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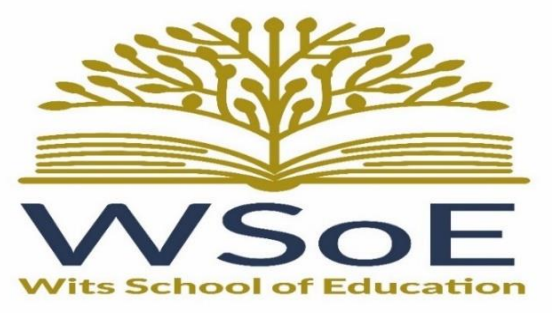
The effects of infrastructure, teaching & learning materials in geography classrooms: investigating the experiences of teachers & learners in two public schools, Gauteng province

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FACULTY OF HUMANITIES
SCHOOL OF EDUCATION

MASTERS DISSERTATION

THE EFFECTS OF INFRASTRUCTURE, TEACHING & LEARNING MATERIALS IN GEOGRAPHY CLASSROOMS: INVESTIGATING THE EXPERIENCES OF TEACHERS & LEARNERS IN TWO PUBLIC SCHOOLS, GAUTENG PROVINCE.

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PROTOCOL NUMBER: H19/11/28

SUPERVISOR: DR THOKOZANI MATHEBULA

Title Page

FACULTY OF HUMANITIES

SCHOOL OF EDUCATION

The Effects of Infrastructure, Teaching & Learning Materials in Geography Classrooms: Investigating the Experiences of Teachers & Learners in Two Public Schools, Gauteng Province.

A Small-Scale Masters dissertation submitted to fulfil the requirements for the degree Master of Education.

Supervisor: Dr T. Mathebula

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Date: 30 October 2020

Declaration

I, (Name and Surname) Mahlangu Morefaith Naledi,

Student Number: 862810

Know and accept that plagiarism (i.e., to use another's work and to pretend that it is one's own) is dishonest. **I hereby declare the following:**

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Signed: MN MAHLANGU

Date: 30 Oct. 2020

Dedication

I would like to dedicate this study to my family:

My Mother, Mercy Mahlangu

My Father, Michael Mahlangu

My younger sisters, Makabongwe & Mazwamahle Mahlangu

Your support has been my strength.

My lovely family, you have been my only rock and the only institution I know that has proven to work. Your beautiful love has sustained me. Thank you for supporting my dreams and everything I desire to pursue. Thank you for the support of my decisions without a doubt. Thank you, Daddy, for your unconditional support and the love you have always shown me. Thank you for convincing me to pursue this degree. It was the best decision I have ever made. Yes, it was not easy, but I am proud of how far I have come.

Thank you, mother, you are the pillar of my strength. You always see the fatigue behind my smile and the fear behind my anger when no one else can. Your support remained steady and unchanged throughout the journey. You are my unmatched gift.

To my sisters, I have always said this and I will repeat it, you make my life colourful, joyful and thank you for still being there for me not only in time of need but in all days I wanted sisters. May this study be a form of encouragement to you that good things happen to those who wait patiently and work. May it remind you always to take risks. Growth involves the risk of failure, and if you try, you risk failure, but if you do not, you ensure it!

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Abstract

Infrastructure and teaching and learning materials are integral aspects of quality teaching and learning. In the same breath, the lack of it can compromise the school's capacity to offer quality teaching and learning. This study aimed at investigating the effects of infrastructure, teaching and learning materials on the quality of education and learning in classrooms. The nature of investigating involved looking closely into the different experiences of Geography educators and learners on infrastructure, teaching and learning materials, to attempt to show the relationship if any, between infrastructure, learning materials and quality teaching and learning. The two public schools involved were of two different quintiles. The first public school was a township school that formed part of quintile one category, and the other school was a quintile four school in the urban area.

The study included a total number of four experienced Geography teachers with three and more years of teaching experience and eight grade 12 Geography learners who had studied Geography from grade 10. The experiences of both teachers and learners were advantageous to the study as participants were familiar with the subject and teaching and learning materials needed to help produce quality teaching and learning in Geography.

The data was collected qualitatively using semi-structured and focus-groups interviews. The findings from interviews showed a relationship between infrastructure, learning materials and quality teaching and learning to be reflexive. The results of this study concluded on three aspects; (1) that the quality teaching and learning in Geography classrooms relied heavily on infrastructure and teaching and learning materials and therefore, was necessary. (2) The research further implied that the effects of quality teaching and learning result because of the lack of infrastructure and teaching and learning. (3) Lastly, the quintile one school revealed the shortcomings of poor infrastructure, teaching and learning materials and how it affected the teaching and learning experience.

Key Words: Infrastructure, Teaching Materials, Learning Materials, Public Schooling, Quality teaching and learning.

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The South African Schools Act's (1996) primary objective is to build anew a national system which will redress past injustices in an educational provision such as infrastructure and teaching and learning materials; to provide a quality education for all learners, which fights against racism and unfair discrimination. The act acknowledges the apartheid legacy in South Africa and promises to achieve a revived national system for schools that will offer a high quality of education to all learners, especially learners from disadvantaged backgrounds in quintile 1 and 2 public schools.

According to Bourdieu (1990), schools depend heavily on the cultural capital that gives leaners advantages to learn effectively, and that is the nature of schools. Cultural capital refers to but not limited to relevant teaching and learning materials, infrastructure, extra lessons, and financial support. According to Bourdieu (1990) children who do not have the cultural capital such as learning materials have a difficult time learning and competing with other learners in advanced public schools and "failure to achieve good performance is often interpreted as lack of ability" (Christie, 2008, p. 171) when it is merely the lack of cultural capital in less disadvantaged schools.

Infrastructure and teaching and learning materials are essential aspects of quality education, and the absence of it may compromise the school's capacity to offer quality teaching and learning. Nkosi (2018) argues that learners from advantaged and well-resourced schools in South Africa continue to perform better than learners from less-advantaged schools (public schools) due to lack of proper infrastructure and learning materials. Nkosi (2018) posited that the children of parents who paid more for school fees enjoyed the privilege of learning in smaller classes, excellent infrastructure, and learning materials. In contrast, learners from poor backgrounds learnt in a challenging context with no support of infrastructure and learning materials. According to the quality education theory of Cheng and Cheung (1997), quality teaching and learning cannot be achieved in isolation of proper infrastructure and learning materials, however, infrastructure and supporting learning materials form a large part of quality teaching and learning in the classroom. From this, the support good infrastructure and teaching and learning materials are essential and worth investigating.

1.2 PROBLEM STATEMENT

What is problematic about the education in South Africa in disadvantaged and under-resourced schools, is the appalling neglect of infrastructure and learning materials towards quality education. It is found that the government policies put in place are not being translated to ensure the provision of infrastructure and teaching and learning materials in quintile one public schools. As a result, teachers and learners teach and learn under constrained environments (Spaull, 2013).

According to the Curriculum and Assessment Policy Statement for Geography (Department of Basic Education, 2011), Geography is divided into various studies. There is physical Geography that seeks to look to study the processes and features of the atmosphere and ecosystem. In Human Geography learners are taught to investigate the different activities and impacts of habitants on earth. However, the challenge of many quintile one and two schools is not having the correct infrastructure such as classroom furniture, teaching, and learning materials such as textbooks, atlases and map works to achieve this.

According to Lemberg and Stoltman (1999) teaching and learning materials such as textbooks and powerful technology have transformed the work of Geography teachers. This helps teachers and learners to engage in deep inquiry about Geography using authentic data and therefore necessary. “Geography teachers are simultaneously faced with increasing scrutiny of teaching, new educational standards and a plethora of new teaching methods” (Krygier, et al.,1997, p 17).

This study is concerned with the school infrastructure, learning materials and quality teaching and learning promised to learners in lower public schools. South African public schools (quintile one) operate under terrible conditions ranging from the lack of teaching, learning materials, poor school infrastructures, and to some extent, poor delivery of education. Furthermore, communities surrounding quintile one schools are faced with socio-economic factors such as poverty and crime (Spaull, 2013).

Cheng and Cheung (1997) argue that the complex nature of quality education involves good infrastructure, teaching and learning materials. “School infrastructure and learning materials are one of the five dimensions contributing to quality education and therefore, a necessity in all schools” (UNICEF 2002, 2005). Infrastructure and learning

materials are necessary to ensure quality teaching and learning in classrooms and therefore, should be provided.

1.3 BROAD RESEARCH QUESTION

1. What are the experiences of teachers and learners regarding the effect of infrastructure, teaching and learning materials in geography classrooms?

KEY RESEARCH SUB-QUESTIONS

1. What is the link between infrastructure and teaching and learning materials and quality teaching and learning?
2. What is the significance of having the proper infrastructure and the availability of teaching and learning materials?
3. In what ways do infrastructure and teaching and learning materials influence the quality of teaching and learning in classrooms?

1.4 AIMS OF THE STUDY

1. To investigate the experiences of teachers and learners on how infrastructure, teaching and learning materials affect quality teaching and learning in geography classrooms.
2. To investigate the relationship if any, between infrastructure, learning materials and quality teaching and learning.

1.5 RATIONALE OF THE STUDY

Hendricks (2012) argues that a school among many roles is a space where learners and educators develop a sense of belonging, selfhood, and identity. However, the success of this is primarily embedded and influenced by the quality of school infrastructure, teaching and learning materials made available. The lack of infrastructure and teaching and learning materials that are needed to enhance learning have the potential to affect teaching and learning in classrooms (Modisaotsile, 2012).

Nkosi (2018) argues that many educators and learners in quintile one public schools find themselves in confined and challenging spaces of learning without the support of

infrastructure, learning materials and their ability to produce quality teaching and learning in classrooms is not maintained. Marishane (2013) showed that despite the state's efforts to bring about equality in education through the provision of supporting materials and infrastructure in public schools, the provision remains highly unequal.

The existing knowledge on the relationship between infrastructure and teaching and learning materials translating to quality teaching and learning, especially in a post-apartheid South African context is not a common subject in research and therefore limited. I intend to close this knowledge gap by investigating the experiences of teachers and learners on how infrastructure and learning materials affect the quality of teaching and learning in South African geography classrooms. The study will be concentrated on the South African educational policies, existing literature and two theoretical frameworks (the hierarchy of needs and the seven multi-models of quality education). The theoretical frameworks will be useful to investigate the effects of infrastructures in Geography classrooms. Both frameworks advocate for the provision of infrastructure and supporting materials in schools. Furthermore, a presentation of a multiple case study of a township (quintile one) and urban (quintile four) public schools using questionnaires and interviews that will be made.

As already mentioned, Cheng and Cheung (1997) which advocate for a fair opportunity and provision of proper infrastructure, teaching and supporting learning materials in all public schools. Christie (2008) also argues that a distribution of infrastructure, teaching and learning materials on the scale that meets the learners and teachers in public schools to teach and learn should be made. "The distribution of wealth and income in a society must be equal and political positions should be accessible to all" (Mathebula, 2018, p. 95).

From the above, the effects of infrastructure and teaching and learning materials is, therefore, worth investigating. The effects mentioned above will only be limited to Geography classrooms. The argument I intent to present in this study, is a social-economic issue of social class. I will look at (1) the experiences of teachers and learners in public schools on the effects of infrastructure and learning materials and (2) the relationship if any, between infrastructure, learning materials and quality teaching and learning.

1.7 ORGANIZATION OF THE STUDY

The study follows the structure below.

CHAPTER	DESCRIPTION
CHAPTER 1 The Background of the Study	This chapter consists of the introduction, research problem, rationale, aims of the research, key research questions of the study.
CHAPTER 2 Literature Review & Theoretical framework	This chapter consists of an in-depth study of existing research knowledge on infrastructure and learning materials and their effects on the quality of teaching and learning. Furthermore, this chapter looks at two theories used in this study and will be used to analyse the results of the research based on the literature.
CHAPTER 3 Research Methodology	This chapter will reveal an analysis and conduction of the study through data collection instruments and ethical consideration.
CHAPTER 4 Data Presentation and discussion	This chapter consists of data discussion at an descriptive and evaluative level.
CHAPTER 5 Theoretical Analysis	This chapter will be data discussion at a conceptual level.
CHAPTER 6 Conclusion & Recommendations	This final chapter will consist of recommendations and conclusions drawn from this study.

CHAPTER SUMMARY

This chapter revealed the background of the study and what the study aims to achieve. The problem statement and the rationale of the study were presented. Finally, the chapter revealed the three main questions that this study aims to respond to (with the help of research participants) to intent to close the knowledge gap of the effects of infrastructure and learning materials in Geography classrooms as discussed above.

CHAPTER 2: LITERATURE REVIEW

INTRODUCTION

This chapter consists of an in-depth study of existing research knowledge on infrastructure and learning materials and their effects on the quality of teaching and learning. The chapter will look at the history and background of infrastructure, teaching materials in public school as well as investigate the educational policies. Of great significance, the chapter reveals research gaps in the reviewed literature, the contrasting debates, and implications for infrastructure, leaning materials and the quality of teaching and learning in schools. Furthermore, this chapter looks at two theories (hierarchy of needs and the multi-models of quality education) used in this study and will be used to analyse the results of the research based on the literature. The limitations of each framework will be shown.

2.1 INFRASTRUCTURE, TEACHING & LEARNING MATERIALS, QUALITY OF TEACHING AND LEARNING AND PUBLIC SCHOOLS: HISTORY AND BACKGROUND

2.1.1 INFRASTRUCTURE

According to the Department of Basic Education (2007), school infrastructure refers to the physical teaching and learning environment. It is how the school is built, organized, and maintained for the operation of teaching and learning. The school infrastructure can be divided into two parts: the physical teaching environment and physical learning environment. The former refers to facilities made available for teachers in the school environment for educational purposes.

According to the South African Schools Act (1996), the features of the physical teaching environment include the provision of safe classrooms, electricity, water, sanitation, electronic connectivity, and perimeter security. The physical learning environment refers to facilities made available for learners to aid their learning goals. It features, tables, chairs, sanitation, library, hall, laboratories for science, sport, and recreational facilities (South African Schools Act, 1996). The features for school infrastructure for teachers and learners overlap to one another as they coexist in the same environment. For instance, both teachers and learners need proper sanitation, water, and a classroom to teach and learn and these features are available in both physical learning and teaching environment.

The school infrastructure meets the basic school functionality requirements if it meets the essential safety features, such as having proper classrooms with functional windows and furniture. The school needs to be well-maintained with electricity, staff room and an administration block. Furthermore, a school needs a multipurpose hall; laboratories for science and technology, a library and renewed library stocks that is accurate and relevant; computer rooms and media centres. Other primary school functionalities include environmental factors, which are equally more critical as physical features such as air temperature; air humidity; air movement; and the warmth of surrounding surfaces for health reasons. These are necessary for the school environment where teachers and learners live (South African Schools Act, 1996).

Equally, a school infrastructure will not meet the essential safety requirements if it exposes learners to severe conditions such as a lack of access to clean water, sanitation facilities and extremely unsafe building structures that could collapse on top of the learners. Classrooms should not be overcrowded or have broken windows and dangerous fencing (South African Schools Act, 1996). Furthermore, it is the minister of Education's duty to ensure that there is provision for school infrastructure in schools, "The minister may, after consultation with the Minister of Finance and the Council of Education Ministers by regulation prescribe minimum norms and standards for (i) school infrastructure" (SASA, 1996, p. 9).

From this section, it is vital to comprehend how policy documents define the infrastructure and what constitutes good infrastructure and unsafe infrastructure for public schools. The next part will focus on the definitions of teaching and learning materials.

2.1.2 TEACHING AND LEARNING MATERIALS

According to Modisaotsile (2012), supporting teaching and learning materials refer to any tool used to enhance and improve the quality of teaching, learning and the understanding of the subject content. Frequently, teaching and learning materials are referred to as supporting aids and serve the purpose of improving and making teaching and learning tangible for teachers and learners. Both supporting teaching and learning materials make that which is abstract practical and actual. An example of this could be 'words' which are abstract and cannot be seen, being translated into a textbook or

a teacher's guide to give a visual representation of information of words. A textbook will then aid the teacher and learners' understanding of terms to form sentences and create meaning.

According to the South African Schools Act of 1996 section 5A, teaching and learning support materials features involve: "stationery and suppliers, teaching equipment, science, technology, mathematics and life sciences apparatus, electronic equipment, school furniture and other school equipment" (South African Schools Act, 1996, p. 10). The above features of teaching and learning materials are tools needed by the school to achieve discipline and learning in the classroom, such as but not limited to textbooks, charts, laptops, pens, paper, workbooks, chemicals for science, smart boards and other visual aids (Modisaotsile, 2012).

Concerning the provision of teaching and learning support materials, it is the Minister of Education's duty to ensure that the contents are readily available for school. The South African Schools Act that "The minister may, after consultation with the Minister of Finance and the Council of Education Ministers by regulation prescribe minimum norms and standards for (ii) the provision of learning and teaching support material" (South African Schools Act, 1996, p. 9).

2.1.3 QUALITY TEACHING AND LEARNING

Upon research, quality teaching and learning or quality education is an unclear and challenging concept because of how people in different parts of the world perceive it. We will try to break it down for clarity purposes. Firstly, we will look at the term 'quality' then move to 'education'.

According to Cheng and Cheung (1997), the term quality has several meanings attached to it, such as value and excellence, making it a relative concept. Amount refers to something desirable and vital in the sense that it brings worth. Excellence speaks to virtue and greatness. Ndofirepi (2013) views the term quality as a philosophical concept. He relates condition to the notion of time and context, making it a subjective phenomenon open to many interpretations of people in a time and context.

Cheng and Cheung (1997) argue that the measurement for quality in teaching and learning should weigh against the efforts and inputs invested in the teaching and

learning and the value it produces. Inputs then refer to an infusion or contribution of something to achieve a goal. Inputs are necessary to make an output of quality education. A few examples of input to quality teaching and learning can be infrastructure, learning materials and qualified teachers and the outcome being quality teaching and learning (Cheng and Cheung, 1997).

Hamm (1989) makes provision for quality teaching and learning in schools and higher institutions. He argues that education produced in classrooms must serve the purpose of formal schooling and promote general enlightenment. General enlightenment refers to a person's development and liberation of the human mind from conformity to critical thinking. Hamm (1989) argues that the focus of schools then should be to develop the mind of a child and activate the cognitive functions for them to solve problems and decide on how best to live (Hamm, 1989). Lastly, according to Hamm (1989), any education in the classroom must be of value where a person who went to school can be easily distinguished from those who did not. "Education should be a particular kind of human achievement which is considered to be most valuable development of mind characterized by knowledge and understanding" (Hamm, 1989, p. 31).

Ndofirepi (2013) concurs that quality education should be strictly linked to economic and social development and be able to prepare learners for the real world and offer them critical skills to solve immediate problems. In his terms, quality teaching and learning in schools means an education that allows learners the opportunity to assume responsibility through activating cognitive functions to solve their immediate problems such as crime or poverty, and he refers to this as open-mindedness (Ndofurepi, 2013).

The central features of quality teaching and learning as mentioned above involve infrastructure, teaching and learning materials (inputs), general enlightenment, critical thinking and problem-solving.

2.1.4 PUBLIC SCHOOLS

South African Schools Act (1996) makes provision for public schools. Section 34 (1) stipulates that the state must fund public schools from general revenues on an equitable basis and ensure a proper exercise of the rights of learners to education and redress the funding inequalities of the past. Concerning the above policy and for this

section, I will give a breakdown of how public schools are defined and funded in South Africa.

Hendrick (2012) argues that South Africa has two distinct schooling system. Schools in South Africa are classified as primary or secondary schools and distinguished as public or private schools (South African Schools Act, 1996). The schools that involve the majority of under-resourced are public and rural schools and a minority of privileged and well-resourced schools are known as independent or private schools. Public schools as according to the South African Schools Act (1996) refer to "an ordinary public school, a public school for learners with special education needs or a public school that provides education with a specialised focus on talent, including sport, performing arts or creative arts." (SASA, 1996, p. 21).

Furthermore "the member of the Execute Council must provide public schools for the education of learners out of funds appropriated for this purpose by the provincial legislature" (SASA, 1996, p. 21). Briefly, the State funds public schools through infrastructure and learning materials. However, funding is categorized according to schools. The discussion of funding will follow shortly.

Christie (2008) refers to private /independent schools as fortified sites and schools with fewer advantages or public schools as exposed sites. She further argues that schools have become part of structural inequalities in a democracy, where independent schools serving prosperous communities have appropriate infrastructure and learning materials. The same is not said for many public schools. The South African Schools Act (1996) makes provision for independent schools and according to policy, section 45 "any person at his own cost may establish, maintain an independent school" (South African Schools Act, 1996, p. 54). These are schools that do not heavily rely on the government for funding and may have their curriculum different from public schools.

Christie (2008) argues that fortified sites are as schools that can face the demands of the curriculums. Parents of learners in these schools maximise the advantage of their learning through the provision of relevant teaching and learning materials and paying high school fees to cater for infrastructure and resources. Fortified schools are commonly referred to as formerly white schools and hold privileged status, social and cultural capital. The strategy understood in these sites is that quality education is

achieved with the use of proper infrastructure and teaching and learning materials and therefore invest accordingly. These schools have the right conditions of work for teachers, with small classes, remedial teachers, and counsellors through the high fees (Christie, 2008). These schools are independent of the government and rely on external funding of infrastructure and provision of learning materials.

Exposed sites (public schools) serve the working and poor communities and feature learners who struggle with the curriculum. Christie (2008) argues that learners in lower public schools lack cultural and social capital; and advantage to compete with fortified schools. Historically, public schools were affected mainly by apartheid through the racial classification that resourced schools differently, and as a result of public schools largely depend on the government for the provision of infrastructure, teaching and learning materials (Christie, 2008). Furthermore, these schools struggle to fund themselves or charge school fees because they exist in disadvantaged backgrounds such as rural areas and townships where there is a high unemployment rate.

The features of public schooling from the above, involve infrastructure and learning materials and are used to define the schooling system. As described, schools do not offer the same teaching and learning experience to the communities which they serve. The evidence of protected and exposed sites provided also shows the prevailing inequalities in public schools of infrastructure and learning materials where schools lack infrastructure because of apartheid legacy.

A quintile system is used to categorize schools. The categorizations of Public schools involve five different quintiles, where different quintiles are informed by context and geography. The description of a quintile system is a system used to classify schools for government funding (Corruption Watch, 2013). The rates inform the quintile to which the school is categorised of unemployment, income, and illiteracy of the school's surrounding area. The quintile system was part of the National Norms and Standards (1998). It was introduced to improve equity in education as a lack of funding can hinder the quality of education in South Africa, where the majority of learners face the issues of poverty and unemployment from their homes (National Norms and Standards, 1998).

Quintiles 1 to 3 comprises of 60% of schools in the country which are primarily in rural areas and townships. Quintile one public schools are generally no-fee schools and

receive approximately R1316 from the state for each pupil annually to cover for learning materials and other operating expenses of the school. The operating costs of school involve water and electricity, which is not enough considering the duration of the year, inflation, and the day to day maintenance of the school (Nkosi, 2018). Quintiles 4 and 5, comprise only 40% of the country's schools and are mainly located in advanced communities such as urban areas. These are fees-paying and most well-resourced and advantaged public schools. They receive fees and donations from parents and minimal state funding (Nkosi, 2018). Quintile 4 schools receive R660 per learner annually, while quintile five schools only get R228 financing of the state. This funding is used together with school fees and external donations from parents and sponsors. An expectation from Quintile four and five schools is to supplement their state funding by charging school fees and raising funds (Corruption Watch, 2013).

As already mentioned, the most impoverished schools receive seven times more funding per learner than the most affluent schools (Bush and Heystek, 2003). This approach is justifiable to address historical inequalities. Still, it also increases pressure on the governing bodies of the schools in the top two quintiles to replace the 'lost' income through fees or other fundraising activities. The outcome is substantial variations in fee levels at different schools, making it more challenging to achieve the goals of equity and equality. The wealthier schools can protect their privileged position through high fees while the positive discrimination in state funding cannot compensate for the substantial differences in fee levels (Bush and Heystek, 2003).

Christie (2008) argues that there are different views on why schools are unequal. Firstly, from a sociological perspective, the history of schooling in South Africa was to socialize children into the societal norms and values and build the social cohesion for apartheid purposes. Schools were introduced to prepare students for different forms of work and offer skills and knowledge necessary for participation in slavery and modern economies. For instance, during the apartheid era, black learners in public schools were trained to become slaves to white people because they were deemed inferior. White learners were taught to become managers and supervisor to black workers (Carrim, 2001). In the Marxists view, schooling is a tool used by those in power to perpetuate inequalities. They argue that schools appear to offer equal opportunities to all students. Still, in the real sense, they reproduce inequalities and paint a picture

that biases are healthy and only those with cultural capital access good quality education (Christie, 2008).

In South Africa, the association of quality teaching and learning is with well-resourced schools. Resourced schools were people in the township attempt to make efforts to send their children to better quintile 4 and 5 public schools and independent schools. Parents hope that if they take their children to better schools, they will receive a better education than the one offered in lower public schools (Corruption Watch, 2013). Infrastructure and learning materials are readily made available in independent schools, unlike in poor schools. That availability of infrastructure and learning material accelerates quality education, “School infrastructure and learning materials are one of the five dimensions contributing to quality education and therefore a necessity in all schools” (UNICEF 2002, 2005).

What would this mean for lower quintile public schools in post-apartheid South Africa? From the above discussion, infrastructure and learning supporting materials are basic needs required to accelerate quality teaching and learning and therefore necessary.

From the evidence of Norms and Standards for Infrastructure in the South African Schools Act (1996), both infrastructure and supporting teaching and learning materials contribute to quality teaching and learning in the classroom, and the lack of it, therefore, has potential to hinder quality education to learners. Christie (2008) argues that the total of teaching and learning materials available in lower public schools should be complementary to the educational efforts and goals. For instance, every learner in every school should have stationary, a chair, and a desk to assist them to have a good learning experience. No learner should be disadvantaged because of their disadvantaged backgrounds, however the “right to basic education…” (The Republic of South Africa, 1996, p. 12) of all children should be highly maintained as per the Constitution of the Republic of South Africa.

Given the inequalities in public schools (fortified & exposed sites), I take a position that recognition of equal rights to education and provision of school infrastructure and learning materials be made in public schools. Learners in public schools should not be disadvantaged because of their home backgrounds but be afforded equal rights to education like learners in advanced schools. The state should ensure to provide necessary infrastructure and supporting learning materials to help the process of

learning as mandated by the policy, “the norms and standards for school funding contemplated… must (i) set out criteria for the distribution of state funding to all public schools fairly and equitably” (South African Schools Act, 1996, p. 44).

2.2 INFRASTRUCTURE, LEARNING MATERIALS, QUALITY OF TEACHING AND LEARNING AND PUBLIC SCHOOLING: TRENDS & DEBATES

2.2.1 THE POST-APARTHEID SOUTH AFRICAN EDUCATION STANCE ON INFRASTRUCTURE & TEACHING AND LEARNING MATERIALS

For this section, I will make use of education-related policies, documents, and the constitution to give the stance of the post-apartheid South African education on infrastructure and teaching and learning materials in public schools.

According to the National Education Policy Act (1996), South Africa's democratically elected government inherited one of the world's most inequitable education and training systems. Briefly, unequal education opportunities were fostered mainly through the unequal distribution of education resource inputs that are known to impact on classroom learning negatively. The school infrastructure had historically been one of the most visible indicators of inequitable resource inputs; this includes infrastructure and teaching and learning materials. However, most learners were learning in unsafe buildings; with no electricity, safe water, sanitation, and learning materials and that needed to change (Department of Education, 2008).

Section 29(1)(a) of the Constitution of the Republic of South Africa (1996) guarantees all children the right of access to primary education, excluding tertiary education. It requires the state to adopt reasonable legislative and other measures to realise this right within its available resources progressively, “(b) to further education, which the state, through reasonable measures, must make progressively accessible and available” (The Republic of South Africa,1996, p. 12).

From the above, the stance of the South African Schools Act (1996), as per the Constitution of the Republic of South Africa (1996) is unequivocal on making available funding to ensure the right to education of all children. The act stipulates in section 34(1) that “the state must fund public schools from public revenues on an equitable

basis to ensure the proper exercise of the rights of learners to education and the redress of past inequalities in education provision" (South African Schools Act, 1996, p. 44).

Given the Constitution of the Republic of South Africa, the South African Schools Act (1996) aims to have a new national system for schools which will redress past injustices in educational provision and provide an education of progressively high quality for all learners. It promises to lay a strong foundation for the development of all learner's talents and capabilities and advance the democratic transformation of schools and do away with unfair discrimination and intolerance. South African Schools Act (1996) acknowledges the apartheid legacy and the possibility of change in schools to maintain the right to education for all children.

Moreover, the importance of safe school infrastructure is also made explicit in the National Development Plan (NDP), the South African Government's Vision for 2030. The policy aims to ensure safe and equitable access to quality education for all children in South Africa. Furthermore, the Norms and Standards on School Infrastructure (2013) made a provision to upgrade and maintain universal access in all schools. The universal access includes but not limited to; clear floor area ramps with regulated gradient heights and spacing; proper sanitation, proper notice boards etc.

The National School Safety Framework (2016) is a framework that ensures health, infrastructure, occupational health, disaster risk management and creates a conducive and supportive learning environment for teachers and learners. Section 8 of the Occupational Health and Safety Amendment Act (1993) puts the responsibility on the employer in this context would be the state, to ensure that the teaching and learning environment is safe, conducive and free of danger (Department of Education, 2017).

As shown above, equality and safety are one of the principles enshrined in the Constitution of the Republic of South Africa (1996). And therefore, equality and protection of teachers and learners should be held to high esteem.

While the state seeks to translate the policies to public schools, it is confronted with a massive challenge of provision and funding (School Infrastructure and Security Guidelines, 2017)**.** The following section then will focus on local and global trends on infrastructure, teaching and learning materials in public schools.

2.3 TRENDS AND DEBATES ON INFRASTRUCTURE, TEACHING AND LEARNING MATERIALS AND QUALITY TEACHING AND LEARNING.

Looking at the local debates and trends in South Africa on infrastructure and supporting learning materials, the argument is that there are still many schools without toilets, electricity, desks, and chalkboards. A study recently commissioned by Marishane (2013) showed that despite the state's efforts in ensuring equality in education spending per learner the quality of infrastructure at school level remains highly unequal. Many learners do not have access to facilities such as computer centres and libraries. There are severe problems with the provision of support materials, such as school stationery, and with capital projects, including school maintenance (Marishane, 2013).

The research that was done by Hendrick (2012) in the Eastern Cape showed that most schools need clean water for drinking, functioning toilets, and classroom furniture, mostly desks. Hendricks (2012) argues that learning materials are also absent in schools where teachers teach without reading materials. Textbooks are essential forms of material provision and must compliment and the teacher's knowledge to be practical (Hendricks, 2012). He further posits that reading materials are crucial to learner's literacy development. Unfortunately, over 90% of government schools nationally lack textbooks and libraries, which is very problematic for the enablement of pedagogical access. The above shows that government policies for funding and provision are not translated in lower public schools.

In November 2013, the Minister of Basic Education, Angie Motshekga, published legally binding Norms and Standards for School Infrastructure (2013). And it was to emphasise that every school should have; water, electricity, internet, working toilets, safe classrooms with a maximum of 40 learners, security, libraries, laboratories, and sports facilities (Department of Basic Education, 2013). A year later, the report from the Republic of South Africa National Planning Commission (2014) claimed that there are still many schools without toilets, electricity, desks, power, and chalkboards. Further investigations were done by, the National Education Infrastructure Management System (NEIMS, 2014) and the following report detailing statistics on the

lack of teaching and learning materials in public schools across the country was published. The report noted that of the 24 793 public schools in 2014:

- Three thousand five hundred forty-four schools do not have electricity, while a further 804 schools have an unreliable electricity source.
- Two thousand four hundred two schools have no water supply, while a further 2611 schools have an unreliable water supply.
- Nine hundred thirteen schools do not have any ablution facilities, while 11 450 schools are still using pit latrine toilets.
- Twenty-two thousand nine hundred thirty-eight schools do not have stocked libraries, while 19 541 do not even have space for a library.
- Twenty-one thousand twenty-one schools do not have any laboratory facilities, while 1 231 schools have stocked laboratories.
- 2 703 schools have no fencing at all: and
- Nineteen thousand thirty-seven schools do not have a computer centre, while a further 3 267 have a room designed as a computer centre with no computers.

The above statistics identified as a prevailing crisis. Given the massive inherited inequalities in learning materials and infrastructure in public schools, recent studies show that there is a link between the physical infrastructure learners where are taught, and teaching and learning effectiveness, as well as student learning outcomes. The physical infrastructure, such as school buildings influences student achievement and teacher attitude toward school. Extreme poor infrastructure and teaching and learning materials are found to increase dissatisfaction, reduce concentration span, increase fatigue and the deterioration of work patterns, and affect student learning achievement (Hendricks, 2012).

Upon research done in South African schools, Asmal & James (2001) also found that schools with excellent infrastructure and learning materials for educators showed enormous learner achievement growth. And that there is a definite link between learning outcomes and infrastructure in which teaching, and learning take place. They further argue that access to quality education is dependent on the entrance to financial resources (Infrastructure, learning materials) and these remain unequally distributed.

Johnson et al., (2012) also argued that school infrastructure has potential to affect teachers' ability to teach well, their sense of agency, their satisfaction with their role and their willingness to stay in their school. They argue that teachers who teach in favorable work environments are more satisfied and less likely to plan to transfer or leave the profession than their peers in schools with less favorable conditions. Importantly, they argue that the context of work appears to matter not only for teachers but also for learners. When Johnson et al., (2012) compared schools with similar student contexts and performance, those with better infrastructure for teachers showed more exceptional student achievement.

With that, they argued that the school's workplace should capitalize on the following fundamentals: facilities (Infrastructure), expertise (qualified teachers) and resources (teaching and learning materials). The extent to which teachers work in a safe, clean, and well-maintained and a school environment that enables teachers and learners to be to be productive. Teachers are recognized as educational experts in schools. They need the flexibility to make professional decisions about teaching and access to sufficient instructional and learning materials, technology in school (Johnson et al., 2012).

In February 2019, the minister of finance announced to improve the education system of South Africa through the allocation of over R30 billion, that will be allocated to building new schools and maintain schooling infrastructure in public schools (Budget speech, 2019). However, a high number of South African schools still lack vital learning and teaching materials. South Africa spends over 18.5% of its annual budget on education. Yet, the education system remains poor. The critical elements of the physical teaching and learning environment remain insufficient and inequitable across schools. Modisaotsile (2013) argues that the quality of education remains very poor, and the output rate has not improved in public schools, shortage of resources in education despite the substantial budgetary commitments by government.

With this, Spaull (2013) argues that there is an on-going crisis in South African education, and the current system is failing the majority of South Africa's children, where several schools every year battle to get attention from the provincial department about their severe infrastructure problems. Spaull (2013) argues that schools seek the care to fix run-down mud buildings that sometimes do not have roofs or structured

classrooms. And clean water and adequate chairs and desks for the number of learners attending the countryside and public schools.

Msibi and Mchunu (2013) argue that what causes inequalities such as lack of teaching and learning materials and poor infrastructure in public schools is purely lack of professionalism. They say that, historically, professionalism was only encouraged in white schools. At the same time, the expectation was not the same from African teachers, and there was an unequal distribution of learning materials and infrastructure. The apartheid government offered black teachers no teaching and learning resources to work with as professionals, and this trend has been kept presently in public schools. Bush and Heystek (2003) point out that the introduction of fees in South Africa was initially partly to allow the previous 'white' schools to maintain quality in their schools.

From the global discussions, the findings reveal that school infrastructure is more important to teachers than salaries and learners' contexts. These discussions can also apply to the South African context. Horng (2009) argues that teachers are more concerned about where they work, as this further translates how well they will work that salaries. The understanding shared here is that when teachers work in an excellent teaching environment, they will be able to carry out their work without any difficulty—for instance, having classroom and chairs to maintain order in the school.

According to Murillo and Roman (2011), the understanding of infrastructure is both essential services and as a physical facility for teachers and learners. The association of infrastructure is with student achievement that when learners have vital services such as drinkable water, the supply of electricity and connectivity, they learn better, and the services meet their needs. The study of Murillo and Roman (2011) was done in Latin American schools, and the findings show that most schools lacked water and electricity. Murillo and Roman (2011) found that "the availability of specific facilities dedicated to the learning-teaching process also makes the different" (p. 39). With this, they argue that infrastructure should be the number one main school focus as this is a service to learners and infrastructure impact the classroom learning.

Branham (2004), raised fascinating points that poor infrastructure has a negative influence on teachers. He argues that, for a school which has no toilets for learners will usually have no toilets for teachers either and if children get wet when the roof

leaks, so will teachers. He concluded that poor infrastructure and learning materials affect the willingness of teachers to stay in the school and to some extend the effectiveness of teaching and learning in the classroom.

Mahan et al., (2010) found that most public-school teachers experience continuous episodic stressors in their work environment, including a lack of safety in the school infrastructure. However, school infrastructure stressors were a prominent health and safety issue for secondary school teachers, affecting the delivery of the lesson more directly. Mahan et al., (2010) found that the work environment (infrastructure) stressors led to adverse psychological consequences such as anxiety and depression among healthy newly educators.

Furthermore, according to the Centre for Evaluation and Education Policy Analysis (2015), school infrastructure can have effects on teachers and learners. The centre reported that school infrastructure could affect the teacher's results and efforts while it can also affect the behaviour, engagement, and growth in achievement. The Centre for Evaluation and Education Policy Analysis (2015) argued that the physical and emotional health of teachers and learners depend on the quality of physical context of the school, which establishes the safety and health.

According to the Centre for Evaluation and Education Policy Analysis (2015), there are five primary facets of school facilities: air quality, noise, lighting, and classroom space that can affect teachers and learners.

For air quality, Centre for Evaluation and Education Policy Analysis (2015), reports that poor indoor quality can have effects on learners with asthma and breathing difficulties, and that could affect the performance of learners. Moreover, viruses, bacteria that contribute to childhood disease are typically in schools with poor ventilation. So, classroom equipment such as flooring materials, paints and cleaning materials can also affect learners if the ventilation system of the school is weak (Centre for Evaluation and Education Policy Analysis, 2015).

The report argues that noise can affect teachers and learners. The report claims that schools that have classrooms with less noise externally are positively schools with higher student attainment—the schools' context matters. The management of the school must deal with external noise contributes to the teaching and learning experience of learners. (Centre for Evaluation and Education Policy Analysis, 2015).

With lighting, the report claims that natural light and electricity has positive impacts on the students' learning and necessary for visual learners. Lastly, on classroom space and size, the report claims that overcrowded classrooms decrease student engagement and level of education. Alternatively, classes with enough space, furniture and small size of learners allow learners to work in a team, problem solve and communicate among themselves. Lastly, enough space reduces auditory and visual interruptions and positively relate to quality learning in the classroom.

2.3.1 CONTRASTING DEBATES ON INFRASTRUCTURE AND TEACHING AND LEARNING MATERIALS.

Currently, in South Africa, there are over 510 inappropriate school structures across the country, 2401 schools that have no water on-site, 3544 that have no electricity, and 913 that have no ablution facilities (Parliamentary Monitoring Group, 2015). The education system is mostly in crisis, and the legacy of poor infrastructure and supporting teaching and learning materials remains post-apartheid.

The argument on the effects of infrastructure and teaching and learning materials has contrasting views from different authors in the field of education. According to Modisaotsile (2013), there is strong evidence suggesting that some poorly resourced schools nevertheless achieve good results because of strong leadership given by principals who insist that teachers come to school punctually and teach to their best abilities. Modisaotsile (2013) argued that the presence of infrastructure and learning materials do not guarantee quality education and teachers can find means to compensate for the lack of infrastructure.

Probyn (2012) argues that teaching and learning materials do not guarantee better results as every resource should be translated into practice for it to produce high levels of academic development. What this means is that teachers must possess the knowledge of using resources effectively. The challenge comes when teachers lack the knowledge to implement resources. Furthermore, Probyn (2012) argues that there are many schools known as resilient schools that work in lack of proper school infrastructure and supporting learning materials and still thrive and produce excellent results at the end of each year. The focus of these schools is student attainment.

According to Christie and Potterton (1997), resilient schools refer to schools that manage to achieve good school outcomes in challenging contexts where there are poor infrastructure and lack of teaching and learning materials. Resilient schools thrive on producing excellent results and providing a supportive framework for learning regardless of difficulties. Furthermore, resilience has the disposition to identify and utilise personal capacities, competencies and assets in a specific context when faced with perceived adverse situations. Resilient schools overlook the context of not having the infrastructure and learning materials. Spaull (2013) argues that resilient schools (rural and township schools) struggle to get the attention from the government for funding and therefore, teach in the absence of infrastructure and teaching and learning materials. It is not by choice but circumstances.

Adding to this counter-argument Theron and Theron (2010) argue that academic achievement among disadvantaged schools is possible. They found that learners in disadvantaged schools regardless of the support from the government, they are goal-oriented and highly motivated by their backgrounds to do well in school. These learners may lack financial support and provision of learning materials in school; however, they rely on emotional support that they receive from home, community, and teachers. With this, Mampane and Bouwer (2006) also investigated that some quintile one schools prove that it is possible to teach and learn in poor schools where there is no electricity, furniture, and learning materials. However, the learning experience cannot be measured.

2.4 INFRASTRUCTURE, LEARNING MATERIALS, QUALITY OF TEACHING AND LEARNING AND PUBLIC SCHOOLING: WHERE TO FROM HERE?

Given the above discussion of infrastructure and supporting learning materials, I affirm for the fair opportunity and provision of proper infrastructure and supporting teaching and learning materials in public schools. And as far as the post-apartheid South African schools are concerned, I maintain that regardless of apartheid struggle the right to education of all children, without discrimination needs to be realised (Mathebula, 2018).

I reject the perpetual of inequalities evident in schools that deny equal access to education in lower public schools. As argued by different scholars, differences in

schools are visible in different necessary infrastructure and teaching and learning materials found in fortified and exposed schools.

Gardner (2012) argues that the support of learning materials is essential and need to be made available to schools for the benefit of learners and this is how. Gardner (2012) argues that learners perceive and learn through multiple intelligences or learning styles. Intelligence needs the support of learning materials. Multiple intelligences refer to modalities of viewing intelligence in different ways. Intelligence is not general but varies from learner to learner, and we should not assume that learners do not need learning materials in their classroom learning experience. The multiple intelligences are as follows but not limited to; logical-mathematical, spatial, bodily-kinaesthetic, and musical. Gardner (2012) use various intelligence to justify how supporting learning materials in schools are essential for learner's quality learning experience.

Logical-mathematical intelligence refers to learners who have an affinity for numeracy. The intelligence involves numbers, logic, and calculations. Briefly, these learners will need the support of teaching and learning materials such as calculators, mathematical textbooks, workbooks, and stationery. Not having such learning materials can hinder them from performing best in their intelligence (Gardner, 2012). Relevant to this, the South African Schools Act (1996) section 14 stipulates that all schools must have a laboratory and necessary apparatus following the specific curriculum needs of a school to make it possible to conduct experiments. So, this would mean, schools should have relevant resources to cater to the mathematics curriculum.

The spatial intelligence refers to learners who learn concepts and grasps content knowledge visually (Gardner, 2012). These learners need the teacher to make use of the board, and chart, colour, mind maps when teaching and explaining concepts. Learners in this intelligent learn effectively with the use of appropriate teaching and learning materials. Finally, the bodily-kinaesthetic intelligence refers to learners who learn through movement, crafts, and relevant science apparatus. These are learners who need a sensory learning experience to learn effectively (Gardner, 2012).

Furthermore, the Department of Education (2008) found out that "Good lighting improves students' ability to perceive visual stimuli and their ability to concentrate on instruction. A colourful environment improves students' attitudes and attention span,

student and teacher mood, feelings about school, and reduces absenteeism" (Department of Education, 2008, p. 5).

The list of intelligence is endless and continuously revisited; however, from the above learning styles, it is evident that learners need the support of teaching and learning materials to access pedagogical knowledge and learn effectively. Learning materials are not a luxury; however, a need to assist teachers and learners in their teaching and learning experience. From Gadner's (2012) work Learners learn differently, and relevant teaching and materials are necessary to accommodate all learners. The same can be said for teachers and in this matter. Teachers need essential tools such as laptops, Wi-Fi, teachers' guides, and associated equipment necessary for their teaching to teach effectively and accommodate all learners with different intelligence. The provision of teaching materials should be made.

According to a social theorist, Bourdieu (1990) schools depend heavily on the cultural capital or resources that give learners advantages at school. Cultural capital refers to relevant leaning materials, extra lessons, and financial support. In contract, for learners who do not the cultural capital, especially learners in quintile one public schools have a difficult time learning and competing with others in private schools. What learners bring from their home makes a difference in their learning experience and achievements at school. Christie (2008) argues that if we treat schools equally, then we perpetuate inequalities as public schools are different, and learners in public schools need more support of infrastructure and learning materials. Some learners heavily rely on the state for quality education for learning materials such as textbooks and stationery (Republic of South Africa National Planning Commission, 2014). And it is, therefore, necessary that the state fund public schools and ensure to protect the right to education of children.

By right, no teacher should work under stressful conditions in South Africa. Stressful situations perpetuate inequalities in the sense that such abnormal environments are normalized and seen to be right. The state must provide school infrastructure and useful learning materials to smoothen the process of quality education (South African Schools Act, 1996). In my opinion, there is an underestimation of motivated and dedicated teachers. Some teachers in poor schools' work in poor infrastructure in the

name of they are passionate about their work. According to Maslow (1954), there are psychological effects of working in poor infrastructure.

Resilient schools are not far from schools that were overwhelmed by the difficulties of their environments due to apartheid. We should also take to account that resilient schools were schools excluded from government provision since apartheid and the culture is still persistent (Christie, 2008).

The South African government must recognise the equal rights to education for all children and not discriminate. The primary purpose of the state is to protect the right of knowledge of all learners (Mathebula, 2018). The state must make available funds for school infrastructure and supporting learning materials and distribute teaching and learning materials on the scale that meets the learners and teachers in public schools to teach and learn. “The distribution of wealth and income in a society must be equal and political positions should be accessible to all” (Mathebula, 2018, p. 95).

A focus on equality is essential if we are to improve education and substantial support from the government, especially in more impoverished schools where continuous support is often scarce (Bush and Heystek, 2003). A sound education system is crucial, not only for ensuring that the citizenry is well educated; but also, for human development and the maintenance of socially responsive economic and political systems (Modisaotsile, 2012).

My strategy is that public schools must have appropriate infrastructure and have access to teaching and learning materials as promised by the relevant policies such as the South African Schools Act (1996) and others mentioned above.

With the provision of infrastructure and teaching and learning, this would mean that teachers also have a responsibility to maintain the school’s infrastructure and learning materials. According to Marishane (2013), adequate infrastructure management in schools refers to the management of the provision, use, maintenance, and disposal of a school’s physical resources (equipment, buildings, and grounds), with due consideration given to their educational value and value for efficiency, and effectiveness. Maintenance would mean as the state provides infrastructure, teaching and learning materials teachers and learners will need to make use of the

infrastructure, teaching and learning materials efficiently and be responsible to maintain it.

3. THEORETICAL FRAMEWORK

This section will present Maslow's (1954) theory of Hierarchal needs and the Seven multi-models of education theory by Cheng and Cheung (1997), respectively. The findings of this study will be analysed using these theories.

3.1 MASLOW'S THEORY OF HIERARCHY OF NEEDS

Maslow's hierarchy of needs is a theoretical framework borrowed from psychology. This theoretical framework evaluates human needs and how individuals are psychologically affected when their basic needs at the workplace are not met. The framework's approach encourages a workplace environment that enables employees or its members to fulfil their potential and be productive (Maslow, 1954).

A need can be described as a necessity or something that people cannot survive without, such as food and shelter. According to Maslow's theory, there are 8 different levels of needs, but for the purpose of this study, only three levels will be discussed. The first two levels consist of physiological, and safety needs. These are identified as basic needs which relate to Section 8 of the Constitution of the Republic of South Africa. This emphasises that every child has the right to essential nutrition, shelter, primary health care services and social services (1996). These are fundamental human rights.

3.1.1 PHYSIOLOGICAL NEEDS

Physiological needs refer to the biological requirements essential for human survival. Physiological needs include air, water, shelter, and warmth. Maslow (1954) argues that physiological needs must be met for the human body to function effectively. In a school setting, physiological needs refer to the school's infrastructure and facilities which include water, air, sanitation, and warmth; all necessary and essential for teachers and learners to function effectively. Air is necessary for breathing; therefore, classrooms should be conducive for effective ventilation. Considering the aforementioned, it can be argued that learners need clean drinking water, proper sanitation, and shelter for their survival in a school environment. It can be deduced

that the lack of appropriate infrastructure in schools has the potential to cause discomfort and demotivate learners and teachers from being productive.

3.1.2 SAFETY NEEDS

Safety refers to a condition or state of being protected from potential danger, injury, or risk (Maslow, 1954). Safety needs allude to people's wellbeing, security, and stability. People expect protection from the occupational environments they inhabit. When people feel unsafe, or in danger, they tend to become uncomfortable, and this affects how they work. Safety needs imply that schools need to provide a safe learning environment with appropriate security and stability for teachers and learners.

Maslow (1954) states that physiological and safety needs dominate people's behaviour and performance. It is, therefore, the government's duty as the employer to ensure a safe school environment that promotes productivity. Failure to meet these needs may affect the quality of teaching and learning in the classroom.

3.1.3 COGNITIVE AND AESTHETIC LEVEL OF NEEDS

The last level of needs argued by Maslow (1954) is the cognitive and aesthetic level. Cognitive needs are referred to as higher-order needs. They involve artistic pursuits and intellectual pursuits of knowledge. Artistic pursuits are natural or inborn creative skills such as drawing, painting or dramatic arts. Learners have innate talents and need to pursue them. Intellectual pursuits refer to a need to pursue and explore knowledge, balance or nourishment that lead to mental stimulation and cognitive engagements (Maslow, 1954). Examples of this can be learners who have an interest in chess and problem-solving subjects like, Mathematics, Geography and Business studies.

Briefly, "In physical Geography, we examine natural processes and features, including the atmosphere, landforms, and ecosystems. All geographical phenomena have a spatial dimension and operate in a continuously changing environment using mapworks and atlases (Department of Basic Education, 2011, p. 8)". From this it can be understood that Geography is a practical subject with a depth content knowledge and the support of infrastructure and learning materials is necessary.

Furthermore, learners who demonstrate and articulate the need and desire to explore things and create art need the support of appropriate learning materials for their learning pursuits such as painting brushes, history books, maths textbooks or chess boards. This level of needs proves that learners have different cognitive and artistic needs that could be explored in various disciplines and should be supported accordingly through the provision of learning materials.

According to Maslow's theory, excellent infrastructure and learning materials are a basic need for both teachers and learners to ensure security and facilitate the learning process. The availability of infrastructure and learning materials then, supports the teaching and learning in the classroom and eases the learning process. The physiological and safety needs level will require the provision of infrastructure, while the cognitive level needs the support of teaching and learning materials. All levels of needs should be met to ensure quality teaching and learning and to maintain the wellbeing of teachers and learners. In conclusion, Maslow's theory supports the welfare of teachers and learners and further advocates for a smooth teaching and learning process.

3.1.4 LIMITATIONS OF THE THEORY

According to Chapman (2008), Maslow's theory has limitations. Chapman (2008) argues that not everyone follows the theory's hierarchy of needs. According to Chapman (2008), the hierarchical order of needs may differ for everyone. He argues that cognitive needs may be more prominent than safety needs for some individuals.

Furthermore, Chapman (2008) explains that different needs outside the hierarchy might dissatisfy some individuals. Therefore, the authority of requirements for each level of needs may not be as pure as it appears. Despite Chapman's criticisms, Maslow's theory offers a good understanding of what may affect individuals to be unproductive and deliver as expected. Chapman (2008) only criticises the structural order of the hierarchy and not its contents. Therefore, the limitations, as suggested by Chapman, can be disregarded as the contents of Maslow's theory help in understanding the psychological needs of individuals and how they can be met.

3.2 SEVEN MULTI-MODELS OF QUALITY OF EDUCATION THEORY

The seven-models of quality education theory by Cheng and Cheung (1997) attempts to simplify the complex nature of quality education and claims that “quality education is a multi-dimensional concept and cannot be easily assessed by only one indicator” (p23). The statement above means that quality education is a conception made of elements in the input and output process. According to Cheng and Cheung (1997), the theoretical framework of education offers manageable strategies for achieving quality education in schools.

The seven models of quality education include the goals and specifications model; the resources input model; the process model; the satisfaction model; the legitimacy model; the absence of problems model; and the organisational learning model. This study will only consider the resource-input model and process-model.

3.2.1 RESOURCE-INPUT MODEL

According to Cheng and Cheung (1997), the resource-input model presents quality resources, infrastructure, and financial support as necessities for quality education. This model assumes that the input of resources is necessary to enable quality education. In this model, the quality of teaching and learning is a natural result of quality resources such as financial support, better teacher and learner ratio, infrastructure, and teaching and learning materials.

Furthermore, the resource-input model assumes that quality resources are necessary for schools to achieve objectives and provide quality education (Cheng and Cheung, 1997). From this, it can be deduced that the desire to produce quality education needs an input of resources. However, resources are not only limited to learning materials but extend to excellent infrastructure, qualified teachers, and financial support. This model implies that the capacity of the school to provide quality resources represents the potential teaching and learning process the classroom will have. When schools lack resources such as classrooms, textbooks and electricity, the quality of the teaching and learning process might be affected. Lastly, this model is useful if the connections between quality of inputs and outputs are clear (Cheng and Cheung, 1997).

3.2.2 PROCESS MODEL

The process model refers to the quality of the teaching and learning process in the classroom. It involves a fruitful relationship between process social interactions, classroom learning experiences and educational outcomes. It is a smooth internal institutional process which converts resource inputs into performance and enables staff to perform teaching tasks effectively and students to easily gain fruitful learning experiences (Cheng and Cheung,1997, p. 25). This model explains how learners and teachers relate and interact effectively with one another during the teaching and learning process with the use of learning materials. In this model, quality of education is defined as a smooth and healthy internal process that comes through converting resource inputs into performance.

The belief found in the process model is that the availability of proper infrastructure and resources contribute positively to the quality of teaching and learning in the classroom (input). The process to quality teaching and learning involves teaching methods, teaching strategies, classroom management and learning experiences (Cheng and Cheung,1997).

3.2.3 LIMITATIONS OF THE THEORY

The seven multi-models of quality education have their strengths and weaknesses and emphasise on different aspects to pursue quality education. One disadvantage of the resource- input model may be that “the acquired resources may become wastage if they cannot be used efficiently to enhance the quality of process and outcomes” (Cheng and Cheung,1997, p. 25). With the process model, the classroom experience with infrastructure and learning materials may not be smooth, and teachers may have difficulties monitoring processes and fail to bring out the quality in the end. Another limitation to note about the theory is that the applicability of any of these models is not universal and contextual conditions often limit it (Cheng and Cheung,1997).

CHAPTER SUMMARY

Briefly, this chapter looked at the different meanings of infrastructure, teaching and learning materials and the quality of education. The trends and contrasting debates of the above phenomena were looked at, together with the South African educational

stance of infrastructure and leaning materials through policies. From literature it was implied that poor infrastructure has a negative influence on teachers and the learning experience of learners.

Looking at both the theoretical framework of Maslow's (1954) and Cheng and Cheung (1997) multi-models, Maslow's theory speaks to effects infrastructure and supporting teaching and learning materials. The multi-model theory views infrastructure and helping materials as requirements to attain quality education. Both approaches advocate for the provision of infrastructure and supporting materials in schools. I believe that making use of these theories may produce the knowledge of understanding the effects and the relationship between school infrastructure, learning materials and quality education.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

INTRODUCTION

This chapter will present the research methodology, data collection instruments and ethical clearance methods used to conduct the study. It will also present a discussion of the research paradigm, methodology, research sampling, data analysis, ethical issues, and trustworthiness. The research design helped to ensure that the research questions are answered more effectively.

3.1 RESEARCH PARADIGM

A paradigm refers to a collection of beliefs held by a group of scholars or a school of thought. It is a pattern of the idea of how people view the world and has accepted as truth (McMillan, 2012). This study uses the interpretivism paradigm. Interpretivism refers to offering a local orientation of an event as opposed to a generalised and global direction. The interpretivism paradigm is a culture-bound framework that studies the way individuals act in a specific context (Feinberg & Soltis, 2009, p. 90).

“The position and stance of interpretivism in relation to ontology and epistemology is that interpretivists believe that reality is multiple and relative” (Hudson and Ozanne,1988, p. 3). Furthermore, Interpretivism states that the construction of the world is through the interaction of individuals, each with their own subjective experiences and perceptions (Scott, 2013, p. 127). The knowledge found in this paradigm is socially constructed and subjective rather than objective. The researcher remains open to new knowledge throughout the study and allow it to develop through the help of participants (Hudson and Ozanne,1988, p. 3). Briefly, Ontology refers to a view of nature and existence in a social research whilst epistemology refers to the nature of knowledge and ways of learning about social reality (Hudson and Ozanne,1988).

Interpretivism considers the use of empathetic interpretive techniques that involve the sequence of hermeneutic acts to understand actions and meaning of individuals (Scott, 2013). The paradigmatic stance engages with participants through interviews and observations to attempt to understand the participants’ experiences to build its study.

The interpretivism paradigm is practical and relevant to the aim of the research study which is to, investigate the effects of infrastructure, teaching and learning materials in Geography classrooms and the relationship, if any, between infrastructure &learning materials and the quality teaching and learning. In the interpretivism paradigm, the nature of research is subjective and does not assume any understanding to apply to every context. In applying this paradigm, participants will be allowed to share their experiences of having or not having infrastructure and learning materials in their school. This will further enable participants to respond to the research questions in their respective contexts, which will be of significance to the objectives of the study. Interpretivism links with the objectives of the study which is to explore the experiences of Geography teachers and learners. As already discussed, interpretivism focuses on subjective experiences and unique meanings of individuals.

Furthermore, McMillan (2012) argues that one shortcoming of interpretivism is that it assumes that by understanding the contexts, perceptions and beliefs of individuals, their meaning could be automatically interpreted. The assumption is untrue and can be misleading as researchers themselves could misapprehend people's situations. Participants will be allowed to share their own experiences and meanings to prevent the assumption.

3.2 RESEARCH METHODOLOGY

The qualitative research methodology is a process of research from the comprehension of a problem into the formulation of a narrative case (Creswell, 1998, as cited in Fouche, 2005). It is a study comprising of a single setting or a small number of individuals. The qualitative methodology is concerned with fully understanding the essence of a phenomenon, and this is achieved through intensive individual interviews and involving participants in a more direct manner (McMillan, 2012). In qualitative research, the emphasis is on natural settings, understanding and verbal narratives.

A qualitative methodology is closely linked to interpretivism paradigm. The methodology followed in interpretivism aims to create external realities rather than creating the objective study (Black, 2006). This methodology is useful for this study as this study aims to explore the experiences of teachers and learners on the effects of

infrastructure, teaching and learning in Geography classrooms, using questionnaires and interviews.

A multiple case study analysis was conducted to gain an understanding of the infrastructure and supporting materials in quintiles 1 and 4 public schools. According to McMillan (2012), a case study is an in-depth analysis of a single encounter, a no experimental experience or object and is defined by context and time. According to McMillan (2012), using a case study can be advantageous to a qualitative study. Firstly, it allows the researcher to collect more data that would not be easy to obtain using other designs. Secondly, the data in case studies tends to be richer and have a greater depth to the study. Case studies are not only limited to scientific experiments only. Furthermore, case studies can help the researcher to grasp ideas and produce content that can be used for later hypothesis knowledge.

This study presents a case of two public schools with different infrastructure and learning materials and focuses on exploring the different experiences that come with different infrastructure and learning materials in schools. The challenges that Geography teachers and learners face without the use of infrastructure in their teaching and learning will be the focus of the study. Furthermore, the study aimed to investigate the participants' understanding of the relationship between infrastructure, learning and teaching materials, and quality teaching and learning.

3.3 RESEARCH SAMPLING

Sampling refers to a process used to select a portion of a population for a study (Maree, 2011). According to McMillan (2012), the purpose of sampling in qualitative studies is to obtain a number or group of people who will represent a larger group of people and provide targeted responses. There are different types of sampling, and for this study, purposeful sampling was used, which is based on participant selection as participants can be informative and bring insight into the study topic. The researcher makes the judgement to include the participants in the study. (McMillan, 2012).

Two public schools in the Gauteng province were selected for the study. One classified as a quintile one school and the other as a quintile four school. Two teachers were selected from each school based on the school profiles provided by the school principals, and four grade 12 learners were selected from each school. The sampling

frame consists of twelve participants. The selection criteria for the teachers was three or more years of experience in teaching Geography. The same sampling criteria was used to select the learners who had studied Geography since grade 10. The purpose of this was to select participants who would have experience in Geography and know what infrastructure, teaching and learning resources are necessary to achieve quality teaching and learning. Geography was selected for this study as one of many subjects that require a daily use of infrastructure, and teaching and learning materials to achieve quality learning. The scope of the study will therefore be limited to infrastructure and learning materials needed in geography. It is important to note that the study is aware that, many other learning areas such as Physical sciences and Mathematics may require the use of infrastructure and learning materials.

3.4 DATA COLLECTION METHODS

The study was conducted through semi-structured and focus group interviews. According to Walliman (2009), semi-structured interviews are a flexible tool with a wide range of applications to offer more productive and more extensive material than other methods of data collection. They allow the researcher to see the world through the participants' eyes and provide interviewees with a platform to share their experiences (Cohen et al., 2011). McMillan (2012) concurs that the nature of semi-structured interviews is flexible and consists of precise questions to get insight into the perceptions of participants and explores issues in-depth. Clear interview questions that allowed participants to share their experiences were compiled for the study. The selected teachers were interviewed separately at an office that was provided for the study.

The learners were interviewed in a focus group. "Focus groups are an effective method for obtaining in-depth information about a concept or issue and learning about people's experiences" (McMillan, 2012, p. 294). The learners were interviewed in a focus group to enable them to express themselves in an open and flexible environment as learners tend to be shy during formal one on one conversations. Each focus group consisted of the four learners from each school, and only a single session of interviews was conducted in each school. The schools provided a private space for the focus group interviews.

The interviews were recorded using an audiotape with the permission of the participants. Audiotapes give an accurate summary of discussions and capture all the answers given as a reference. Researchers can return to the information recorded at a later stage for the write-up of findings (Maree, 2011).

3.5 DATA ANALYSIS

Data analysis refers to organising collected data from participants and sorting it into workable segments (McMillan, 2012). The purpose of data analysis is to discover ideas, explanations, and understandings. “Specific data elements need to be organised and then synthesised to derive the patterns and ideas that will form the basis of the conclusion” (McMillan, 2012, p. 297). Data analysis is, therefore, seen as a process that involves intensive development of the research (McMillan, 2012).

The data collected was analysed thematically based on the research questions. (Cohen et al., 2011). Thematic analysis refers to identifying and interpreting patterns of meaning in quantitative studies. The thematic analysis process involves the process of coding in six stages to create established patterns. The steps include familiarising with data, generating and searching for themes, reviewing themes, defining ideas, and producing the final report (Nowell et al., 2017). The thematic analysis is a qualitative research method that is used in different qualitative epistemologies and research questions. The advantages of thematic analysis include a provision of a highly flexible approach to analyse data and does not require technical knowledge. This method examines the perspective of participants, identifies similarities, differences, and unanticipated events (Nowell et al., 2017).

In this study, themes were created through emic and etic data. Similar phrases, responses and events that stood out were formed into themes. Emic data analysis refers to the information given by participants in their own words, actions, and explanations. Etic data refers to the researcher’s interpretation of the data and is usually illustrated by trends and findings (McMillan, 2012). Furthermore, the thematic analysis involves two stages of the investigation. The evaluative stage is field-driven, and the theoretical stage is knowledge-driven. Both these stages of analysis were essential to show the reoccurring concepts, generate themes, show surprising elements, and confirm current views.

3.6 ETHICAL ISSUES

According to Strydom (2005), when conducting research, some ethical issues should be considered to ensure that the study does not cause harm to the class of participants. Strydom (2005) adds that it is the researcher's responsibility to protect participants and limit the risk of discomfort. The interview times of this study were minimised to at least 30 minutes per session to ensure comfortability, and were guaranteed not to exceed 45 minutes, should the interview overlap. A standard of not asking personal questions that could make participants uncomfortable was maintained. Grade12 learners and teachers work under constrained schedules; therefore, short, and precise questions were prepared for interviews to limit the amount of time they take away from the participants.

The study observed all ethical protocols, and ethical clearance was obtained from the School of Education. Permission from the Gauteng Department of Basic Education was obtained to conduct research at the selected schools. Additionally, informed consent letters underpinned by the principles of autonomy, non-maleficence, and beneficence were issued to all participants (Cohen et al., 2011).

According to Strydom (2005), participants should be made aware that participation is voluntary, and they can withdraw from the research at any time without any penalties. The permission of participants was requested, and they were informed that their participation was voluntary and that they could withdraw from participating in the study if they wish to do so without any penalty. Participants were assured that the information they provided through their responses would be kept confidential and will only be used for research purposes. Research data collected from the participants was kept safely in a locked cupboard at the University of the Witwatersrand. For confidentially and anonymity purposes, the information provided by participants was not exposed to other classes.

It is important to note that confidentiality and anonymity could not be entirely guaranteed for learners as the research took place at the school premises and the participants knew each other However, confidentiality among participants was strongly emphasised. Pseudonyms were used to guarantee the anonymity of the participants

and the participating schools. The pseudonyms used for the two schools were Austin High School (Quintile 4) and Lungisani High School (Quintile 1).

Lungisani High school is situated in Evaton, an undeveloped informal settlement in the south of Johannesburg in Emfuleni Municipality. The school's building is ancient and unpainted. As you enter from the gate, the school has a congested parking space, and some teachers park under trees. Lungisani High school is a small secondary school in terms of physical space and learners are at a disadvantage because there are no fields or enough space for sport activities, a school hall or landscaping. The school seems to have the relevant infrastructure in terms of classrooms, chairs, and a library; however, the infrastructure seems to be unmaintained and outdated.

Austin High school is a fee-paying public school situated in Parktown, a suburb in Johannesburg. The school is consistently rated as one of the best schools in South Africa not only because of the 100% annual grade 12 pass rate but also its excellent infrastructure and sport facilities. The school has an extensive library, internet connectivity and takes pride in sporting activities such as rugby and swimming. This large school has one headmaster, two principals and 50 teachers.

3.7 TRUSTWORTHINESS

Trustworthiness is a demonstration that the evidence for the results reported is accurate, and the interpretation is valid. The research interviews aimed at supporting the integrity of the findings of the research against which data could be verified (Maree, 2011). According to Guba (as cited in Shanton, 2004), four criteria promote trustworthiness in qualitative research. The requirements involve credibility, transferability, dependability, confirmability.

Credibility refers to the implementation of appropriate research methods and developing familiarity with the culture of participants; different types of participants and various sites; frequentative questioning in interviews; description of background; member checks of data transcriptions and a full story of the case study (Shanton, 2004). Credibility deals with the question, "How congruent are the findings with reality?" and tests trustworthiness. This study made use of interview transcripts and questionnaire responses to create an accurate picture of both cases, as well as to provide a detailed description of the context and background of the schools. To ensure

total honesty from the participants, questions that participants found unclear were clarified and elaborated. Another method of confirming the credibility of a study is by asking participants to sign off their transcripts. The participating learners and teachers were asked to read their interview transcripts and sign them off if they agreed that the contents of the transcripts correctly represented their words and intended meaning.

According to Shanton (2004), transferability is a result of the qualitative study understood within the context of the characteristics of a geographical area in which the fieldwork was carried out. Transferability assesses if the findings match with the participants' responses. To ensure trustworthiness, two schools in the Gauteng province were involved. The quintile one school is in an undeveloped informal settlement in the south of Johannesburg known as Evaton. It is a non-fee-paying ordinary secondary school with an average of 1050 learners and 27 teachers. It is a public school attended by black learners from disadvantaged homes. The other secondary school involved was a fee-paying public school situated in Parktown, a suburb in Johannesburg. The school consistently rates as one of the best schools in South Africa and Africa and has a 25:1 teacher ratio. The school is known as a former middle school and a quintile four public school attended by learners from middle-class homes.

According to Shanton, (2004) to address the dependability, the processes within the study should report in detail, as such in-depth coverage. The study's report included research design and implementation. The report contains a description of the on-site execution, the operational aspect of data collection and a description of what was done in the schools to ensure trustworthiness. Lastly, a key criterion for confirmability is the extent to which the researcher admits his or her predispositions. The study's report will describe the methodological approaches that were employed as "Once more, detailed methodological description enables the reader to determine how far the data and constructs emerging from it may be accepted" (Shanton, 2004, p. 72).

CHAPTER SUMMARY

This chapter presented the methodology and the overall research design of the study. The chapter provided an overview of the research methods used to collect data, together with the research processes followed. Qualitative methodology was followed

with the use of a case study research design. The following chapter will discuss the findings from the collected qualitative data.

CHAPTER 4: DATA PRESENTATION AND DISCUSSION

INTRODUCTION

This chapter aims to discuss data at an evaluative level that is to show what sense I am making of the findings. For this section, 'thematic discussion' and 'evaluative analysis' are used interchangeably. A connection between the aims of the study, key research questions and data presentation will be discussed. I will first discuss interviews for teachers, followed by focus groups interviews for learners.

From the finding teachers and learners attempted to respond to the critical research questions and the aims of the study. Teachers were able to engage with the questions asked except for one teacher from Lungisani high school who was shy and in response, gave short answers. Learners from Austin high school were confident in their responses and tempted to go beyond the limited time for interviews that I had to cut them. Learners from Lungisani high school were also shy to share their experiences with infrastructure and learning materials but tempted to respond to the questions asked. Interview questions for learners were simplified to make learners comfortable to be able to share their experiences without any language technicalities.

6.1 SEMI-STRUTURED INTERVIEWS FOR TEACHERS

To make sense of data collected, I generated themes from interview questions and responses of teachers (data presentation), and for each subject, I will give an evaluative analysis. The themes generated for evaluative analysis are as follows:

1. Experiences of teachers with infrastructure and teaching materials
2. The significance of infrastructure and teaching materials
3. The link between infrastructure, teaching materials and quality teaching and learning
4. The effects of infrastructure and teaching materials in Geography classrooms
5. Quality teaching and learning in Geography classrooms
6. Other related issues on infrastructure and teaching materials

6.1.1 THEMES FROM SEMI-STRUCTURED INTERVIEWS FOR TEACHERS

THEME 1: EXPERIENCES OF TEACHERS WITH INFRASTRUCTURE AND TEACHING MATERIALS

For this theme, I am going to merge the responses of teachers of question 1 and 2. Question 1 aimed at first finding out the experiences of teachers with infrastructure and teaching materials in their respective schools. Secondary to that, the second question was the investigative of the teachers' perspectives of infrastructure and teaching materials in their schools. Both these questions aimed at responding to the first aim of the study. From the responses of teachers, it was revealed that the two schools were of different quintiles based on how participants described their challenges and successes with infrastructure and teaching materials. Teachers from Austin high school, which was a quintile four school took pride at their school's excellent infrastructure and teaching materials. When the teachers described their experiences with the schools' infrastructure, teachers mentioned that their school was able to provide projectors, computers, textbooks, and visualizers among many other supporting resources and that helped them to meet their everyday educational needs. Furthermore, the teachers from Austin high school commented on the great support from the school management that was able to provide infrastructure and facilities such as fields for extramural activities and centres such as audio-visual rooms.

In contrast, teachers from Lungisani High school had more challenges than successes about the school's infrastructure and teaching materials where teachers experienced graffiti in classrooms and lack of maintenance. The teachers made mention of broken windows, shortage of smart boards, storage, and overcrowded classrooms. Unlike Austin high school, the teachers took pride in sports facilities to support all mural activities and the small number of learners in classrooms.

All teachers shared different perspectives on their schools' infrastructure. What was like the teachers' attitudes was the emphasis that their schools needed change and advancement on technology. Teachers from Lungisani high school believed that their school required technology and update of teaching materials as they were stuck in old ways of teaching. Lungisani high school was provided with tablets at the beginning of the year. However, they continuously experience challenges with electricity and connectivity, and that affected the use of tablets and access to printing machines. In general, the teachers had a bad experience with the school's infrastructure and teaching materials.

In contrast, teachers from Austin high school had a good experience with infrastructure and teaching materials. One teacher believed that the school had enough infrastructure. He called their school fortunate and was grateful to teach at such a school. Another teacher from Austin high school felt that their learners had great infrastructural support, and that helped them in their learning.

In conclusion for this theme, it was revealed that Lungisani high school lacked infrastructure, teaching and learning materials. In contrast, Austin high school had enough infrastructure and teaching materials to sustain the educational needs with the help of school fees.

THEME 2: THE SIGNIFICANCE OF INFRASTRUCTURE AND TEACHING MATERIALS

The findings for interview question 4, 5 and 7 were responding to the significance of infrastructure and teaching materials. This was speaking to the second key research question. These questions aimed to investigate the importance and demand for teaching materials in Geography to teachers to promote effective teaching in the classroom.

The participants believed that teaching and learning were abstract and needed the use of teaching materials to be effective potentially. All teachers agreed that the subject is in high demand for teaching materials, and they made use of teaching materials every day in their teaching. Teachers further believed that the lack of teaching materials made it difficult for learners to imagine or conceptualize abstract knowledge and the use of visual elements such as textbooks, maps and charts made their lessons to be more practical to learners.

One teacher from Lungisani high school said that teaching and learning materials were like twins and inseparable and another teacher from Austin high school believed the knowledge from textbooks was limited and needed to be complemented with online materials to be more productive. Furthermore, teachers from Lungisani high school and Austin high school defined supporting teaching materials as an enabler to prepare for lessons efficiently. What was similar about the findings was that the availability of teaching materials assisted teachers in preparing for lessons and master concepts that required more than general knowledge. Teachers from Austin high school posited that the support of teaching materials also helped them to save time and stir up

conversations and discussions that enhanced active learning. Teaching materials were essential to them, and they believed active learning made learners listen attentively during lessons.

Moreover, one teacher from Lungisani high school raised an issue that supporting teaching materials are only useful when a teacher can infuse them correctly to the lesson. The teacher argued that teachers first need to be able to use teaching materials to enhance teaching and learning effectively. This then suggested that supporting teaching materials are only supportive when infused correctly. This then brings the teacher into the context and the importance of training to make use of teaching materials.

Lastly, all participants experienced infrastructure and teaching materials to be relevant not only to their lesson delivery but also to the learning experiences of learners. One teacher from Austin high school argued that the importance of infrastructure and teaching materials could not be overly emphasized. He explained that infrastructure and teaching materials made a difference in how learners learnt in class even though distinctions could not be guaranteed. On a scale of 1-10, this teacher believed the significance of infrastructure and teaching materials to be 7/10 where the other three solely depended on the learners.

This theme revealed the importance of having teaching materials and infrastructure for quality teaching and learning in classrooms. It was evident that the availability of teaching materials benefited both teachers and learners. Three teachers observed that the availability of teaching materials created a desire to learn in learners, simplified lessons and made learners understand better.

THEME 3: QUALITY TEACHING AND LEARNING IN GEOGRAPHY CLASSROOMS

Question 3 and 9 were investigative of quality teaching and learning in geography classrooms. Both these questions aimed at responding to critical research 3 of the study. To start the conversation of quality education, teachers first shared their beliefs and experiences of what made a conducive space to produce quality teaching and learning.

From the findings of teachers, it was revealed that what made a conducive learning space was proper ventilation, and enough furniture such as windows, chairs and desks. What I found to be similar about the responses of teachers was that they believed that how a classroom was set up created a particular teaching and learning environment. All teachers thought that visual excitements such as charts, posters and painted wall were necessary to spark the learners' imagination and concentration. Teachers from Lungisani high school believed that teaching in a clean environment with enough furniture, natural lighting and proper ventilation was of paramount importance, and that could enhance an excellent education and learning experience. Furthermore, teachers from Austin high school experienced that being in a safe environment helped lighten up the atmosphere for learning where teachers and learners were safe from any infrastructural danger such as a falling ceiling. It was only unfortunate that teachers from Lungisani high school experienced graffiti, broken windows in winter and overcrowded classrooms which they believed affected their teaching and learning space.

Furthermore, question 9 asked teachers if they were aware of different learning styles to ensure quality learning for learners in the classroom. From the findings, it was interesting to note that teachers had knowledge of learning styles and three teachers discussed that visual and practical learners required the support of learning materials to learn effectively. However, teachers argued that it was difficult to accommodate all learners because of limited time and the demanding curriculum. And this is what three teachers experienced in relations to time:

A teacher mentioned that:

> *"You only have that much time, you can't do it every single lesson but as much as I can I try and cater for them with the resources that I have." (Austin high school)*
>
> *"What I have discovered is that everything I talk about I must write on the board and this is one of the most important resources." (Lungisani high school).*
>
> *"It is a bit difficult to try and pitch a lesson if I got 26-27 boys in the class, you know most of them will be your visual learners, and a large group will also be auditory, and your*

smaller groups are those that need to move." (Austin high school).

The above findings suggested that even though teachers were challenged with time, overcrowded classrooms, and the inflexible syllabus, they had mitigating strategies to accommodate learners and ensure quality teaching and learning.

THEME 4: THE LINK BETWEEN INFRASTRUCTURE, TEACHING MATERIALS AND QUALITY TEACHING AND LEARNING

After focusing on infrastructure, teaching materials and quality teaching and learning, it was also essential to investigate if there was a relationship between the 3. Question 6 was investigative of the link between infrastructure, teaching materials and quality teaching and learning. This question aimed to respond to the first research question and the second aim of the study.

From the finding, all participants believed there were a definite link and relationship between the infrastructure, teaching materials and quality of teaching and learning. Participants thought that the availability of proper infrastructure and teaching materials produced excellent learner attainment. They also believed that infrastructure and teaching materials were vital to support average learners to improve themselves. Furthermore, teachers thought that the absence of these made learners disruptive. One teacher from Austin high school made an example that when there was a lack of infrastructure such as electricity that affected the use of teaching materials such as an overhead projector and without the overhead projector the delivery of the lesson would be disturbed. Another teacher stated that the lack of infrastructures such as desks, chairs and teaching materials created teaching and learning challenges.

Lastly, teachers from Austin high school experienced that overcrowded classrooms affected the definite link between infrastructure, teaching materials and quality teaching and learning as they suffered a shortage of textbooks and classroom furniture and a significant number of learners.

THEME 5: THE EFFECTS OF INFRASTRUCTURE AND TEACHING MATERIALS IN GEOGRAPHY CLASSROOMS

After discussing the significance of infrastructure and teaching materials, it was also essential to address the effects of infrastructure and teaching materials in geography classrooms. This question aimed to answer the third critical question of this study and respond to the first aim of this study.

The responses from teachers seemed to speak on the effects of infrastructure and teaching materials on the behaviour of learners. My participant believed that the presence of infrastructure and teaching materials helped learners to become focused. Teachers found that when all learners had their own space (desk and chair) and learning materials, they behaved well and paid attention to the activity done in class. However, when there were not enough furniture learners sat on the floor and misbehaved and held discussions outside the scope of what is being done in class. So, the lack of infrastructure affected the behaviour of learners.

Teachers from Lungisani high school expressed that they found keeping order in overcrowded classrooms very challenging. Teachers from Lungisani high school had overcrowded classrooms of approximately 50-60 learners. Teachers believed that having a smaller number of learners contributed to the excellent behaviour of learners and effective teaching and learning because a small number of learners allows the teacher to supervise and manage learners and their progress.

THEME 6: OTHER RELATED ISSUES ON INFRASTRUCTURE AND TEACHING MATERIALS

Every study has limitations, and question 10 allowed participants to share what might have been of good discussion about effects of infrastructure and learning materials but was not asked. From the responses of teachers believed that the advancement of infrastructure would help link learners to the 21st century, where they would be technologically inclined and equipped to the respondent to change effectively.

Participants made the following contributions, and about teaching materials, this is what one teacher from Lungisani high school had to say about laptops and how they aid teaching:

> *"The use of laptops makes the work of educators easy, and teacher can be able to mingle around and not be stuck in front*

because these learners as I have indicated before you find them playing at the back and most of these learners at the back are challenged or have learning barriers." (Lungisani, high school).

With relevance to the provision of infrastructure and teaching and learning materials, one teacher from Austin high school mentioned that funding was essential, and the government should ensure to fund schools in need:

"I think the biggest thing is funding, and we are fortunate that we have an SGB, so we get quite a lot of funding towards getting resources for the school. But that should be coming from the government, so we can solve that." (Austin high school).

Another teacher added and said:

"Education should be the number one priority of the country, the fact that it is not is concerning. We are ranked consistently in the shallow end of the world in terms of academics, and you know what, infrastructure is one thing we do need to be able to give kids opportunities." (Austin high school).

6.1.2 THEMES FROM FOCUS GROUP INTERVIEWS FOR LEARNERS

To make sense of data collected, I generated themes from interview questions and responses of learners, and for each subject, I will give an evaluative analysis.

I generated the following themes for evaluative analysis:

1. Experiences of learners with infrastructure and learning materials
2. The significance of infrastructure and learning materials
3. The effects of infrastructure and learning materials in Geography classrooms
4. Improvements in schools' infrastructure and learning materials to promote quality learning

THEME 1: EXPERIENCES OF LEARNERS WITH INFRASTRUCTURE AND LEARNING MATERIALS

For this theme, I am going to merge the responses of learners of question 1, 2 and 4. Question 1 aimed at first finding out the schools' infrastructure and classroom environment of learners and how learners could best describe it. Secondary to that the other questions were investigative of the learners' perspectives of infrastructure and learning materials in their schools. These questions allowed participants to describe what drew them to their schools and what they liked about their school in terms of infrastructure and learning materials. Furthermore, the questions aimed at responding to the first aim of the study, which was to investigate the experiences of learners with infrastructure and learning materials at their respective schools.

Learners from Austin high school mentioned that their school had smartboards and enough furniture such as desks and chairs. This meant they had their personal space to learn from (desks and chairs). One learner from Austin high school mentioned that their teacher encouraged them to work individually and that helped them to put more efforts into their work and understand how they learnt. Learners from Lungisani high school described their classrooms to be clean, fresh, and neat even though they did not have enough furniture such as smartboards, desks, and chairs. Comparing the two schools, Austin high school was more advantageous with infrastructure and learning materials as compared to Lungisani high school.

Two Learners from Lungisani high school believed that their school infrastructure was undeveloped because of several broken windows in the classrooms and unmaintained bathrooms. One learner mentioned that the school only provided them with necessary stationery such as pens, workbooks and pencils and they had to buy their calculators and other prescribed textbooks of which was a burden to some learners who were from impoverished homes. On the contrary, learners from Austin high school believed that their school was developed and improving. They acknowledged that their school had financial challenges. Still, they were convinced that the school was making efforts to improve the infrastructure through small developments such as renovating classrooms and updating classroom furniture.

Furthermore, learners from Austin high school mentioned that they were attracted to their school because their school was a former middle C school and was not too expensive. Other learners were attracted by the school's infrastructure and the variety of sports and mural activities found in the school and believed it was value for money. One learner mentioned that:

> "*Knowing you could study and do the sport you like, and that is what attracted me to the school" (Learner 2).*

Learners from Lungisani high school liked their school because they believed their school was the least corrupt in their neighbourhood and closer to their homes. They mentioned that when they started school in grade 8, their principal then, was strict and the school managed to get a 100% pass rate for the first time, even though that pass rate had currently dropped.

Lastly, what was similar with the findings for this theme was that learners believed that the classroom environment was created by the teacher with what they promote and how they teach, and not so much of the available infrastructure and learning materials.

THEME 2: THE SIGNIFICANCE OF INFRASTRUCTURE AND LEARNING MATERIALS

For this theme, I am going to merge question 3 and 5. These questions were responsive to critical questions 2 and 3 of the research study. The first question was a build-up from the two questions in theme one and mainly focused on the significance of infrastructure and learning. Question 5 looked to find out if learning materials contributed to the learners' knowledge at home and how that improved the learners' learning at school.

From the findings, not all learners had the learning materials they needed, for instance, learners from Lungisani high school lacked atlases, maps, advanced calculators, and other prescribed textbooks. They believed these learning materials to be significant in the geography subject and felt set back. This suggested a shortage of learning materials in Lungisani high school.

Learners from Austin high school strongly believed that infrastructure was essential to their learning and helped them learn better. Similarly, learners from Lungisani high schools also agreed that infrastructure was crucial to learning and, in their responses, they limited infrastructure to only be desks and chairs even though they had chalkboards and classrooms. One learner said:

> "*Yes, it does, but not entirely, we have no other furniture beside chairs and desks."*

Six learners agreed that owning learning materials was vital because they could work self- sufficiently, in their own time, unlike having to the learning materials with their classmates. Learners believed that when they worked individually, they got to see where they did not understand and bring that to class. Overall, learners from Austin high school were grateful to have learning materials to their disposal as they believed it was significant for the grade 12 level.

Learners from Austin high schools believed that infrastructure had positive impacts on how they learnt and to have a teacher in front of them, chairs to sit on and the beautiful posters on the wall stimulated their desire to learn. Other learners mentioned that infrastructure influenced their will power to determine and participation in class. Lastly, two learners from Austin high school believed that infrastructure and learning materials were not enough, and learning was dependent on an individual. They made an example that some learners have all the infrastructures, but they and do not work hard to improve their grades.

THEME 3: THE EFFECTS OF INFRASTRUCTURE AND LEARNING MATERIALS IN GEOGRAPHY CLASSROOMS

This question was looking for any problematic aspects that learners found to be hindering their learning experience in Geography classrooms. This theme will respond to the effects of infrastructure and learning materials on learners which were the first aim of the study.

Briefly, participants shared from their everyday classroom experiences and what was common among the grade 12 pupils was the emphasis on the importance of

infrastructure and learning materials. Learners deemed infrastructure and learning materials to be most relevant to their learning.

Learners from Lungisani high school had problems with weak infrastructure such as a shortage of chairs and broken windows that affected their wellbeing during winter when it was cold. They also experienced loud music and noise from outside during school hours. Lungisani high school was situated around houses (inform settlement) and the noise from the neighbourhood affected the learners' focus during lessons.

Learners from Austin high school conveyed that some of their peers were hugely problematic. As a result, some teachers developed a bad attitude towards their class and only taught when problematic boys were less problematic. With this, three learners stressed out that it was then better to own learning materials and learn independently whether at home or school on days they did not receive enough teaching in class.

THEME 4: IMPROVEMENTS ON SCHOOL'S INFRASTRUCTURE AND LEARNING MATERIALS TO PROMOTE QUALITY LEARNING

For this theme, question 4 was used. This question was interested in finding the learners' inputs on what the school can improve on to make the quality of teaching and learning possible and for learners to learn effectively. This question aimed to respond to the third research question.

From the learner's suggestions, it could be concluded that learners from Lungisani high school were struggling with infrastructure and learning materials and needed necessary infrastructural improvements. With learners from Austin high school only required the school to advance and be more technologically inclined. From Lungisani high school, learners believed that they needed the following infrastructure and learning materials for their learning:

1. Computer labs- the school, did not have access to computer labs
2. Sports fields- learners believed that this could help them distress exercise and explore their talent

3. Provision of mapwork and atlases to help them work with past papers and do well in geography examinations.
4. School trips- learners believed they needed exposure, and the school must make means to support them.
5. Multi-purpose hall- learners, believed they needed a hall for assembly meetings and school events and to also protect themselves from rain.

CHAPTER SUMMARY

The findings revealed the experiences of teachers and learners with infrastructure, teaching materials and its effects on quality education. Teachers also experienced a positive relationship between infrastructure, teaching materials and quality teaching and learning and emphasized on the importance of infrastructure and learning materials. What was evident and exciting about the interviews was the teachers' concern about infrastructure and teaching and learning materials.

Learners showed an excellent ability to share what stimulated their learning desire and what affected their teaching and learning experiences. Learners believed that learning has to do with the willingness of the individual after the support of infrastructure and learning materials. Learners showed dedication to their schoolwork and pointed out what they believed the school needed to improve on to better their learning experiences. Furthermore, learners from Austin high school thought that they only required tablets for convenience purposes and to improve their learning experience. Learners believed that owning tablets could save them money to buy textbooks and were also open to the fact that tablets need training and could be easily stolen.

CHAPTER 5: THEORETICAL ANALYSIS

INTRODUCTION

At this point, I am going to discuss the link of the data discussion to the existing literature and theoretical frameworks. This theoretical analysis will attempt to show what was learnt about the (1) effects of infrastructure and learning materials on the quality of teaching and learning and (2) the relationship between the infrastructure, learning materials and quality teaching and learning; and suggest a new future for the phenomenon. This section will further answer the critical research questions, research problems and the social problem at a theoretical level.

It is important to note that the social problem at large for the scope for this research is inequalities found in quintile one public schools and the challenges faced by teachers and learners due to lack of appropriate infrastructure, teaching and learning materials. As already mentioned, the research problem looks at the appalling neglect of infrastructure and learning materials towards quality teaching and learning in public schools. The government policies put in place to ensure quality provision of infrastructure, teaching and learning materials are not fulfilled in public schools; and as result teachers and learners teach and learn under constrained environments that could hinder quality teaching and learning.

THE SIGNIFICANCE OF INFRASTRUCTURE, TEACHING AND LEARNING MATERIALS

"School infrastructure and learning materials are one of the five dimensions contributing to quality education and therefore, a necessity in all schools" (UNICEF 2002, 2005).

From the findings, it was established that infrastructure, teaching materials and learning materials were necessary and essential to teachers and learners for quality teaching and learning. Learners believed that learning materials accelerated learning and helped them understand better in class. And Teachers found that teaching materials helped them prepare for lessons and master abstract and content knowledge. Teachers further believed that the availability of infrastructure enhanced active learning. What was learnt from the findings was that infrastructure and learning

materials are essential and helped teachers and learners to achieve their educational goals.

The findings were congruent with literature. According to literature infrastructure, teaching and learning materials are tools needed by every school to achieve discipline and teaching and learning in the classroom (Modisaotsile, 2012). Teachers also believed that the availability of teaching and learning materials created a desire to learn in learners, simplified lessons and made learners understand better. It was established in the literature that when learners have essential services such as potable water, the supply of electricity and connectivity they learn better and their needs are taken care of (Murillo and Roman, 2011).

Gardner (2012) argues that the support of teaching and learning materials is essential for the benefit of learners. He explains that learners perceive and learn through multiple intelligences that need the assistance of infrastructure and learning materials. This is significant for their development, learning experience and performance. The literature of Bourdieu (1990), which is a base for this study, strongly argues that schools depend on cultural capital known as infrastructure, teaching, and learning materials, and financial support. The cultural capital then affords learners an advantage to learn effectively and as expected.

The theoretical framework of (Cheng and Cheung (1997)) advocates for the importance of infrastructure, teaching and learning materials and according to the resource-input model quality infrastructure and learning materials are necessary for schools to achieve objectives and provide quality teaching and learning (Cheng and Cheung, 1997). From this model, the desire to produce quality education needs an input of infrastructure and learning materials. The study found that infrastructure, teaching and learning materials infrastructure had positive impacts on teachers and learners; and played a significant role in fulfilling quality teaching and learning.

EFFECTS OF INFRASTRUCTURE, TEACHING AND LEARNING MATERIALS ON GEOGRAPHY TEACHERS AND LEARNERS

According to Hendricks (2012), the success of a school largely depends on the quality of school infrastructure, teaching and learning materials made available and the lack of infrastructure potentially affect the quality of teaching and learning. It is argued that

extreme poor infrastructure and teaching and learning materials increase dissatisfaction in teachers and affects student learning achievement (Hendricks, 2012; Branham, 2004).

From the study, teachers and learners from Lungisani High school were affected by the school's poor infrastructure and learning materials. The effects of infrastructure and learning materials involved, overcrowded classrooms, lack of multipurpose hall, graffiti, broken windows, shortage of electricity and connectivity. And unmaintained school building and bathrooms, noise from outside the school, shortage of smart boards, chairs, and textbooks. With this, the study revealed that Lungisani high school does not meet the necessary safety requirements of schools. According to the South African Schools Act (1996), the school infrastructure is considered to meet the basic functionality requirements if it meets the necessary safety features as having proper and enough classrooms to match the number of learners; working windows and furniture. And ablution facilities such as the paint used; electricity; staff room; an administration block; multipurpose hall; laboratories for science and technology, a library and library stocks that are regularly renewed.

According to Spaull (2013), the issue of overcrowded classrooms and broken windows is prevalent is quintile one public schools where there are insufficient classrooms and teachers. From literature, noise can potentially affect teachers and learners and further hinder their teaching and learning process. The report from the Centre for Evaluation and Education Policy Analysis (2015) reported that schools that have classrooms with less external noise are positively schools with higher learner attainment. Where the school is located plays a vital role in the internal teaching and learning experience of learners and teachers.

According to the theory of Maslow (1954), adequate school infrastructure and learning materials are essential for teachers and learners to function effectively. The lack of proper support in schools causes discomfort and demotivate learners and teachers from enjoying school. Maslow (1954) argues that the school infrastructure must be favourable for teachers and learners and enable their effectiveness and desire to participate in schools' activities. Furthermore, Maslow (1954) argues that learners have cognitive needs and therefore, need the support of learning materials for their pursuit and learning experience. At a school level, learners demonstrate the need and

desire to explore things, problem-solving and create arts and should be supported through the provision of appropriate learning materials.

Horng (2009) argues that teachers are more concerned about where and how they work, and when teachers work in functional teaching environments, they carry out their work without any difficulty. And the extent to which teachers work in a safe, clean, and well-maintained environment and have access to enough instructional materials and technology enables them to be productive and carry out their work without infrastructural challenges (Johnson et al., 2012). The study revealed that teachers from Austin high school were happy to teach at the school because of the availability of infrastructure and learning materials as compared to teachers from Lungisani high school that faced challenges with infrastructure. A teacher from Austin high school indicated that the school had enough infrastructure such as sports fields and classrooms and learning materials to support the number of learners at the school.

From the findings, it was learnt that the lack of infrastructure and learning materials could affect the teacher's effects and efforts. At the same time, it can also change the behaviour, engagement, and growth in the achievement of learners.

A POSITIVE RELATIONSHIP BETWEEN INFRASTRUCTURE, TEACHING MATERIALS AND QUALITY TEACHING AND LEARNING

The goal of every school should be to produce the quality of teaching and learning. Hamm (1989). According to Asmal and James (2001), access to quality teaching and learning is dependent on the entrance to financial resources, infrastructure, and learning materials. Asmal and James (2001) argue that schools with excellent infrastructure and learning materials for educators showed enormous learner achievement growth. Moreover, Cheng and Cheung (1997) argue that quality in teaching and learning should be measured against the efforts and inputs invested in the teaching and learning and the value it produces.

The study affirmed a positive relationship between infrastructure, teaching and learning materials and quality teaching and learning and was consistent with the literature. Participants believed that the availability of proper infrastructure and teaching materials produced good classroom engagements that improved student's performance. Furthermore, teachers found the absence of infrastructure, teaching and

learning materials affected the behaviour of learners, classroom engagements and lesson deliveries. Learners believed that support had positive impacts on their education, such as having a teacher to deliver content knowledge, chairs, desks, textbooks, and posters on the wall. Literature, therefore, assumes that an excellent teaching environment invites learners to be participatory and engage in the content presented (Mahan et al., 2010).

According to Cheng and Cheung (1997), quality infrastructure and learning materials are necessary for schools to achieve their objectives and provide quality teaching and learning. The theory argues that the capacity of quality resources the school has such as infrastructure and learning materials represents the potential teaching and learning process the classroom will have. Infrastructure, teaching, and learning materials serve as an input to quality teaching and learning.

Furthermore, Cheng and Cheung (1997) argue that infrastructure and learning materials contribute to a fruitful learning process in the classroom where teachers and learners relate and interact efficiently with one another during the teaching and learning process with the use of infrastructure and learning materials. Cheng and Cheung (1997) defined quality education as a smooth internal process that comes through converting infrastructure and learning materials into performance.
From the study, it was learnt that infrastructure, teaching, and learning materials contribute to quality teaching and learning experience in geography classrooms. A positive relationship was identified.

PROVISION OF INFRASTRUCTURE AND LEARNING MATERIALS IN QUINTILE 1 AND QUINTILE 4 PUBLIC SCHOOLS

Equality of educational opportunity is one of the principles held to the high esteem in the Constitution of the Republic of South Africa (1996). From literature, quintile one schools are entirely dependent on the state for infrastructure and learning materials such as textbooks and stationery (Republic of South Africa National Planning Commission, 2014). However, several quintiles one school struggle to get attention from the provincial departments about their infrastructural challenges (Spaull, 2013).

According to Nkosi (2018), quintile one schools are confined in challenging contexts of learning and their ability to produce quality teaching and learning in classrooms is not supported through the provision of teaching and learning materials. The provision of infrastructure, teaching and learning materials are not always consistent and maintained in quintile one public schools; causing teachers and learners to teach and learn under constrained environments (Spaull, 2013). With this, Spaull (2013) argues that there is an on-going crisis in South African public schools with the provision of infrastructure and learning materials and the current system is failing majority of learners in quantile one schools. Modisaotsile (2012) also argues the state fails to fund infrastructure and learning materials in most public schools such as township and rural schools.

The findings from the study affirmed the unequal access to infrastructure and learning materials. From the results, Lungisani high school lacked infrastructure and learning materials. In contrast, Austin high school had enough infrastructure to produce quality teaching and learning using funding from the school. Austin high school had enough classrooms, projectors, and sports facilities, and in contrast, Lungisani high school lacked learning materials such as updated textbooks, library books, sports facilities, and enough classes. The findings also revealed that infrastructure and supporting learning materials were necessary for geography classrooms, and Lungisani high school lacked provision and funding to sustain its educational needs.

While the state seeks to translate the policies to public schools, it is confronted with a considerable challenge of provision and funding infrastructure (School Infrastructure and Security Guidelines, 2017)**.** Marishane (2013) argued that there are severe problems with the provision of school maintenance and, access to excellent infrastructure remains highly unequal. Learners in quintile four and five enjoyed the privilege of learning in smaller classes, excellent support, and learning materials. In contrast, learners from quintile one schools learnt in challenging contexts with no infrastructure and learning materials because of their impoverished backgrounds (Nkosi, 2018).

Msibi and Mchunu (2013) argue that what causes a lack of teaching and learning materials and poor infrastructure in public schools is the legacy of apartheid that is not yet resolved. They say that, during apartheid, black teachers in public schools were

offered no infrastructure, teaching, and learning materials to work with, and this trend has been kept presently in public schools. They argue that the state needs to redress the inequalities and redistribute resources accordingly, especially to schools that are non-paying and heavily rely on the government for provision and funding.

In conclusion, the theory of Maslow (1954) then, advocates for favorable physical conditions with excellent infrastructure for all teachers and learners. Maslow (1954) argue that physiological and safety needs dominate people's behaviour and how they perform. Therefore, it is the government's duty as the employer to ensure conducive environments in schools that will allow teachers and learners to operate in favourable conditions with electricity, safe buildings, proper sanitation, and ventilation. Murillo and Roman (2011) argue that infrastructure should be the number one main school focus for the benefit of teachers and classroom learning.

CHAPTER SUMMARY

From the findings, a link between data presentation, literature review and theoretical framework was made. From the thematic analysis, the results were consistent with both literature and theoretical frameworks. The conceptual framework of Maslow (1954) was used to comprehend the effects of infrastructure, teaching, and learning materials on the quality of teaching and learning. The seven multi-models of quality education theory by Cheng and Cheung (1997) were used to explain the quality of teaching and learning in classrooms. The theoretical analysis revealed the responses of teachers and learners to the problem statement of the study, aims and key research question of the study. It is important to note that the reactions of teachers and learners to this study represent their experiences in their respective schools and conclusions should not be drawn for all quantile one and four schools in Gauteng province.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

INTRODUCTION

This final chapter will consist of what was learnt from the study through a discussion of a summary, conclusions, recommendations, limitations and implications of the research and future research. From the theoretical analysis, the study revealed a positive relationship between infrastructure, teaching and learning materials and quality teaching and learning. The effects of infrastructure and learning materials were also discussed where Lungisani High school struggled with necessary infrastructure and learning materials.

SUMMARY OF THE STUDY

Briefly, the study was founded on three main research questions which aimed to investigate the experiences of teachers and learners with infrastructure, teaching and learning materials. The study revealed a positive relationship between infrastructure, learning materials and quality teaching and learning. Below is the summary of the responses of Participants to the main research questions:

1. What is the link between infrastructure and teaching and learning materials and quality teaching and learning?

Participants believed that infrastructure and teaching materials were necessary to support the subject knowledge and the absence of these made learners less manageable and disrupted. Furthermore, participants believed that the lack of infrastructures such as desks, chairs and teaching materials added to the existing teaching and learning challenges. The findings revealed a definite link and relationship between the infrastructure, teaching materials and quality of teaching and learning and it was affirmed that the availability of proper infrastructure and teaching materials produced excellent learner attainment.

2. What is the significance of having the proper infrastructure and the availability of teaching and learning materials?

The responses for this question showed that participants experienced infrastructure and learning materials to be relevant not only to a lesson delivery but also to the learning experiences of learners. The responses showed that Geography was in high

demand for teaching and learning materials for daily use and the lack of teaching materials made it difficult for learners to imagine or conceptualize abstract knowledge and therefore visual presentation such as maps and charts were necessary.

3. In what ways do infrastructure and teaching and learning materials influence the quality of teaching and learning in classrooms?

Participants believed that a conducive learning space with proper ventilation, safe infrastructure, learning and teaching materials is necessary for a quality teaching experience and what was similar about the responses was a common belief that a classroom with visual excitements such as charts, posters and painted wall were necessary to spark the learners' imagination and concentration.

CONCLUSIONS OF THE STUDY

The following section shall consist of the conclusions of the main research questions drawn from findings.

1. The findings from researched schools emphasized the importance of infrastructure, teaching materials to promote quality teaching and learning in Geography classroom.
2. The study affirmed that proper infrastructure and supporting learning materials heavily contribute to quality teaching and learning in Geography classrooms and the absence of it, created discomfort in both teachers and learners.
3. The findings affirmed a positive link between infrastructure, learning materials and quality teaching and learning. It was concluded that the availability of proper infrastructure and teaching materials produced good classroom engagements that improved student's performance in Geography.
4. From the findings, infrastructure, teaching, and learning materials played a huge role in the lesson delivery and influenced quality teaching and learning in geography classrooms. Participants revealed that the support of learning materials had a positive impact on the subject content.
5. Infrastructure, teaching, and learning materials serve as an input to quality teaching and learning and assisted to accelerate teaching and learning experience for Geography teachers and learners.

6. The study further showed the inequalities between two quintile schools and a lack of provision and funding from the state (geography classroom).

RECOMMENDATIONS FOR FUTURE STUDY

While investigating the experiences of teachers and learners on the effects of infrastructure and learning materials, it was revealed that teachers and learners struggled to ensure quality teaching and learning in the absence of infrastructure and learning materials. It is, therefore, recommended that the future research conduct a broader study on the implications of lack of infrastructure and learning materials on learners in the fourth industrial revolution where inclusion of participants from the Department of Education and educational organisations is made. The scope of the research could be enlarged where a different theoretical framework could be explored.

The most significant impact of lack of infrastructure and learning materials is that it sets most disadvantaged learners even far back as they never make it to university level. If they get the university entry-level, they fail to perform well as expected in higher institutions. The provision of infrastructure and learning materials can then accelerate learning for learners and keep teachers motivated to teach and help learners realise their unique potentials (Maslow, 1954). The two resources are deemed to be necessary to ensure quality teaching and learning in classrooms.

According to Modisaotsile (2012), it was evident in most public schools that the state failed to fund infrastructure and supporting teaching and learning materials, and that affected teachers and learners in lower quintile schools. These injustices should be rectified, and quality education should be ensured for all learners in South Africa. According to the constitution, all learners have a right to primary education and no child should be discriminated against (The Republic of South Africa,1996). The government must address the issue of provision and funding to ensure quality teaching and learning in quintile one public schools, as many schools are challenged and do not have necessary finances.

From the findings, teachers and learners made recommendations on how the quality of teaching and learning could be achieved. Teachers recommended a provision of more classrooms and learning materials to accommodate the number of learners in every school. Teachers were challenged with overcrowded classrooms, and this

affected the behaviour of learners in Geography classrooms. Teachers recommended that quintile one schools should be provided with school maintenance from time to time to mitigate the gap between non-paying schools and advantaged schools. Lungisani high school needed bathroom renovations for learners and the school building repainted.

Teachers and learners recommended a provision of infrastructure and learning materials that supports change and technology in public schools. The provision of infrastructure and learning materials comes with the responsibility of teachers knowing how to infuse them to their lessons. Practical teacher training on teaching and learning materials that will help teachers master how to make use of learning materials should be designed.

Lastly, teachers believed that right windows, cleaning materials and spacious classrooms contributed to the teaching and learning environment that will affect the learners learning. More classes should be provided to ensure a healthy teacher to learner ratio.

IMPLICATIONS OF THE STUDY

It is argued that cultural capital plays as a significant in schooling and learners who do not have the cultural capital have a difficult time learning and completing in schools (Bourdieu,1990) and “failure to achieve good performance is often interpreted as lack of ability” (Christie, 2008, p. 171) when it is merely the lack of cultural capital.

When teachers and learners lack the necessary infrastructure and learning materials, the quality of teaching and learning is put into jeopardy. The lack of infrastructure and teaching and learning materials have the potential to affect teaching and learning in classrooms. Teachers and learners from lower quintile schools are equally as important as teachers and learners from excellent schools and should not be discriminated against but be afforded the provision of infrastructure and learning materials to fulfil the educational mandate.

The relationship between infrastructure, supporting learning materials to achieve quality teaching and learning should not be undermined. Rather an excellent infrastructure and supporting teaching and learning materials should be made readily

available for teachers and learners. The provision of necessary infrastructure and learning materials in public schools, therefore, can benefit teachers and learners in their teaching and learning experience and make the learning process effective and desirable.

LIMITATIONS OF THE STUDY

Cheng and Cheung (1997) argue that different people may use various indicators such as qualified teachers, socio-economic issues, and other indicators to investigate the quality of teaching and learning in the classroom. For this study, only infrastructure, teaching and learning materials were used to investigate the effects of infrastructure and learning materials and therefore, different outcomes were reached.

This study was only limited to the experiences of teachers and learners, and therefore ideas of parents, the Department of Education, and other stakeholders such as principals were not investigated. The study was narrowed to classroom experiences and how the school's infrastructure and learning materials affected the quality of teaching and learning in the classroom. The study was further narrowed to Geography classrooms and how the school's infrastructure and learning materials contributed to teaching and learning in the school. Therefore, the findings of the study are not appliable to all subject knowledge.

The findings of this study may not necessarily apply to all teachers and learners in Gauteng, and the experiences investigated represent that of researched schools. The sample size of participants involved only four teachers and eight learners in quintile one and four public schools, and the different outcome would be reached in a diverse scope of participants. The study cannot claim that all public schools in South Africa have similar experiences with the effects of infrastructure and learning experience. The study cannot again claim that all schools are affected by infrastructure and learning materials, even though the findings of the were consistent with the literature. It is important to note that classroom observations were not explored on purpose due to the scope of the study.

CONCLUSION OF THE STUDY

The aim of this study was not to criticize the state for a lack of provision in most public schools. However, the study aimed to investigate the relationship between infrastructure, learning materials and the quality of teaching. Furthermore, the experiences of Geography teachers and learners with infrastructure, teaching and learning materials were explored. With this, the study aimed to show the significance of infrastructure and learning materials to produce quality teaching and learning in Geography classrooms and further advocate for the provision of infrastructure and learning materials in less fortunate schools that entirely depend on the state for provision.

Given this, the existing trending notion that schools do not need the support of proper infrastructure, teaching and learning materials to perform well and achieve quality teaching and learning was contested by geography teachers. And an acknowledgement for resilient schools and the extra effort put by teachers who work under severe school conditions to ensure that their learners perform beyond average was made.

This study was concerned with the lack of school infrastructure, learning materials promised to learners in lower quintile public schools. And as already mentioned, most quintile one public schools operate under dire conditions ranging from the lack of teaching, learning materials, poor school infrastructures in geography classrooms. To attempt to close the knowledge gap, in 7 chapters, this study looked at educational policies and existing literature for infrastructure, teaching and learning materials and what constitutes quality education. The theoretical framework of Maslow's (1954) and Cheng and Cheung (1997) were used to advocate the need for infrastructure and learning materials as requirements to attain quality education. A qualitative methodology was followed with the use of a case study research design.

From the findings in, quality teaching and learning is almost impossible in Geography classrooms without the enhances of appropriate infrastructure and excellent teaching and learning materials. The provision of infrastructure played a huge role to assist Geography teachers and learners to engage in productive teaching and learning. The study revealed the effects of infrastructure and learning materials in Geography. Conclusions were drawn of what constitutes quality teaching and learning in the two

schools and a reflexive relationship between infrastructure, learning materials and quality education was identified.

If I were to redo this study, I would incorporate the classroom observations of the researched schools for more in-depth insights of the effects and the affirmed relationship between infrastructure, teaching and learning materials and the quality of education. I would further enlarge the scope of the dissertation to at least six newly qualified teachers and ten learners doing other subjects other than Geography for more experiences on the effects of infrastructure and learning materials to the quality of teaching and learning.

CHAPTER SUMMARY

This study gave a brief overview of the conclusion and recommendations of the study. The study sought to investigate how teachers and learners related to one another using infrastructure and learning materials in geography classrooms. It is important to note that the study was not focused on the performance of learners; instead it looked at how teachers and learners responded to effects and the availability of infrastructure, teaching and learning materials to help them teach and learn better. Like any another study this chapter presented the limitations of the study and what the study cannot claim.

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APPENDICES

APPINDIX A: LETTER TO PRINCIPAL

LETTER TO THE PRINCIPAL
January 2020

Dear Mr/Ms/Mrs

My name is Mahlangu Morefaith Naledi, a Master's student registered at the Wits School of Education and I am currently conducting a research on the effects of infrastructure and learning materials on the quality of teaching and learning in South African Classrooms.

My research involves investigating the experiences of teachers and learners on how infrastructure, teaching and learning materials affect quality teaching and learning in geography classrooms. The research findings will contribute to the current study and knowledge of the effects of infrastructure and teaching and learning materials in South African schools.

I, therefore, would like to request for your permission as the leader of the school to conduct my research study at your school and humbly ask the participation of 2 teachers and four learners to respond based on their experiences on infrastructure and learning materials and how this affects teaching and learning in the classroom. I chose your school because of the school's excellent reputation and the convenience for my research purposes. My research study is conducted with ethical clearance from the Gauteng Department of Education and Wits Ethics Clearance Committee to ensure the safety of your school.
I intend to use interviews as my data collection mediums. The interviews comprise of short and precise open-ended questions. I plan to utilize an audiotape to conduct interviews, and the purpose of this action is to assist me in listening attentively during the conversations and have the aid of reference at a later stage when writing a report.

I assure you that the research will not negatively affect teachers and learners as I will only request 25-35 minutes that will be solely dependent on their schedule and after school hours. Confidentiality and anonymity are guaranteed for the school. The names of learners and teachers and that of the school will not be publicized. In all publications arising from this study, a pseudonym will be used. All information and data collected will be kept confidential and securely in a password-protected laptop, and I will only use this information for academic purposes. After the completion of this study, I will destroy all the data collected.

Participation in this research is entirely voluntary. And if teachers and learners wish to withdraw their permission at any given time during this project, they will be allowed to do so without any penalty. There are no direct benefits or foreseeable risk, and I expect that the research findings will contribute positively to my research and the ongoing research on the effects of infrastructure and learning materials in South African schools.

Please let me know if you require any further information.

Yours sincerely,
MN Mahlangu

(Email: faithnaledi@gmail.com Cellphone: (082 6188 369)

Supervisor: Thokozani Mathebula
Telphone:011 717 3746
Email: Thokozani.Mathebula@wits.ac.za

If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University **Human Research Ethics Committee (Non-Medical)**

Telephone +27(0) 11 717 1408

Email: Shaun.Schoeman@wits.ac.za

APPINDIX B: LETTER TO TEACHERS

LETTER TO TEACHERS
January 2020

Dear Mr/Ms/Mrs

My research investigating the experiences of teachers and learners on how infrastructure, teaching and learning materials affect quality teaching and learning in geography classrooms The research findings will contribute to the current study and knowledge of the effects of infrastructure and teaching and learning materials in South African schools. My research study is conducted with ethical clearance from the Wits Ethics Clearance Committee to ensure your safety.

I, therefore, would like to humbly invite you to participate and share your experiences on infrastructure and teaching materials at your school and how this aid or fails to aid your teaching. Briefly, I intend to, interviews as my data collection mediums. The interviews comprise of short and precise open-ended questions. I plan to utilize an audiotape to conduct interviews, and the purpose of this action is to assist me in listening attentively during the meetings and have the aid of reference at a later stage when writing a report.

Furthermore, the research will not negatively affect or inconvenience you in your performance duties to the school as I will only request 20-30 minutes of your time that will be solely dependent on your schedule and after school hours. The confidentiality and anonymity are guaranteed for you, and this means that your name and that of the school will not be publicized. In all publications arising from this study, a pseudonym will be used. All information and data collected will be kept confidential securely in a password-protected laptop, and I will only use this information for academic purposes. After the completion of this study, I will destroy all the data collected.

Your participation in this research is entirely voluntary. And if you wish to withdraw your permission at any given time during this project, you will be allowed to do so without any penalty. There are no direct benefits to you or foreseeable risk. Still, I expect that the research findings will contribute positively to my research and the ongoing research on the effects of infrastructure and learning materials in South African schools.

Please let me know if you require any further information.

Thank you very much for your help.

Yours sincerely,
MN Mahlangu

(Email: faithnaledi@gmail.com Cellphone: (082 6188 369)

Supervisor: Thokozani Mathebula
Telphone:011 717 3746
Email: Thokozani.Mathebula@wits.ac.za

If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University **Human Research Ethics Committee (Non-Medical)**

Telephone +27(0) 11 717 1408

Email: Shaun.Schoeman@wits.ac.za

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APPINDIX C: LETTER TO LEARNERS

LETTER TO LEARNERS
January 2020

Dear Learners

My name is Mahlangu Morefaith Naledi, a Masters student registered at the Wits School of Education and I am currently conducting a research on the effects of infrastructure and learning materials on the quality of teaching and learning in South African Classrooms.

My research involves investigating the experiences on how infrastructure, teaching and learning materials affect quality teaching and learning in geography classrooms. The research findings will contribute to the present study and knowledge of the effects of infrastructure and teaching and learning materials in South African schools. My research study is conducted with ethical clearance from the Wits Ethics Clearance Committee to ensure your safety.

I, therefore, would like to humbly invite you to participate and share your experiences on infrastructure and learning materials and how this aids your learning in the classroom. Briefly, I intend to use focus groups interviews. The interviews comprise of short and precise open-ended questions. I plan to utilize an audiotape to conduct interviews, and the purpose of this action is to assist me in listening attentively during the meetings and have the aid of reference at a later stage when writing a report.

Furthermore, the research will not negatively affect or inconvenience you in your performance duties to the school as I will only request 25-35 minutes of your time after school hours. The confidentiality and anonymity are guaranteed for you, and this means that your name and that of the school will not be publicized. In all publications arising from this study, a pseudonym will be used. All information and data collected will be kept confidential securely in a password-protected laptop, and I will only use this information for academic purposes. After the completion of this study, I will destroy all the data collected.

Your participation in this research is entirely voluntary. And if you wish to withdraw your permission at any given time during this project, you will be allowed to do so without any penalty. There are no direct benefits to you or foreseeable risk. Still, I expect that the research findings will contribute positively to my research and the

ongoing research on the effects of infrastructure and learning materials in South African schools.

Please let me know if you require any further information.
Thank you very much for your help.
Yours sincerely,
MN Mahlangu

(Email: faithnaledi@gmail.com Cellphone: (082 6188 369)

Supervisor: Thokozani Mathebula
Telphone:011 717 3746
Email: Thokozani.Mathebula@wits.ac.za

If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University **Human Research Ethics Committee (Non-Medical)**

Telephone +27(0) 11 717 1408

Email: Shaun.Schoeman@wits.ac.za

APPINDIX D: LETTER TO PARENTS

LETTER TO PARENTS
January 2020

Dear Mr/Ms/Mrs

My name is Mahlangu Morefaith Naledi, a Masters student registered at the Wits School of Education and I am currently conducting a research on the effects of infrastructure and learning materials on the quality of teaching and learning in South African Classrooms.

My research involves investigating the experiences of teachers and learners on how infrastructure, teaching and learning materials affect quality teaching and learning in geography classrooms. The research findings will contribute to the current study and knowledge of the effects of infrastructure and teaching and learning materials in South African schools. My research study is conducted with ethical clearance from the Wits Ethics Clearance Committee to ensure your safety.

I, therefore, would like to humbly request your permission to involve your child to participate in my research study where I would ask them to share their experiences with infrastructure and learning materials and how it aids or fails to support their learning.
Briefly, I intend to use focus groups interviews as my data collection mediums. The interviews comprise of short and precise open-ended questions. I plan to utilize an audiotape to conduct interviews and the purpose for this action is to assist me in listening attentively during the meetings and having the aid of reference at a later stage when writing a report.

Furthermore, the research will not negatively affect or inconvenience your child as this will be done after school hours for no more than 35 minutes. The confidentiality and anonymity are guaranteed for your child, and this means that your child's name and that of the school will not be publicized. In all publications arising from this study, a pseudonym will be used. All information and data collected will be kept confidential securely in a password-protected laptop, and I will only use this information for academic purposes. After the completion of this study, I will destroy all the data collected.

Participation in this research is entirely voluntary. And if you wish to withdraw your permission at any given time during this project, you will be allowed to do so without any penalty. There are no direct benefits to you or foreseeable risk. Still, I expect that the research findings will contribute positively to my research and the ongoing research on the effects of infrastructure and learning materials in South African schools.

Please let me know if you require any further information.
Thank you very much.
Yours sincerely,
(Email: faithnaledi@gmail.com Cellphone: (082 6188 369)

Supervisor: Thokozani Mathebula
Telphone:011 717 3746
Email: Thokozani.Mathebula@wits.ac.za

If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University **Human Research Ethics Committee (Non-Medical)**

Telephone +27(0) 11 717 1408

Email: Shaun.Schoeman@wits.ac.za

APPINDIX E: TEACHERS CONSENT FORM

TEACHERS' CONSENT FORM

Please fill in and return the reply slip below, indicating your willingness to be a participant in my voluntary research project:

Permission to be audiotaped

I agree to be audiotaped during the interview YES/NO
I know that the audiotapes will be used for this project only YES/NO

Permission to be interviewed

I would like to be interviewed for this study YES/NO
I know that I can stop the interview at any time and don't have to answer all the questions asked. YES/NO

Informed Consent

I understand that:

- My name and information will be kept confidential and safe and that my signature and the name of my school will not be revealed.
- I do not have to answer every question and can withdraw from the study at any time.
- I can ask not to be audiotaped
- All the data collected during this study will be destroyed within 3-5 years after the completion of this project.

Sign_____ Date_____

APPINDIX F: LEARNERS' ASSENT FORM

LEARNERS' ASSENT FORM

Please fill in and return the reply slip below, indicating your willingness to be a participant in my voluntary research project:

Permission to be audiotaped

I agree to be audiotaped during the interview.	YES/NO
I know that the audiotapes will be used for this project only	YES/NO

Permission to be interviewed

I would like to be interviewed for this study.	YES/NO
I know that I can stop the interview at any time and don't have to answer all the questions asked.	YES/NO

Informed Assent

I understand that:

- My name and information will be kept confidential and safe and that my signature and the name of my school will not be revealed.
- I do not have to answer every question and can withdraw from the study at any time.
- I can ask not to be audiotaped
- All the data collected during this study will be destroyed within 3-5 years after the completion of this project.

Sign_____ Date_____

APPINDIX G: PARENTS' CONSENT FORM

Please fill in and return the reply slip below indicating your willingness to be a participant in my voluntary research project:

I_____ the parent of _____,

Permission to be audiotaped

I agree for my child be audiotaped during the interview YES/NO
I know that the audiotapes will be used for this project only YES/NO

Permission to be interviewed

I agree for my child to be interviewed for this study. YES/NO
I know that he/she can stop the interview at any time and don't have to answer all the questions asked. YES/NO

Informed Consent

I understand that:

- My child's name and information will be kept confidential and safe, and that my signature and the name of my school will not be revealed.
- My child does not have to answer every question and can withdraw from the study at any time.
- My child can ask not to be audiotaped
- All the data collected during this study will be destroyed within 3-5 years after the completion of this project.

Sign_____ Date_____

APPINDIX H: INTERVIEWS FOR TEACHERS

Interview Schedule for Secondary School Teachers

Section A: Biographical Information

1. Subject Specialism:
2. Experience as a teacher (in years):
3. Teaching qualifications:

Section B: Interview questions

1. Tell me about the exciting and challenging thing about the physical conditions of your school?
2. What do you think about the state of your school's infrastructure and learning materials?
3. What are some of the necessary conditions that make a classroom a conducive learning space?
4. How regularly does your subject area demand the use of teaching and learning materials in the classroom?
5. How do available teaching materials support your teaching experience?
6. Do you think there is an informed relationship between infrastructure, teaching materials and quality teaching and learning?
7. Is having the proper infrastructure and teaching materials essential to your teaching?
8. To what extent do infrastructure and learning material contribute to how learners perform and behave in class?
9. Are you aware of different learning styles your learners have, and how do you ensure quality learning experience?
10. In conclusion, is there any other issue related to this interview that I have not asked, but you feel strongly that you would like to share with me?

`*Thank you for taking part in this Interview.*

APPINDIX I: FOCUS GROUPS INTERVIEWS FOR LEARNERS

Focus Group Interview Schedule for Secondary School Learners

Section A: Biographical Information

1. Grade:
2. Gender:
3. Experience as a learner at the school (in years):

Section B: Interview Questions

1. If you could describe your classroom environment, what would you say?
2. What attracted you to your school?
3. Does the classroom infrastructure stimulate your desire for learning? Elaborate.
4. What is the status and quality of infrastructure and learning materials in your school? Please elaborate.
5. Do you own any learning materials such as stationery, textbooks, calculator or library books that you can take home and how does that help you in your learning experience?
6. What are some of the essential aspects of your classroom that affects your learning experience?
7. What are some of the improvements do you think will benefit the school (infrastructure)?

`*Thank you for taking part in this Interview.*

APPINDIX J: GAUTENG DEPARTMENT OF EDUCATION APPROVAL FORM

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	18 November 2019
Validity of Research Approval:	10 February 2020 – 30 September 2020 2019/327
Name of Researcher:	Mahlangu M.N
Address of Researcher:	472 Zone 6 Extension 1
	Sebokeng
	1983
Telephone Number:	082 618 8369
Email address:	862810@students.wits.ac.za
Research Topic:	Exploring effects of infrastructure & learning materials on the quality of teaching and learning in South African classroom.
Type of qualification	Master of Education
Number and type of schools:	Two Secondary Schools
District/s/HO	Johannesburg Central and Sedibeng West

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.

18/11/2019

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

1. *Letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*
4. *A letter / document that outline the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
5. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
6. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*
7. *Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.*
8. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
9. *It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.*
10. *The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.*
11. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.*
12. *On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.*
13. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.*
14. *Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

.....

Mrs Faith Tshabalala
Acting Director: Education Research and Knowledge Management

DATE: 18/11/2019

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

APPINDIX K: ETHICS CERTIFICATE

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Mahlangu

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H19/11/28**
PROJECT TITLE	Exploring effects of infrastructure and learning materials on the quality of teaching and learning in South African classrooms
INVESTIGATOR(S)	Ms M Mahlangu
SCHOOL/DEPARTMENT	Education/
DATE CONSIDERED	15 November 2019
DECISION OF THE COMMITTEE	Approved
EXPIRY DATE	06 February 2023

DATE 07 February 2019 **CHAIRPERSON** _____
(Professor J Knight)

cc: Supervisor : Dr T Mathebula

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University. 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 to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ _____/_____/_____
Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

APPINDIX L: TURN IN IT CERTIFICATE

862810:Masters_Dissertation_862810.docx

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APPINDIX M: EDITING CERTIFICATE

edit.aid

edit.aider@gmail.com
079 276 8389 / 081 329 6439

03 August 2020

This is to confirm that a portion of the dissertation by Morefaith Naledi Mahlangu titled "*The effects of infrastructure, teaching & learning materials in geography classrooms: investigating the experiences of teachers & learners in two public schools, Gauteng province*" has been edited to correct errors in spelling, grammar, sentence structure and language usage by a certified editor at edit.aid.

Nombuso Manana
Certified in "Editing for Professionals"
Wits Language School