multilingual approach fosters an emotionally secure environment, enabling students to express themselves genuinely and cultivate positive experiences within the educational context (Wei, 2011). This emotional disassociation is shown during the observations as most learners are not focused and show frustration in the control group.

5.3 SUMMARY OF RESEARCH FINDINGS.

The research findings have ignited the researcher's curiosity, unveiling the profound influence of language proficiency on the academic performance of Grade 4 learners. This revelation opens up enticing avenues for further exploration, particularly regarding the potential of alternating languages of input and output. Such an approach could not only facilitate deeper content comprehension but also contribute to identity construction and broaden epistemic access for multilingual learners.

5.3.1. Pre-test.

The pre-test data, gleaned from 141 Grade 4 learners divided into two equal groups (experimental and control), painting a captivating narrative of academic proficiency, interspersed with flashes of both promise and perplexity. Among the control group's 73 participants, the pre-test scores unveil a tapestry of contrasting performances. At one end, pockets of excellence are readily discernible, with the highest score reaching a commendable 23 out of 25. However, this shining achievement was juxtaposed with the stark reality of a performance deficit, represented by a score of 0 from one of the learners. This stark contrast underscored the unwavering presence of an achievement gap within the group, even as the average score of 45.76% which surpassed the minimum benchmark (40%) stipulated by CAPS for Grade 4 mathematics. Delving deeper into the distribution of scores revealed a nuanced picture. On a positive note, the passing rate of 74% (54 learners) indicated that the majority navigated the test successfully. This encouraging trend is further reinforced by the low standard deviation (5.69%), suggesting a relatively compact cluster of scores around the average.

The pre-test results from the experimental group (comprising of 68 learners) offered a compelling glimpse into the intricate relationship between language and learning. While the raw data presented a seemingly positive scenario, with the highest score soaring to 24 out of 25 and the average exceeding the recommended pass mark (49.28%). The wide range of scores, spanning

from 24 to a mere 3 out of 25, hints at a divergent learning experience within the group. While some students appear to have mastered the concepts with remarkable clarity, others seem to have encountered significant hurdles. This observation is further corroborated by the standard deviation of 4.92%, which suggests a wider dispersion of performance beyond the immediate vicinity of the average.

The pre-test data from both groups present a multifaceted landscape of academic performance. While promising trends and pockets of excellence are evident, the presence of significant challenges and performance gaps cannot be ignored. Moreover, the experimental group's data highlights the crucial role of language in the learning process, prompting further investigation into its nuanced impact on individual student achievement.

5.3.2. Post-test.

Following the implemented intervention, the post-test results unveil a fascinating narrative of progress, disparity, and the enduring influence of language in the learning process.

The control group, adhering to the monolingual instructional approach, presents a puzzling picture. While the average score dipped slightly from 45.76% to 44.76%, the negative learning gain raises questions about the efficacy of the existing method. However, this seemingly concerning dip masks a more nuanced reality. The presence of both a perfect score of 23/25 and a 4/25 underscores significant individual performance variation. Evidently, some students thrived within the monolingual environment, while others struggled. This is further corroborated by the high standard deviation of 5.69%. Additionally, while 16 learners (22%) fell short of the passing mark, highlighting challenges for a sizeable portion, it's important to acknowledge that 57 learners (78%) still managed to pass.

The experimental group, exposed to the multilingual intervention and bilingual post-test, paints a dramatically different picture. The average score skyrocketed from 49.28% to a remarkable 81% exceeding, even the researcher's optimistic expectations. This staggering leap suggests that the integration of Sepedi, the students' home language, alongside English, fostered significant and transformative learning outcomes.

The data further reveals the breadth and depth of this improvement. The top performers continued to excel, with a maximum score of 24/25. However, the most compelling aspect lies in the remarkable upward shift for the previously struggling students. The minimum score of 4/25, compared to 0/25 in the pre-test, demonstrates a significant gain for those who initially faced

challenges. This is further supported by the decreased standard deviation of 2.92%, indicating a tighter clustering of scores around the new, significantly higher average. Perhaps the most telling indicator of success is the fact that only one learner (1%) fell short of the pass mark, a stark contrast to the 24 who did so in the pre-test. This dramatic reduction in failing grades strongly suggests that the multilingual approach effectively addressed the language barriers that previously hampered some students' learning. The post-test results paint a complex picture of learning gains and persistent challenges.

While the control group presents a narrative of stagnation amidst individual variances, the experimental group offers a compelling case for the transformative potential of multilingual instruction. The dramatic improvement observed in the experimental group, particularly among previously struggling students, highlights the critical role language plays in the learning process and underscores the potential of incorporating students' home languages into educational settings. Further research is needed to understand the long-term impact of such interventions and refine their implementation for broader application.

5.3.3. Qualitative data (Observations).

As the study investigated the influence of language instruction on the learning efficacy of Grade 4 mathematics students. Two distinct classroom settings were observed: a control group receiving instruction solely in English and an experimental group employing a bilingual approach incorporating Sepedi alongside English.

Challenging Initial Assumptions: Contrary to the predicted advantages of an English-only environment, initial observations revealed a fascinating pedagogical phenomenon. Teachers in the control group spontaneously adopted a multilingual stance, integrating additional languages into their instruction. This highlighted the inherent flexibility and responsiveness of educators to their students' diverse linguistic needs. As the research progressed, it became evident that the reliance on English alone presented significant challenges for many learners. Comprehending concepts and actively participating in the classroom proved difficult for some students, leading to a sense of disconnect and disengagement. The observation of students yearning for the comfort and familiarity of their home languages poignantly underlined the importance of acknowledging and leveraging a child's linguistic repertoire in the learning process. The stark contrast between the two learning environments underscored the significance of building upon learners' existing linguistic strengths. The bilingual classroom exemplified this concept, showcasing a dynamic and engaging learning space, where scaffolding instruction and bridging activities played a crucial

role. By seamlessly weaving Sepedi into the English curriculum, teachers nurtured student comprehension, boosted participation, and fostered a deeper understanding of mathematical concepts.

"Thina asisazi isilungu miss" A Poignant Plea for Linguistic Inclusivity, this declaration by a student in the English-only group resonated deeply, serving as a powerful reminder of the emotional dimension of language. It illuminated the vulnerability and apprehension experienced by students navigating a learning environment where their primary language of understanding is absent. This plea transcended mere words, signifying the crucial role of language as a lifeline, a bridge to knowledge, and above all, a source of comfort and security. The observations revealed the powerful impact of language instruction on the learning experiences of Grade 4 students. While an English-only approach presented challenges, the bilingual setting demonstrated the transformative potential of acknowledging and embracing linguistic diversity. Scaffolding instruction, building bridges between languages, and prioritizing student comfort emerged as key practices in fostering a truly inclusive and effective learning environment where all students can thrive.

5.3.4. Interviews.

From the initial sample of 141 participants, the researcher selected a sample of 10 individuals for in-depth interviews, ensuring equal representation (n=5) from both the experimental and control groups. From the interviews the researcher identified the following themes:

Theme 1: Language Fluidity and Enhanced Understanding

Theme 2: Bridging the Understanding Gap: Direct Translation as a Catalyst for Conceptual Clarity.

Theme 3: Navigating Linguistic Landscapes: Parental Support and the Complexities of Identity.

Theme 4: Bridging the Gap: Addressing the Need for Academic Support in Grade 4.

A Thematic analysis of interview data revealed a crucial factor contributing to the superior performance of the experimental group: the consistent integration of Sepedi, the learners' home language, alongside English during both instruction and the post-test. This finding aligns with the experimental group's post-test results, which consistently suggest that utilizing learners' home languages in tandem with the LoLT should be considered a cornerstone of effective classroom pedagogy.

Student voices from both groups shed light on their language preferences and perceived learning experiences. Learners in both groups expressed a desire for incorporating their home language into lessons, highlighting perceived benefits in comprehension and a sense of belonging within the learning environment. Notably, the experimental groups participants attributed their improved post-test performance to the enhanced understanding facilitated by the integration of Sepedi. Conversely, the control groups learners reported frustration and difficulty comprehending content delivered solely in English, potentially contributing to their lower post-test scores compared to the experimental group. The findings challenged the traditional, monolingual bias in education, which often prioritised a single language as the point of reference for learning (Makalela, 2015).

The researcher's conclusion suggested that incorporating multiple languages into Grade 4 classrooms offered significant cognitive and language acquisition advantages not observed in monolingual settings. This underscores the potential risks of placing learners in programs that restrict their linguistic repertoire and contradict the diverse sociolinguistic environments in which they naturally acquire and utilize multiple languages.

Student responses raised concerns about the potential homogenizing effect of education, particularly in dominant language contexts. Their observations suggest that as students' progress through the schooling system, the emphasis on a single language intensifies, potentially leading to a cumulative "language deficiency" (Garcia & Wei, 2014; Makalela, 2015; Wei, 2011). This highlighted the need for educational approaches that embrace and leverage the linguistic wealth of students, fostering multilingual competence and promoting language inclusivity.

5.4 RESEARCH CONCLUSIONS.

The research explored three key areas of inquiry through a series of sub-questions.

Research question 1: How do monolingual classrooms impact the academic performance of intermediate phase grade 4 African learners learning in an additional language?

An analysis of the pre-intervention test scores revealed comparably low performance in both groups, with the control group averaging 45.76% and the experimental group 49.28%. This finding suggests that, prior to the intervention, both sets of learners demonstrated limited comprehension skills and grappled with the mathematical concepts necessary for academic success as they navigated learning solely in an additional language (English). This observation was further corroborated by student interviews, which highlighted prevalent comprehension challenges and difficulties with key mathematical concepts.

In the realm of school policy options, two discernible paradigms emerge: the diffusion-of-English paradigm and the ecology-of-language paradigm (Makalela, 2015). The former is shaped by the influences of capitalism, science and technology, and a monolithic perspective on globalization. This paradigm holds particular allure in the developing world, where English exerts influence over indigenous languages (Skuttnab-Kangas, Philipson, and Mohanty, 2009).

The diffusion-of-English paradigm is characterized by its alignment with the forces of capitalism, advancements in science and technology, and a singular interpretation of globalization. It finds resonance, especially in the developing world, where English holds sway over indigenous languages (Skuttnab-Kangas, Philipson, and Mohanty, 2009). This paradigm reflects a global trend where English is often positioned as a dominant language, associated with economic opportunities and technological advancements. In contrast, the ecology-of-language paradigm offers an alternative perspective. This paradigm emphasizes the importance of maintaining a diverse linguistic environment within educational settings. It recognizes the value of indigenous languages alongside global languages like English. By adopting an ecology-of-language approach, schools can foster linguistic diversity, preserving and promoting indigenous languages in tandem with global languages.

The choice between these two paradigms represents a significant decision for educational institutions, particularly in regions where the influence of global languages, such as English, intersects with the rich tapestry of local languages. Balancing the diffusion-of-English paradigm with the ecology-of-language paradigm requires careful consideration of linguistic, cultural, and educational implications to create inclusive and equitable language policies.

The stark contrast between the two classroom environments exposed the profound impact of language instruction on student learning. While the control group relying solely on English witnessed a concerning decline in their post-test scores, dropping from 45.76% to 44.76%, the experimental group embracing a bilingual approach using both Sepedi and English soared from 49.28% to a remarkable 81%. This dramatic divergence suggests that monolingual pedagogies may inadvertently hinder academic progress, potentially due to comprehension difficulties, disengaged learning, or a disconnect between the taught content and students' linguistic realities.

Conversely, the experimental group's success can be attributed to the multifaceted benefits of multilingual instruction. By incorporating Sepedi as a pedagogical tool, the educators likely provided familiar linguistic scaffolding that facilitated deeper understanding of complex

mathematical concepts. Translanguaging practices, where students seamlessly navigate between languages, may have stimulated cognitive processes enhancing critical thinking and fostering a more holistic grasp of the subject matter. Notably, acknowledging and valuing students' home languages likely fostered a more inclusive and engaging learning environment, leading to increased motivation and participation, factors crucial for academic success. In light of these compelling findings, it becomes evident that a critical re-evaluation of the dominant monolingual paradigm in education is warranted. Embracing multilingual pedagogies, which recognize and leverage students' diverse linguistic repertoires and harness the potential of translanguaging practices, holds immense promise for optimizing learning outcomes and promoting academic success, particularly in diverse and multilingual contexts.

In conclusion, while proficiency in the LoLT is a valuable asset for academic success, it is essential to recognize that learner diversity necessitates a multifaceted approach to education. Highlighting the importance of acknowledging and building upon learners' existing linguistic repertoires, including their home languages, alongside the development of LoLT proficiency, can create a more inclusive and effective learning environment. This holistic approach has the potential to foster greater academic achievement for all learners.

Research question 2: How do language policies and curriculum frameworks intersect with monolingual classroom practices to impact the learning outcomes of intermediate phase grade 4 African learners?

The intersection of language policies and curriculum frameworks with monolingual classroom practices profoundly influences the learning outcomes of intermediate phase grade 4 African learners. Language policies, particularly those determining the medium of instruction, set the stage for monolingual practices that can impact learners with diverse home languages. The inclusivity of these policies is crucial, as those recognizing linguistic diversity contribute to a more equitable educational environment. Curriculum frameworks play a vital role by ensuring cultural relevance and incorporating multilingual approaches. When curricula reflect learners' linguistic backgrounds, it enhances engagement and understanding. Monolingual classroom practices, including instructional strategies and participation dynamics, influence how content is delivered and absorbed. These practices can pose challenges for learners not proficient in the language of instruction, affecting their overall academic success. The impact on learning outcomes is multifaceted, influencing language proficiency, cognitive development, and the

equitable participation of students with different language backgrounds. Understanding these dynamics is essential for shaping more inclusive language policies and instructional practices that promote educational equity and effectiveness.

Language policies, often shaped by socio-political and economic factors, serve as the foundation for instructional approaches. The dominance of monolingualism in these policies may inadvertently marginalize learners whose home languages differ from the prescribed medium of instruction. Curriculum frameworks, when designed without due consideration for linguistic diversity, risk perpetuating exclusionary practices. On the contrary, an inclusive curriculum recognizes and values the multilingual backgrounds of learners, fostering a more supportive and culturally responsive educational environment.

Monolingual classroom practices further shape the educational landscape. The methods employed by teachers, the language of instruction, and the level of linguistic accommodation all play pivotal roles. When these practices align with the linguistic diversity of the student body, they contribute to a more inclusive and effective learning environment. However, in the absence of such alignment, learners may face barriers to comprehension and active participation, impacting their academic achievement.

The learning outcomes, therefore, become a composite reflection of these interconnected elements. Proficiency in the language of instruction becomes a determining factor, influencing cognitive development and academic success. Additionally, the cultural and linguistic backgrounds of learners intersect with instructional practices, shaping their experiences within the educational system. Recognizing this intricate interplay is crucial for policymakers, educators, and researchers seeking to enhance educational equity and the overall quality of learning for intermediate phase grade 4 African learners, noting the learners LoLT in grade R-3.

Research question 3: How do the historical and cultural contexts of African learners influence their experiences in monolingual classrooms, and what implications does this have for teaching and learning practices?

The students in the monolingual classrooms under investigation primarily reside in the townships and informal settlements of Kaalontein, Midrand. This geographical reality translates to a limited exposure to English beyond the confines of the schoolyard. As one student poignantly expressed, venturing outside the school and speaking English can feel akin to crossing a cultural divide, even

attracting the derogatory term "legowa" (white person) for their linguistic choice. This sense of dissonance extends to the classroom itself, where the dominant monolingual pedagogy presents a significant hurdle for many learners. Confined to English as the sole medium of instruction, their comprehension and participation are often hindered. This linguistic disconnect creates a double bind: the language they acquire within the school walls feels alien in their everyday lives, while the language of their homes and communities finds no official recognition within the educational space.

This complex interplay between language, space, and identity has profound implications for learning outcomes. The enforced monolingualism risks alienating students from the very content they are meant to engage with. By neglecting their pre-existing linguistic repertoires, the pedagogy fails to capitalize on the cognitive and cultural resources these learners bring to the classroom. Furthermore, the association of English with negative social repercussions outside the school gates can further demotivate students and discourage active participation.

Therefore, addressing the linguistic realities of these students necessitates a nuanced approach that acknowledges the diverse linguistic landscapes they navigate. Pedagogical strategies that incorporate translanguaging practices, where learners seamlessly switch between languages, can foster deeper understanding, and bridge the gap between the classroom and the community. Additionally, recognizing and valuing students' home languages as assets can create a more inclusive and empowering learning environment, fostering a sense of belonging and boosting motivation. Ultimately, the success of education in these contexts hinges on acknowledging the linguistic richness of the learners, dismantling the artificial barriers between school and community, and embracing the diverse linguistic tapestry that these students bring to the classroom from their communities. Only then can we move beyond the confines of monolingual pedagogies and create a truly inclusive and effective learning environment for all.

The historical and cultural contexts of African learners exert a profound influence on their experiences within monolingual classrooms, carrying significant implications for teaching and learning practices. Historically, the legacy of colonialism and apartheid has left an indelible mark on education systems across Africa, often resulting in the imposition of foreign languages as mediums of instruction. This historical backdrop shapes the linguistic landscape of classrooms, impacting learners' identities, communication patterns, and educational trajectories.

Culturally, African societies are characterized by linguistic diversity, with learners often entering classrooms with rich multilingual backgrounds. The clash between this cultural diversity and monolingual teaching practices can lead to a disjuncture between the students' lived experiences and the educational environment. Language is intricately tied to culture, and the exclusion of learners' home languages may contribute to a sense of alienation and disconnection from the educational process.

In monolingual classrooms, the historical and cultural contexts of African learners necessitate a re-evaluation of teaching and learning practices. Recognizing and valuing linguistic diversity becomes imperative for fostering an inclusive and culturally responsive educational space. Educators should aim to integrate learners' cultural backgrounds into pedagogical approaches, acknowledging the richness that multilingualism brings to the learning experience. A curriculum that reflects the diverse historical narratives of African societies can contribute to a more meaningful and empowering educational journey. The implications for teaching and learning practices lie in the acknowledgment of the historical and cultural dimensions that shape the educational experiences of African learners. Embracing linguistic diversity, incorporating culturally relevant content, and adopting inclusive pedagogies are essential steps toward creating an educational environment that resonates with the lived realities of the students, fostering a more equitable and enriching learning experience.

Research hypothesis: The language of instruction significantly impacts the academic performance of Grade 4 learners who are acquiring knowledge in an additional language distinct from their home-language.

This hypothesis finds support in the outcomes of the post-test phase, wherein distinct instructional approaches were implemented for the control and experimental groups. The control group underwent instruction exclusively in English, followed by an English-language post-test. In contrast, the experimental group experienced a bilingual teaching method, incorporating both their home-language, Sepedi, and English. Subsequently, the experimental group's post-test was administered in both languages, reflecting the bilingual nature of their instructional approach. This design allowed for a comparative analysis of the impact of monolingual versus multilingual instructional strategies on the learners' performance in the post-test assessments.

The analysis of calculated p-values, means, effect size indices, and standard deviations revealed significant insights into the academic performance of learners. The comparison between the pre-

test scores of both control and experimental groups and their respective post-test scores unveiled a notable improvement in the experimental group. In contrast, the control group exhibited a less pronounced difference, displaying either minimal change or a decline in academic performance during the post-test phase. These quantitative measures underscore the potential impact of the instructional approach, indicating a positive influence on the experimental group's learning outcomes compared to the control group.

The experimental group, subjected to the intervention utilizing multilingual and translanguaging pedagogies, demonstrated an impressive average score of 81%, marking a substantial contrast with the control group's average of 44.76%. This substantial difference of 36.24 percentage points vividly illustrates the efficacy of translanguaging approaches in promoting enhanced understanding and comprehension among learners. The magnitude of this difference is further accentuated when examining the performance of learners falling below the anticipated benchmark. In the experimental group, only one learner scored below 40%, showcasing the intervention's success in elevating the minimum level of understanding and ensuring widespread engagement with the educational material. Conversely, the control group, confined to an English-only environment, witnessed 16 learners scoring below average, underscoring the potential limitations of strictly adhering to CAPS recommendations without accounting for the diverse linguistic backgrounds of students.

The results obtained from the experimental group indicated an improvement compared to the pre-intervention stage, where the same group of learners achieved an average of 49.28%. In contrast, the control group experienced a slight decline of 1%, resulting in their average dropping to 44.76%. This intervention, coupled with the noteworthy average increase observed in the experimental group, affirms that the language of instruction significantly influenced the academic performance of Grade 4 learners acquiring knowledge in an additional language distinct from their home language. The inclusion of a familiar language (Sepedi) positively impacted the learners' comprehension skills, empowering them and yielding better results compared to the control group, which adhered strictly to the CAPS recommended language, English.

Moreover, the intervention demonstrated a substantial positive effect on the experimental group's overall academic performance, showcasing the efficacy of incorporating multilingual and translanguaging pedagogies. The average score of 81% achieved by the experimental group marked a notable improvement from their pre-intervention stage, reflecting a significant leap in

understanding and mastery of the content. This outcome stands in stark contrast to the control group, which experienced a marginal decline, emphasizing the potential limitations of a monolingual instructional approach. The 36.24 percentage points difference between the experimental and control groups underscores the transformative impact of embracing linguistic diversity in the learning environment.

Examining performance below the expected benchmark further highlights the success of the intervention. In the experimental group, only one learner scored below 40%, indicating near-universal engagement and understanding. In contrast, the control group, constrained by an English-only setting, witnessed 16 learners falling below the average, illustrating the challenges associated with a rigid adherence to CAPS recommendations without considering the linguistic realities of diverse students. These findings not only validate the initial research hypothesis regarding the influence of language of instruction on academic performance but also emphasize the potential of translanguaging approaches to bridge linguistic gaps and enhance overall learning outcomes in Grade 4 learners. The positive impact observed in the experimental group suggests the need for a more flexible and inclusive language policy that recognizes and leverages the linguistic diversity inherent in South African classrooms.

5.5 RECOMMENDATIONS.

To gain a more nuanced comprehension of the influence of language on the academic achievement of grade 4 learners and to enhance their overall academic performance, the following recommendations are put forth:

Research question 1: How do monolingual classrooms impact the academic performance of intermediate phase grade 4 African learners learning in an additional language?

Findings.

Upon scrutinizing the pre-intervention test scores, it became apparent that both groups exhibited relatively low performance, with the control group averaging 45.76% and the experimental group slightly higher at 49.28%. This initial assessment indicates that, prior to the intervention, learners in both groups faced challenges in understanding and grappling with fundamental mathematical concepts essential for academic proficiency. The fact that these challenges were prevalent despite the language of instruction being an additional language (English) emphasizes the need for a closer examination of the impact of language on academic comprehension. This observation aligns with insights derived from student interviews, which further underscored the widespread

difficulties and comprehension challenges related to key mathematical concepts because of the sole use of an additional language.

The insights gleaned from interviews with learners in both the experimental and control groups highlighting a shared challenge in comprehending the vocabulary present in the pre-test. However, the trajectory of academic performance took divergent paths in the post-test. Notably, the experimental group exhibited significantly enhanced performance compared to the control group. This divergence could have been attributed to the intervention received by the experimental group, introducing a transformative element of a familiar language (Sepedi) that positively influenced their understanding and application of the learned material, setting them apart from their counterparts in the control group who did not undergo such targeted support.

Recommendation 1:

Educational institutions are urged to facilitate a seamless progression from Basic Interpersonal Communication Skills (BICS) to Cognitive Academic Language Proficiency (CALP) rather than opting for an abrupt shift. This transition, particularly from grade 3 to grade 4, should be a gradual and supportive process, avoiding a sudden immersion that might leave learners struggling to adapt. The integration of learners' home language is paramount during the intermediate phase, working in tandem with English to ensure a harmonious and effective transition. This approach acknowledges the significance of linguistic diversity and seeks to harness it as a valuable resource in the educational journey.

Recommendation 2.

Educational policymakers and practitioners are encouraged to design and implement language transition programs that cater to the specific needs of learners in the intermediate phase. These programs should be characterized by a thoughtful integration of both home languages and English, fostering an environment where learners can progressively enhance their academic language proficiency without feeling linguistically overwhelmed. The utilization of learners' home language alongside English not only aids in maintaining a connection with their linguistic roots but also serves as a scaffolding mechanism for the acquisition of more advanced academic language skills. This approach aligns with research that underscores the positive impact of bilingual and multilingual educational strategies on cognitive development and academic achievement.

Recommendation 3.

Equipping Educators for Multilingual Success: Fostering Effective Language Transitions.

The successful implementation of bilingual and multilingual pedagogies hinges not only on pedagogical frameworks but also on the preparedness of educators themselves. To navigate the complexities of these approaches and effectively support their students, teachers require robust professional development opportunities. Such targeted support will ensure they possess the necessary skills and knowledge to guide learners through the crucial transition from primarily oral language proficiency to the more demanding requirements of academic language.

This transition is particularly critical at the Grade 4 level, as students encounter increasingly complex concepts and texts that necessitate a sophisticated grasp of academic language. Without proper support, learners accustomed to predominantly oral interactions can struggle to comprehend, analyse, and express themselves effectively within the new linguistic demands of the classroom. This can lead to academic disengagement, frustration, and ultimately, hinder their long-term academic progress. Therefore, professional development programs for educators should be designed to equip them with the necessary tools and strategies for successful bilingual and multilingual instruction. This includes, but is not limited to, developing their understanding of:

Language acquisition theories and the specific challenges faced by multilingual learners.

Effective bilingual and multilingual pedagogical practices, such as translanguaging, code-switching, and differentiated instruction.

Assessment strategies that cater to the diverse linguistic backgrounds and learning styles of their students.

Creating culturally inclusive and responsive learning environments that value and leverage students' home languages.

By investing in comprehensive professional development programs, we empower educators to become effective guides for their multilingual learners. This, in turn, fosters a more inclusive and supportive learning environment where all students have the opportunity to develop the necessary academic language skills for success not only in Grade 4 but throughout their academic journeys.

Research question 2: How do language policies and curriculum frameworks intersect with monolingual classroom practices to impact the learning outcomes of intermediate phase grade 4 African learners?

Findings:

The confluence of language policies and curriculum frameworks with monolingual classroom practices exerts a profound influence on the educational outcomes of intermediate phase grade 4 African learners. Language policies, particularly those dictating the language of instruction, lay the groundwork for monolingual practices that can significantly impact learners with diverse home languages. The inclusiveness of these policies is paramount, as those that acknowledge and accommodate linguistic diversity contribute to a more equitable educational milieu. Curriculum frameworks play a pivotal role by ensuring cultural relevance and incorporating multilingual approaches. A curriculum that reflects the linguistic backgrounds of learners enhances engagement and understanding, fostering a more inclusive educational experience. Monolingual classroom practices encompass instructional strategies and participation dynamics, influencing how content is delivered and absorbed. These practices may pose challenges for learners who are not proficient in the language of instruction, thereby affecting their overall academic success.

The impact of these factors on learning outcomes is multifaceted, influencing not only language proficiency but also cognitive development and the equitable participation of students with diverse language backgrounds. Recognizing and comprehending these dynamics is imperative for shaping more inclusive language policies and instructional practices that promote educational equity and effectiveness.

Language policies, often shaped by socio-political and economic considerations, serve as the bedrock for instructional approaches. The prevalence of monolingualism in these policies inadvertently marginalize learners whose home languages differ from the prescribed medium of instruction. Curriculum frameworks, when designed without due consideration for linguistic diversity, risk perpetuating exclusionary practices. Conversely, an inclusive curriculum recognizes and values the multilingual backgrounds of learners, contributing to a more supportive and culturally responsive educational environment.

Recommendation 1.

Policy makers are urged to revisit Section 6 of the Constitution, established in 1996, a pivotal document that acknowledges the existence of 11 official languages in South Africa. Complementing this constitutional foundation is the Official Languages Act of 2012, which delineates a comprehensive framework mandating the use of official languages in various domains, encompassing courts, government entities, and public institutions, including educational establishments such as schools. The constitutional recognition of a multitude of official languages underscores the commitment to linguistic diversity and inclusivity within the South African context. The Official Languages Act of 2012 further amplifies this commitment by establishing a clear framework, guiding the application of official languages in key sectors of public life. The directive extends to the realm of education, emphasizing the imperative for schools to adopt a multilingual approach that reflects the linguistic richness embedded in South Africa's social fabric.

Policy makers are implored to align their initiatives with these constitutional and legislative mandates, fostering an environment that not only acknowledges but actively embraces the diverse linguistic heritage of the nation. Such alignment can serve as a catalyst for the development and implementation of inclusive language policies within educational institutions, promoting equity, accessibility, and cultural relevance in the learning environment.

Recommendation 2.

Collaboration between policy makers, researchers and linguistic experts. Traditionally formulated in silos, language policies often miss the mark, hindered by a disconnect between theoretical ideals and the lived realities of classrooms. To bridge this gap, a paradigm shift is needed, one that fosters robust collaboration between policy makers, linguistic experts, and educational researchers. This synergistic triad, informed by cutting-edge research, real-world experiences, and deep understanding of language acquisition, holds immense promise for crafting evidence-based policies, tailoring implementation to specific contexts, and continuously refining approaches through ongoing evaluation. Only through such collaborative efforts can we ensure language policies truly empower learners to navigate diverse linguistic landscapes and thrive in an increasingly multilingual world.

Recommendation 3.

Reimagining the Curriculum, embracing Linguistic Diversity Through Inclusive Materials. The traditional one-size-fits-all approach to curricular materials often overlooks the vibrant tapestry of languages woven into the fabric of our classrooms. To truly cater to the needs of diverse learners, we must embark on a bold journey of developing linguistically inclusive curricular materials. This initiative promises to reimagine education, not as a monolithic entity, but as a dynamic and responsive space that embraces the richness of students' linguistic repertoires. Investing in the creation of such materials transcends mere translation exercises. It demands a shift in perspective, recognizing that languages are not simply tools for communication, but windows into unique cultural perspectives, knowledge systems, and ways of understanding the world. By incorporating elements of students' home languages alongside the dominant language of instruction, we can:

Enhance the relevance of educational content: Curriculum materials infused with diverse linguistic voices become more relatable and meaningful for students. Concepts presented through familiar linguistic frameworks resonate deeper, fostering a sense of ownership and engagement with the learning process.

Bridge the comprehension gap: Students struggling with the language of instruction can find support and scaffolding through elements in their home languages. This creates a bridge between what they know and what they are learning, empowering them to actively participate in classroom discussions and navigate complex academic concepts.

Celebrate linguistic diversity: Including multiple languages validates students' identities and cultural backgrounds. This fosters a sense of belonging and inclusivity, creating a classroom environment where all languages are valued and respected, nurturing a spirit of collaboration and mutual understanding.

Unlock hidden potential: By acknowledging and leveraging students' existing linguistic skills, we tap into a wealth of untapped potential. Multilingual learners possess cognitive advantages associated with navigating multiple languages, which can be harnessed to boost critical thinking, problem-solving, and metacognitive skills.

Developing linguistically inclusive curricular materials is not simply a pedagogical endeavour; it is a transformative act. It challenges the status quo, dismantles linguistic barriers, and empowers

educators to become architects of inclusive learning spaces. This journey requires collaboration between educators, linguists, curriculum developers, and, most importantly, the students themselves. Through their lived experiences and linguistic expertise, they can co-create materials that resonate with their unique needs and perspectives.

Research question 3: How do the historical and cultural contexts of African learners influence their experiences in monolingual classrooms, and what implications does this have for teaching and learning practices?

Findings.

The investigation into monolingual classrooms revealed a distinctive demographic context, with students primarily residing in the townships and informal settlements of Kaalontein, Midrand. This geographical setting implies a limited exposure to English beyond the school environment. A poignant revelation from a student highlighted the cultural and linguistic challenges associated with venturing outside the school and speaking English, often attracting derogatory terms like "legowa" (white person). This dissonance extends to the classroom, where the dominant monolingual pedagogy poses a significant obstacle for learners. Restricted to English as the sole medium of instruction, many students encounter hindrances in comprehension and active participation. This linguistic discord creates a dual challenge: the language acquired within the school feels alien in their daily lives, while the languages spoken in their homes and communities lack official recognition within the educational sphere.

The intricate interplay between language, space, and identity carries profound implications for learning outcomes. The imposition of monolingualism risks estranging students from the educational content they are meant to engage with. The pedagogy's oversight of students' pre-existing linguistic repertoires fails to leverage the cognitive and cultural resources these learners bring to the classroom. Additionally, the negative social associations of English beyond the school gates can further demotivate students, discouraging active participation in the learning process. This multifaceted dynamic-underscores the need for pedagogical approaches that acknowledge and integrate students' linguistic diversity, fostering a more inclusive and supportive learning environment.

Recommendation 1.

Bridging the Gap, fostering community engagement for language development.

Effective language education extends beyond the classroom walls and necessitates the active participation of the communities surrounding our schools. To fully support the language development of learners, particularly in multilingual contexts, establishing robust community engagement initiatives is crucial. These initiatives go beyond mere communication channels; they aim to create a collaborative ecosystem where parents, family members, and community members become active partners in the educational journey.

One avenue for engagement involves workshops and educational sessions designed to equip parents and caregivers with knowledge and strategies for supporting language development at home. These sessions can delve into topics like early literacy practices, effective communication techniques, and leveraging home languages to reinforce academic learning. By empowering parents with practical tools and resources, we empower them to become their children's first language teachers, laying the foundation for future academic success. Beyond educational sessions, fostering community events that celebrate linguistic diversity can play a vital role in building bridges and fostering a sense of shared responsibility for language development. Cultural celebrations, multilingual storytelling nights, and community book clubs can create vibrant spaces where families and educators come together to share their languages, traditions, and experiences. These events not only promote understanding and respect for diverse linguistic backgrounds but also provide valuable opportunities for informal language learning and engagement.

Furthermore, developing readily accessible community resources can significantly impact language development efforts. Multilingual libraries, online repositories of educational materials in various languages, and parent support groups can provide families with readily available tools and support networks. By ensuring accessibility and catering to diverse linguistic needs, these resources can empower families to actively participate in their children's language learning journeys. Community engagement initiatives hold immense potential for fostering a holistic approach to language development. By creating avenues for collaboration, sharing knowledge, and celebrating linguistic diversity, we can break down the traditional school-community divide and build a supportive ecosystem where families and educators work in tandem to nurture the language skills of our young learners. This collaborative effort, where language learning

transcends the classroom walls and becomes a shared endeavour, has the power to unlock the full potential of every child, regardless of their linguistic background.

Recommendation 2.

Tailored Support for Language Transition for learners transitioning to English as the primary medium of instruction, navigating the academic landscape can be akin to traversing a linguistic mountain pass. To ensure their successful ascent, providing targeted language transition support programs becomes an essential investment. These programs offer crucial scaffolding, equipping learners with the tools and strategies they need to bridge the gap between their home languages and the language of the classroom.

The spectrum of potential support programs is diverse and should be tailored to the specific needs and learning styles of individual learners. Additional language classes, focusing on academic language skills and literacy development, can provide targeted instruction and practice in navigating the complexities of English in an academic context. For learners at the initial stages of acquisition, language immersion programs, offering intensive exposure to English through various activities and interactions, can foster rapid language acquisition and build confidence in using the language. Additionally, language support specialists, working collaboratively with classroom teachers, can offer individualized support, cater to diverse learning needs, and bridge communication gaps when necessary.

Effective language transition support goes beyond mere language acquisition. It also involves cultural and social integration. Integrating elements of students' home languages and cultural backgrounds into the learning environment can create a sense of belonging and validate their identities. Furthermore, fostering peer-to-peer support networks and mentorship programs can facilitate integration within the new linguistic community, providing social and emotional support crucial for successful transition.

The benefits of robust language transition support programs are multifaceted. By equipping learners with the necessary linguistic tools and fostering a supportive learning environment, we enhance their academic success, boost their confidence, and cultivate a sense of belonging. This, in turn, fosters engagement with learning, reduces the risk of marginalization and disengagement, and ultimately paves the way for their long-term academic and personal growth. Investing in targeted language transition support programs is not simply a pedagogical imperative; it is a moral

obligation. Recognizing the diverse linguistic landscapes our classrooms encompass and providing the necessary support for successful transitions is crucial for ensuring equitable access to quality education for all learners. By fostering a linguistically inclusive environment and equipping learners with the tools they need to navigate the academic terrain, we empower them to become confident and successful participants in the educational journey, regardless of their linguistic backgrounds.

Recommendation 3.

To counteract the prevailing misconception associating English with a specific racial or ethnic group, it is recommended that educators initiate comprehensive strategies within the learning environment. This involves designing culturally inclusive learning programs that highlight the global richness of the English language and integrating literature and resources representing diverse cultural backgrounds. Teachers should undergo cultural sensitivity training to address linguistic and cultural diversity effectively. Community engagement programs can play a crucial role in dispelling stereotypes and celebrating linguistic diversity. Language empowerment campaigns should promote English proficiency as a valuable skill regardless of racial affiliations, while promoting the equal recognition of all languages within the community. Additionally, workshops exploring language identity can in-still pride in linguistic heritage, and collaboration with language experts can inform culturally sensitive language education approaches. Advocacy for inclusive language policies and open community dialogues further contribute to challenging negative perceptions associated with language use, fostering an environment where English proficiency is universally valued.

5.6 AVENUES FOR FURTHER RESEARCH.

A prospective longitudinal study would offer valuable insights into the intricate dynamics of the relationship between language and academic achievement, extending beyond the confines of the current transitional stage from grade 3 to grade 4. By tracking learners over an extended period, such a study could discern patterns and trends in academic performance, providing a nuanced understanding of the impact of language of instruction on learners' educational outcomes. This approach would enable researchers to explore whether learners exhibit varying performance trajectories when utilizing their mother tongue as the Language of Learning and Teaching (LoLT) compared to situations where alternative languages are employed. The longitudinal perspective could uncover whether academic performance remains consistent, experiences fluctuations, or

demonstrates a discernible trend over time, offering a comprehensive picture of the long-term implications of language choices in the educational context.

5.7 CONCLUDING REMARKS.

In conclusion, this study contributes valuable insights to the limited body of research examining the influence of language on the academic performance of grade 4 learners in South Africa, particularly those whose home language differs from the language of learning and teaching (English). The research underscores the pivotal role language plays, particularly when learners speak a different home language than the language of instruction. The identified significance of home language in the academic achievement of grade 4 learners aligns with theoretical assumptions that learners encountering an instructional language distinct from their home language face challenges in achieving comparable performance levels. The study unravelled a profound level of identity investment facilitated by the use of learners' home language in the experimental group. The observed differential mean gain in the post-test between the control and experimental groups serves as tangible evidence of the academic disadvantages faced by learners instructed solely in an additional language. These findings shed light on the intricate relationship between language and academic performance, emphasizing the need for nuanced considerations in instructional practices to ensure educational equity and success for all learners.

The study's unveiling of the intricate dynamics of language proficiency and its impact on academic achievement highlights the need for targeted interventions and policy considerations. The observed challenges faced by learners transitioning from multilingual to monolingual instructional environments emphasize the importance of scaffolded support and gradual transitions. Policy recommendations stemming from this research encourage revisiting constitutional provisions recognizing linguistic diversity and promoting the use of multiple languages in educational settings. The study's exploration of the socio-cultural context, where English can be perceived as a cultural divide, prompts a call for more inclusive language policies that acknowledge and celebrate linguistic diversity. Recommendations extend to educators, urging the creation of learning programs that foster a positive perception of English, mitigating the stigma associated with the language.

In envisioning future research, a longitudinal design is proposed to provide a deeper understanding of the evolving relationship between language and academic achievement, spanning from grade 3 into the transitional stage of grade 4. This could offer valuable insights into the sustained impact of language dynamics on learners' performance over time. In essence,

this study serves as a clarion call for educational stakeholders to recognize and address the multifaceted challenges presented by language in the academic journey of grade 4 learners. The implications extend beyond individual classrooms, resonating with the broader goal of creating an inclusive and equitable educational landscape that honours linguistic diversity and promotes optimal learning outcomes.

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Appendix A

Letter to Principle.

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

WITS SCHOOL OF EDUCATION

Faculty of Humanities,

Wits School Of Education Address: **27 St Andrews Rd**

Parktown, Gauteng, 2193

Johannesburg

Phone number: 011 717 3007

Dear Principle,

My name is Thato Shumba, and I am a Masters student in the Faculty of Humanities studying Education at the university of the Witwatersrand.

As part of my master's program, I am conducting research within the field of education, focusing on the effects of monolingual pedagogies in Intermediate Phase grade 4 learning. The title of my research study is ***"The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language."*** The thrust for this study will be to explore the effect of monolingual pedagogies in enhancing the acquisition and comprehension of literacy skills in grade 4 classrooms. The study will also seek to establish if there is a correlation between proficiency in the language of instruction and academic performance in the intermediate phase grade 4 classrooms.

The research will entail collecting data through observing, testing and interviewing the learner and teachers (no testing for the teacher). I will also observe lessons as learners are being taught then give them a test as part of the intervention. I will also spend four days each week in their classrooms at the primary school, resulting in approximately 40 hours on observational data. Each observation will be an hour long. The study will require two grade 4 classrooms, whereby there will be an experimental group and a control group. At the end of the intervention both groups will be helped to get on the same level.

With permission I will be:

- observing during lessons.
- document learner's participation in the lesson.
- Complete a short test at the end of the study.
- Interview each learner and teachers involved, to get an insight on their experience.

All participants will be asked to give their written or verbal consent before the research begins. Their responses will be treated confidentially and their identities (their names and the name of the school) will be anonymous. Individual privacy will be maintained in all published and written data resulting from the study.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their consent at any time during this research study without any penalty. There are no foreseeable risks in participating in this study, and there is also no form of renumeration offered to the participants (participants will not be paid for this study). All research data will be kept securely in a locked cabinet and password protected computer with restricted access to the researcher, and will be destroyed within 5 years after completion of the study. If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on 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), telephone +27(0) 11 717 1408, email:

hrecnon-medical@wits.ac.za. Yours sincerely,

Researcher's contact details:

Thato Shumba Cell: 071 274 1198

Email: 1911233@students.wits.ac.za

Supervisors' contact details:

Dr Erasmos Charamba

Cell: 0785461420

Email: erasmos.charamba@wits.ac.za

Appendix B.



Teacher's information letter.

WITS SCHOOL OF EDUCATION

Faculty of Humanities,

Wits School Of Education Address: **27 St Andrews Rd**

Parktown, Gauteng, 2193

Johannesburg

Phone number: 011 717 3007

Dear Teacher,

My name is Thato Shumba, and I am a Masters student in the Faculty of Humanities studying Education at the university of the Witwatersrand.

As part of my master's program, I am conducting research within the field of education, focusing on the effects of monolingual pedagogies in Intermediate Phase grade 4 learning. The title of my research study is **"*The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language*"**

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academic performance in the intermediate phase grade 4 classrooms. The research will entail collecting data through observing, testing, and interviewing the learner and teachers (no testing for the teacher). I will also observe lessons as learners are being taught then give them a test as part of the intervention. I will also spend four days each week in their classrooms at the primary school, resulting in approximately 40 hours on observational data. Each observation will be an hour long. The study will require two grade 4 classrooms, whereby there will be an experimental group and a control group. At the end of the intervention both groups will be helped to get on the same level.

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- Interview each learner and teachers involved, to get an insight on their experience.

All participants will be asked to give their written or verbal consent before the research begins. Their responses will be treated confidentially and their identities (their names and the name of the school) will be anonymous. Individual privacy will be maintained in all published and written data resulting from the study.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their consent at any time during this research study without any penalty. There are no foreseeable risks in participating in this study, and there is also no form of renumeration offered to the participants (participants will not be paid for this study). All research data will be kept securely in a locked cabinet and password protected computer with restricted access to the researcher, and will be completely destroyed within 5 years after completion of the study. If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on 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), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,

Researcher's contact details:

Thato Shumba Cell: 071 274 1198

Email: 1911233@students.wits.ac.za

Supervisors' contact details:

Dr Erasmos Charamba

Cell: 0785461420

Email: erasmos.charamba@wits.ac.za

Appendix C



Learner information letter

WITS SCHOOL OF EDUCATION

Faculty of Humanities,

Wits School Of Education Address: **27 St Andrews Rd**

Parktown, Gauteng, 2193

Johannesburg

Phone number: 011 717 3007

Dear learners,

My name is Teacher Shumba, and I am a Masters student at the university of the Witwatersrand.

As part of my study, I will be with you learners for some time, doing research on how you learn in English and your home language. The title of my research study is **"*The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language".***

I will be in your class watching your teacher teach you and how you learn with your teachers. I will be with your class 3 times a week for this term, learning and having a good time with everyone.

After the person who looks after you signs and allows me to work with you, I will:

- watch you during lessons.

- Ask you to write a test.
- and have a chat with me outside so we can talk about your experience

Teacher Shumba will not give you any extra marks or money for helping her with the research but she will highly appreciate your help. After the research no one will know who you are or what school you go to so you can feel safe and trust teacher Shumba. If you feel uncomfortable, please tell your teacher or teacher Shumba and you shall be allowed to withdraw. If teacher Shumba makes you feel uncomfortable or bad please let your teacher know as well she will contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Appendix D.

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Information Letter to Parent /Guardian.

WITS SCHOOL OF EDUCATION

Faculty of Humanities,

Wits School Of Education Address: **27 St Andrews Rd**

Parktown, Gauteng,

2193

Johannesburg

Phone number: 011 717 3007

Dear Parents/ Guardians

My name is Thato Shumba, and I am a Masters student at the University of the Witwatersrand school of education.

As part of my degree, I am conducting research within the field of education, focusing on the effects of monolingual pedagogies in Intermediate Phase grade 4 learning. The title of my research study is **"*The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language".***

The thrust for this study will be to explore the effect of monolingual pedagogies in enhancing the acquisition and comprehension of literacy skills in grade 4 classrooms. The study will also seek to establish if there is a correlation between proficiency in the language of instruction and academic performance in the intermediate phase grade 4 classrooms. This study will be conducted at Drake Koka Primary School (the school your child goes to)

I would like to seek permission for your child/children to participate in the study in this way:

- I will be observing them during their mathematics lesson in their respective classrooms.
- I will document their participation in the lesson.
- Complete a short test at the beginning and end of the study.
- Interview each learner for 10-15 minutes, to get an insight on their experience.

Your child/children will not be advantaged or disadvantaged in any way. S/he/they will be reassured that s/he/they **can withdraw** her/his/their permission at any time during this project without any penalty. There are no foreseeable risks in participating and your child/ren **will not** be paid for this study. Your child's/children's name and identity will be kept confidential at all times and in all academic writing about the study. His/her/their individual privacy will be maintained in all published and written data resulting from the study. Should your child/ren feel uncomfortable in anyway during the interview or participation the researcher shall allow them to withdraw. All data will be stored for 5 years and deleted after the time has lapsed.

Please feel free to contact me if there is any additional information needed.

Thank you for your assistance.

Yours sincerely

Thato Shumba.

Researcher's contact details:

Thato Shumba

Cell: 071 274 1198

Email: 1911233@students.wits.ac.za

Supervisors' contact details:

Dr Erasmos Charamba

Cell: 078 546 1420

Email: erasmos.charamba@wits.ac.za

Appendix E.



Consent letter for teachers

Please may you fill in the form below and circle the applicable response. This is to indicate you

voluntarily give Thato Shumba consent or not to participate in the study titled: "The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social inclusion of African Learners who are Learning through an Additional Language."

I, ……. teacher for grade grant permission to Ms. Thato Shumba from the university of the Witwatersrand to conduct her study in my classroom for +-3 weeks. The researcher has explained to me her study and objectives and I understand what my participation and learners' participation will involve. I agree to the following:

(Please circle the relevant option below).

I agree that my participation will remain anonymous YES/NO

I agree that the researcher may use anonymous quotes in her research report YES/NO

I agree that the researcher may observe and write down notes on the observations YES/NO

I agree that the researcher may Interview me as a grade 4 teacher YES/NO

I agree that the learners in my classroom may be given standardized tests as part of the intervention YES/NO

I have been informed by the researcher that no learner is forced to partake in the study YES/NO

I have been informed by the researcher that my class may withdraw at any given moment should the researcher violate his/her ethics agreement YES/NO

I agree that the researcher and other researchers may use any information gathered during their study after their project has ended for academic purposes, subject to their ethics clearance being obtained YES/NO

Teachers Signature…….

Date…….

Researcher's Signature…….

Date…….

Appendix F

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Parent/ Guardian Consent Form

Date: _/_____/_____

Please may you fill in the form below and circle the applicable response. This is to indicate you voluntarily give **Thato Shumba** consent or not for your child to participate in the study titled: **"*The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language"***

I _____(parent/guardian) of_____

Give permission to the following:

1. I understand and give permission for my child to participate in the study YES/NO
2. I give permission for my child to be observed during the course if the study YES/NO
3. I give permission for my child to be Interviewed as part of the study YES/NO
4. I give permission for my child to be voice recorded during the interview YES/NO
5. I give permission for my child to participate in a written tests YES/NO

I also understand the following:

- My Child's name and personal information will be kept confidential at all times
- My name and the name of the school will also be kept confidential
- That my child can withdraw at any point in the study with no consequences or harm

- The data collected in this study will be stored for a period of 5 years and destroyed after the time has lapsed.

Signature:_____Date: _____

Researcher's Signature…….

Date……...

Appendix G

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Learners assent form

Title of the dissertation: ***The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language in grade 4.***

I ….. (learners allocated number), agree to take part in the research project.

I agree to the following:

(Please circle your answer below)

Ms Shumba has explained to me what she will be doing with me and I understand YES/NO

I understand that I can choose not to take part in the study YES/NO

I understand if I do take part in the study I can choose to stop at any time YES/NO

I agree to Ms. Shumba observing me during lessons YES/NO

I agree to be interviewed for 10-15 minutes and recorded during the interview YES/NO

I agree to take a test as part of study YES/NO

I agree that Ms. Shumba and other researchers may use any information gathered during their study after their project has ended for academic purposes, subject to their ethics clearance being obtained YES/NO

Learners Signature…….

Learner's name and surname……

Date…….

Researcher’s Signature…….

Researcher’s name and surname……

Date……

Appendix H

Pre-test

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Study title: The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language- Thato Shumba.

Learners allocated number	
Grade 4	Pre-test
Subject	Mathematics
Time	4 hours
Total	25 Marks

INSTRUCTIONS:

1. **DO NOT** write your name but write the number ma'am gave you.
2. This test consists of 4 pages
3. Read and understand all the questions.
4. Answer all the questions in the space provided.
5. Write neatly and legibly

In this test you will cover:

- Fractions
- Time
- 2D shapes
- Distance

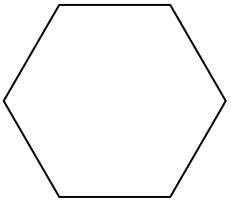
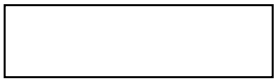
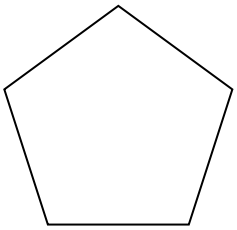
Mark Obtained:	_____ 25	Percentage:

GOOD LUCK!

Question 1: 2D DIMENSIONAL SHAPES.

Study the following 2-Dimensional shapes and choose the correct answer the questions that follows.

Complete the table below:

Shape	Name of the shape	Number of sides
	2.1) A. Octagon B. Pentagon C. Hexagon D. Square [1]	2.2) A. 4 B. 6 C. 7 D. 5 [1]
	2.3) A. Rectangle B. Pentagon C. Octagon D. Hexagon [1]	2.4) A. 4 B. 7 C. 6 D. 5 [1]
	2.5) A. Square B. Pentagon C. Rectangle D. Octagon [1]	2.6) A. 4 B. 6 C. 3 D. 5 [1]

[/6]

Question 2: Fractions

1. Peter bought 8 hamburgers for his party. At the end of the party 3 of the hamburgers were left. What fraction of the hamburgers were eaten at Peters party?

----[1]

2. John ate 3 slices of pizza, his friend Sam ate 2 slices of pizza, there were 8 slices of pizza in total, what fraction of pizza did Sam eat? What fraction remains?

----[1]

3. Lebo had R20 and she spent ¼ of it. How much money does she have left?

----

[1]

4. Ms Maji brought 40 sweets to school and Ms Maji's class ate ½ of the sweets and miss Mabuza's class ate ¼ of the remaining sweets. How many sweets did Ms Maji's learners eat? -

---

----------[1]

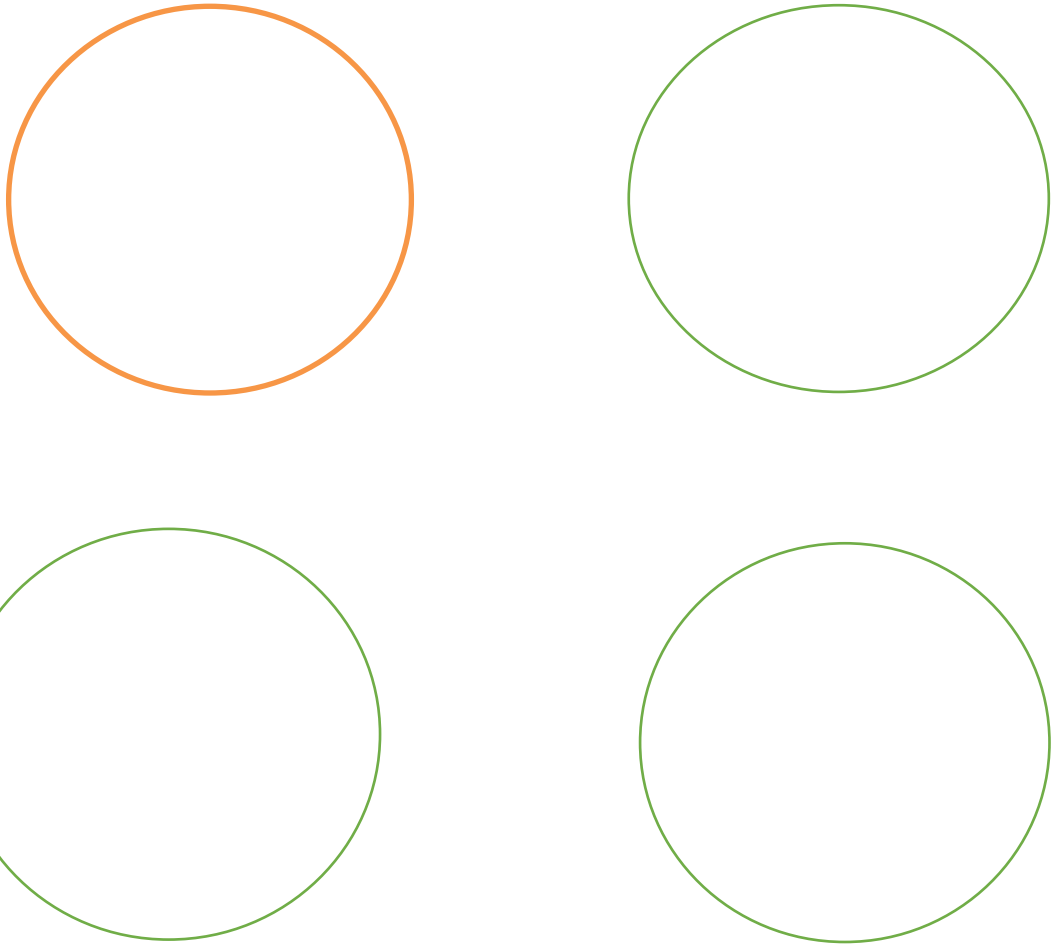
5. How many sweets remained after Ms Maji's class and Ms Mabuza's class ate their sweets.

---.

[2]

6. Comprehension test

Sipho wakes up at 06:30 every morning, after waking up he goes and takes a shower at 06:45, then he leaves for school at 07:00 and comes back home at 15:30. Represent all these values on 4 different clocks below.



[/8]

Question 3:

Circle the letter with the correct answer.

3.1 Fill in $>, < or =$

$\frac{2}{4} \square \frac{1}{2}$

A. > B. < C. = (1)

3.2 100 cm is equal to:

A. 1000 cm B. 100m C. 1m D. 101 (1)

3.3 1hour is …

A. 30 minutes B. 60 minutes C. 60 seconds (1)

3.4 A square has____sides.

A. 4 B.5 C. 2 D.8 (1)

3.5 The appropriate unit that can be used to measure the distance from Tembisa to Centurion is:

A. m B. mm C.km D. cm (1)

[5]

Appendix I

Control group post-test.

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Study title: The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language- Thato Shumba.

Learners allocated number	
Grade 4C	Post-test
Subject	Mathematics
Time	4 hours
Total	25 Marks

INSTRUCTIONS:

1. **DO NOT** write your name but write the number ma'am gave you.
2. This test consists of 4 pages
3. Read and understand all the questions.
4. Answer all the questions in the space provided.
5. Write neatly and legibly

In this test you will cover:

- Fractions
- Time
- 2D shapes
- Distance

Mark Obtained:	_____ 25	Percentage:

GOOD LUCK!

Question 1: Fractions

1. Peter bought 8 hamburgers for his party. At the end of the party 3 of the hamburgers were left. What fraction of the hamburgers were eaten at Peters party?

----------[1]

2. John ate 3 slices of pizza, his friend Sam ate 2 slices of pizza, there were 8 slices of pizza in total, what fraction of pizza did Sam eat? What fraction remains?

----------[1]

3, Lebo had R20 and she spent ¼ of it. How much money does she have left?

----

[1]

4. Ms Maji brought 40 sweets to school and Ms Maji's class ate ½ of the sweets and miss Mabuza's class ate ¼ of the remaining sweets. How many sweets did Ms Maji's learners eat?

----------[1]

5, How many sweets remained after Ms Maji's class and Ms Mabuza's class ate their sweets.

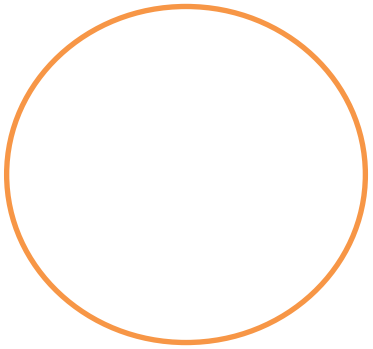
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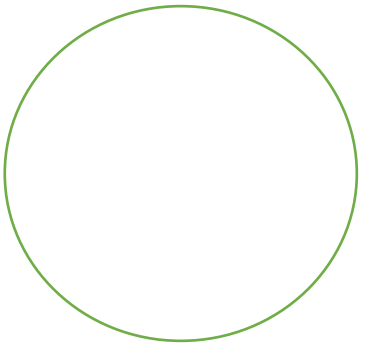
[2]

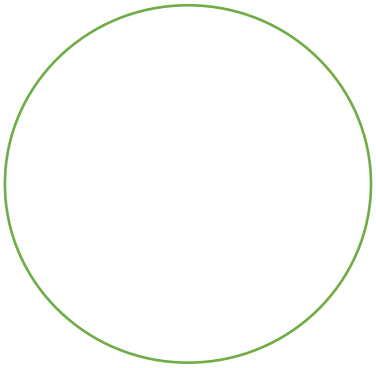
6. Comprehension test

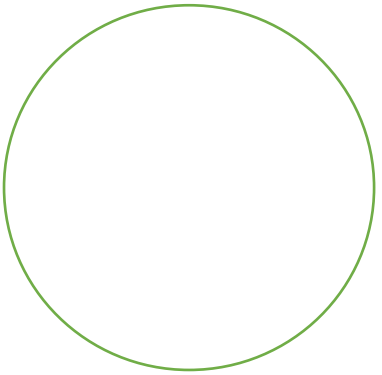
Sipho wakes up at 06:30 every morning, after waking up he goes and takes a shower at 06:45, then he leaves for school at 07:00 and comes back home at 15:30.

Represent all these values on 4 different clocks below.







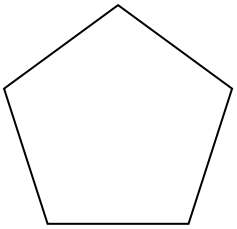
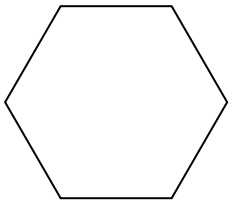
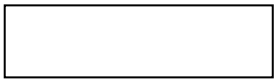


[8]

Question 2: 2D DIMENSIONAL SHAPES.

Study the following 2-Dimensional shapes and choose the correct answer the questions that follows.

Complete the table below:

Shape	Name of the shape	Number of sides
	2.1) A. Octagon B. Pentagon C. Hexagon D. Square [1]	2.2) A. 4 B. 6 C. 7 D. 5 [1]
	2.3) A. Rectangle B. Pentagon C. Octagon D. Hexagon [1]	2.4) A. 8 B. 7 C. 6 D. 5 [1]
	2.5) A. Square B. Pentagon C. Rectangle D. Octagon [1]	2.6) A. 4 B. 6 C. 3 D. 5 [1]

[/6]

Question 3:

Circle the letter with the correct answer.

3.1 Fill in $>, < or =$

$\frac{2}{4} \square \frac{1}{2}$

A. > B. < C. = (1)

3.2. 100 cm is equal to:

A. 1000 cm B. 100m C. 1m D. 101

(1)

3.3. 1-hour is …

A. 30 minutes B. 60 minutes C. 60 seconds (1)

3.4 A square has____sides.

A. 4 B.5 C. 2 D.8 (1)

3.5 The appropriate unit that can be used to measure the distance from Tembisa to Centurion is:

A. m B. mm C.km D. cm (1)

[5]

Appendix J.



Experimental group post-test.

Study title: The Impact of using Monolingual pedagogies in South African Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language- Thato Shumba.

Learners allocated number Nomoro ya murutwana	
Grade 4A Kereiti 4A	Post-test
Subject/ Hlogotaba	Mathematics
Time/ Nako	4 hours/ Di uure tje 4
Total/ Palomoka	25 Marks

INSTRUCTIONS/ TSHWARA:

-DO NOT write your name but write the number ma'am gave you.

GA O aga leina la gago empa o aga nomoro ya mangwana yo ngwadilweng.

-This test consists of 4 pages

Testi ena e na lepele 4.

-Read and understand all the questions.

Bala le go tseba dipotso tse di tshwanetseng.

-Answer all the questions in the space provided.

Kgapetsa tse dintsi tsa dipotso mo go tswa fa go lebelela.

-Write neatly and legibly

Aga ka maitseo a a matlakala le mafelelo.

In this test you will cover:

- Fractions/ Dikganyo
- Time/ Dithopho
- 2D shapes/ Dikgwepha tsa 2D
- Distance/ Bosetlhogo

Mark Obtained:	 25	Percentage:

GOOD LUCK!

Question 1: Fractions

1. Peter bought 8 hamburgers for his party. At the end of the party 3 of the hamburgers were left What fraction of the hamburgers were eaten at Peters party?

Peter o rekile di hempeka tše seswai tša monyanya wa gagwe. Ge monyanya o fela, go be go šetše di hemoeka tše tharo. Ke fractione efe yefe ye e jewego ko monyanyeng?

---------- [1]

2. John ate 3 slices of pizza, his friend Sam ate 2 slices of pizza, there were 8 slices of pizza in total, what fraction of pizza did Sam eat? What fraction remains?

John o jele diphitsa tše tharo, mogwera wa gagwe Sam o jele diphitsa tše pedi, go be go na le di phitsa tše seswai ka bofelelo, ke fraction yefe yeo Sam a e jelego? Go šala fraction ye fe?

----------[1]

3. Lebo had R20 and she spent ¼ of it. How much money does she have left?

Lebo o be a nale R20, a šomiša ¼ ya gona. O Šetše ka bake?

----------[1]

4. Ms Maji brought 40 sweets to school and Ms Maji's class ate ½ of the sweets and miss Mabuza's class ate ¼ of the remaining sweets. How many sweets did Ms Maji's learners eat?

   Ms Maji o tlile le malekere a masomenne sekolong, phapušing ya Ms Maji ba jele ¼ ya malekere, phapušing ya Miss Mabuza ba jele ¼ ya malekere ao onšetšego. Phapušing ya Miss Maji ba jele malekere a ma kae?

   ----------[1]

5. How many sweets remained after Ms Maji's class and Ms Mabuza's class ate their sweets?

   Go šetše malekere a ma kae morago ga gore di phapuši tša Miss Maji le ya Ms Mabuza Di je malekere?

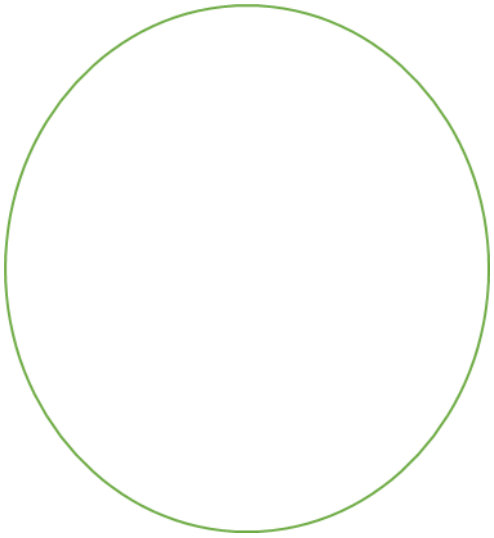
   ----------.[2]

6. Comprehension test

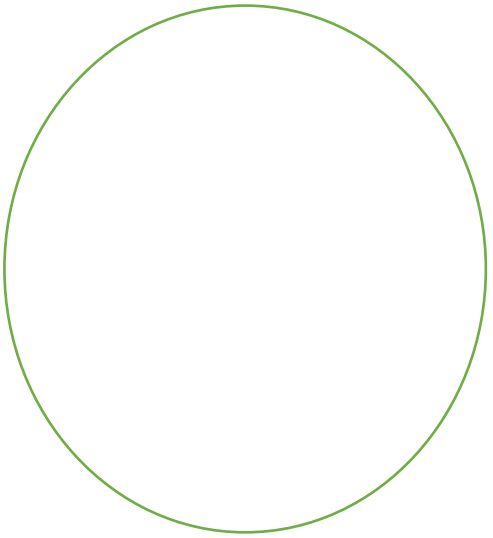
Sipho wakes up at 06:30 every morning, after waking up he goes and takes a shower at 06:45, then he leaves for school at 07:00 and comes back home at 15:30.
Represent all these values on 4 different clocks below.

Sipho o tsoga ka 06:30 mesong ye mengwe le ye mengwe, ge a tsoga o hlapa ka iri ya 06:45, ke moka a ye sekolong ka 07:00, a bowe gae ka iri ya 15:30. Ngwala di nako tse mo di clockong tse di latelago.

a.

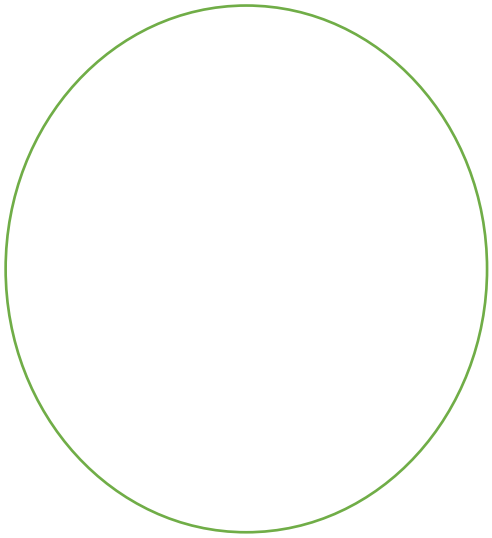


b.

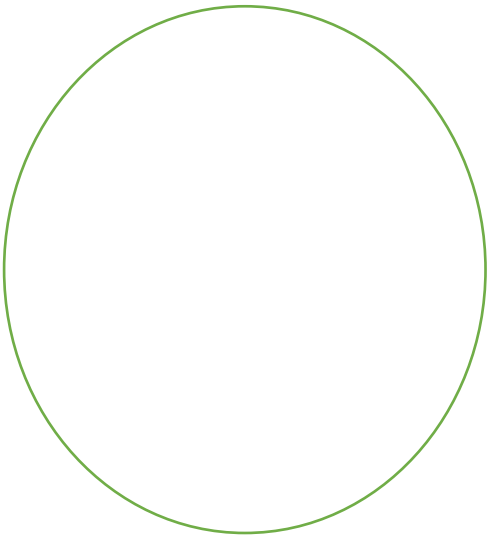


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c.



d.



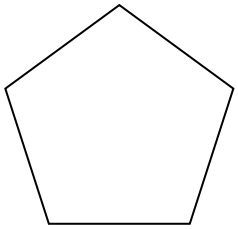
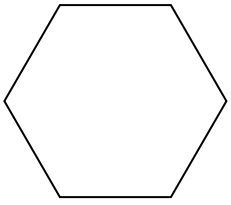
Question 2: 2D DIMENSIONAL SHAPES.

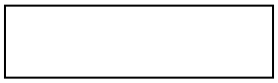
Study the following 2-Dimensional shapes and choose the correct answer the questions that follows. (6)

Bala di shape tše Di latelago, o kgethe karabo ya maleba

Complete the table below:

Feleletša tafole ye e latelago:

Shape	Name of the shape	Number of sides
	A. Octagon B. Pentagon C. Hexagon D. Square [1]	A. 4 B. 6 C. 7 D. 5 [1]
	A. Rectangle B. Pentagon C. Octagon D. Hexagon [1]	A. 8 B. 7 C. 6 D. 5 [1]

	A. Square B. Pentagon C. Rectangle D. Octagon [1]	A. 4 B. 6 C. 3 D. 5 [1]

[/6]

Question 3:

Circle the letter with the correct answer.

Kgetha karabo ya maleba ka go gokola alfabethe ya maleba

3.1 Fill in $>, < or =$

Tsenya >,< goba =

$\frac{2}{4} \square \frac{1}{2}$

A. > B. < C. = (1)

3.2 100 cm is equal to:

100 cm e lekana le:

A. 1000 cm B. 100m C. 1m D. 101

(1)

3.3 1-hour is equal to…

1-hour e lekana le…

A. 30 minutes B. 60 minutes C. 60 seconds (1)

3.4 A square has____sides.

Square se na le mahlakore a ma kae

A. 4 B.5 C. 2 D.8 (1)

3.5 The appropriate unit that can be used to measure the distance from Tembisa to Centurion is:

Yuniti ya maleba ya go bala sekgoba sa go tloga Tembisa go fihla Centurion ke:

A. m B. mm C.km D. cm (1)

[5]

Appendix K

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Grade 4 Interview.

1. **May you please tell me your allocated research number given by your ma'am at the beginning of the study.**

2. **How did learning in your home-language and English make you feel?**

3. **Looking at your two test marks which test did you perform better on and why do you think you performed the way you did?**

4. **Do you speak English at home and with your friends? If not why?**

5. **Please comment on the lessons you received during the study, what did you enjoy, or what would you change?**

6. **What would you like your teacher to change in the way she teaches after the study?**

Appendix L.

GDE APPROVAL LETTER.



GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	**20 October 2023**
Validity of Research Approval:	**08 February 2024– 30 September 2024** **2023/290A**
Name of Researcher:	**Shumba TJ**
Address of Researcher:	**1466 Damsel Fish Street**
	Kaalfontein /Midrand
Telephone Number:	**071 274 1198**
Email address:	**Shumba.thato99@gmail.com**
Research Topic:	**The impact of using monolingual pedagogies in South African classrooms on the academic performance and social inclusion of African learners who are learning through an additional language**
Name of University:	**Wits**
Type of qualification	**Masters**
Number and type of schools:	**1 Primary School**
District/s/HO	**Johannesburg East**

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

20/10/2023

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

Making education a societal priority

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

Appendix M Ethics clearance certificate.

UNIVERSITY OF
THE WITWATERSRA
JOHANNESBURG

Research
Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

R14/49 Shumba

cc: Supervisor: Dr E Charamba

PROTOCOL NUMBER: 1-123/07/64

CLEARANCE CERTIFICATE	The Impact of using Monolingual pedagogies in South African
PROJECT TITLE	Classrooms on the Academic Performance and Social Inclusion of African Learners who are Learning through an Additional Language
	Ms T Shumba
INVESTIGATOR (S)	Wits School of Education/
SCHOOUDEPAR TMENTDATE	21 July 2023
CONSIDERED	Approved Risk Level: Minimal
DECISION OF THE COMMIT TEE	18 December 2026
EXPIRY DATE	

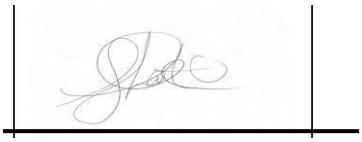
DATE 20 December 2023 CHAIRPERSON

(Professor Watermeyer)

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and A SIGNED COPY returned to the Secretary electronically. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure be contemplated from the research procedure as approved I/we undertake to submit an amendment of the protocol to the Committee. I/we agree to completion of a regular progress report. For Minimal and Low Risk studies, this is due annually on 31 December. For Medium and High Risk studies, this is due twice annually on 30 June and 31 December.



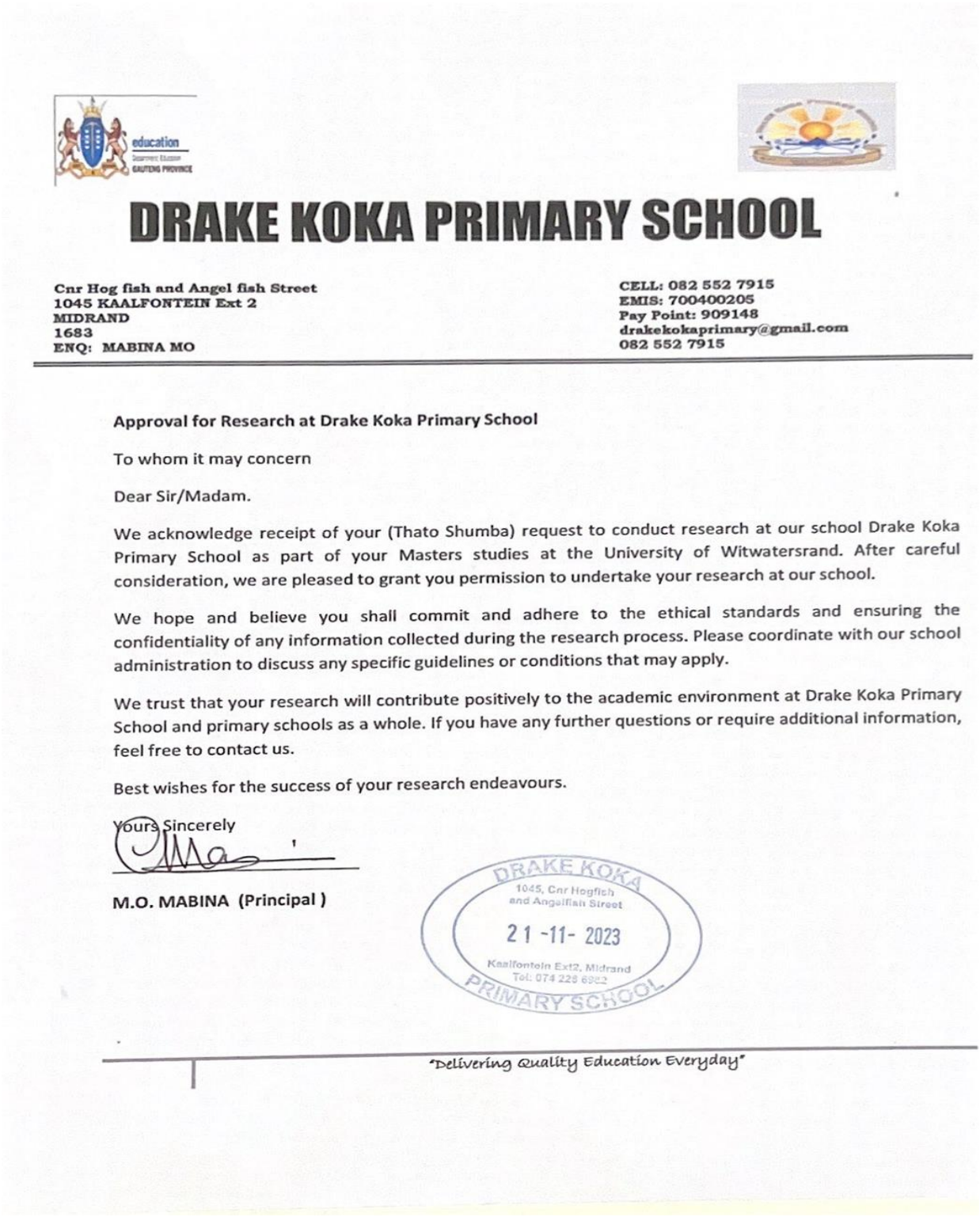
23 / 12 / 2023

Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Appendix N.

Permission letter from the school.



education
Department: Education
GAUTENG PROVINCE

DRAKE KOKA PRIMARY SCHOOL

Cnr Hog fish and Angel fish Street
1045 KAALFONTEIN Ext 2
MIDRAND
1683
ENQ: MABINA MO

CELL: 082 552 7915
EMIS: 700400205
Pay Point: 909148
drakekokaprimary@gmail.com
082 552 7915

Approval for Research at Drake Koka Primary School

To whom it may concern

Dear Sir/Madam.

We acknowledge receipt of your (Thato Shumba) request to conduct research at our school Drake Koka Primary School as part of your Masters studies at the University of Witwatersrand. After careful consideration, we are pleased to grant you permission to undertake your research at our school.

We hope and believe you shall commit and adhere to the ethical standards and ensuring the confidentiality of any information collected during the research process. Please coordinate with our school administration to discuss any specific guidelines or conditions that may apply.

We trust that your research will contribute positively to the academic environment at Drake Koka Primary School and primary schools as a whole. If you have any further questions or require additional information, feel free to contact us.

Best wishes for the success of your research endeavours.

Yours Sincerely

M.O. MABINA (Principal)

DRAKE KOKA
1045, Cnr Hogfish
and Angelfish Street
21 -11- 2023
Kaalfontein Ext2, Midrand
Tel: 074 228 6922
PRIMARY SCHOOL

"Delivering Quality Education Everyday"