Exploring grade eleven Mathematics teachers' experiences in implementing the Curriculum and Assessment Policy Statement in schools in the Durban area of South Africa.

Niven K. Ramdhani

Student number 8116214

Coursework dissertation submitted in partial fulfilment of the requirements of the Degree of Master of Education in the Division of Curriculum Studies, Department of Educational Studies, University of KwaZulu-Natal.

Supervisor:
Doctor Lokesh Ramnath Maharajh
Discipline of Curriculum and Education Studies
Education Studies Cluster
School of Education
Edgewood Campus
University of KwaZulu-Natal

December 2014

DECLARATION

I, Niven Krishnapersad Ramdhani, declare that this dissertation, entitled “Exploring grade eleven Mathematics teachers’ experiences in implementing the Curriculum and Assessment Policy Statement in schools in the Durban area of South Africa.” is my own work and all sources used or quoted in this research study have been acknowledged appropriately by complete references.

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N. K. Ramdhani Date

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Dr. L.R. Maharajh Date

ACKNOWLEDGEMENTS

I would like to acknowledge the following persons who have supported me throughout this research study:

1. The divine power of Lord Krishna who has blessed me with good fortune to complete this dissertation.
2. My Supervisor Dr. Lokesh Maharajh for your excellent guidance and support in making this achievement possible.
3. My friend, Dr. Nirmala Gopal, for sacrificing your time and lending me your professional guidance and support.
4. My wife Reene, children Nikashia and Shikar, and parents Krishnapersad and Sonpathie for their prayers and encouragement.
5. The teachers who volunteered to be part of this study by providing the data necessary to complete this research.

ABSTRACT

I have located my study within the parameters of qualitative research and interpretivist paradigm, in order to undertake a phenomenological study to explore grade eleven Mathematics teachers' experiences in implementing the Curriculum and Assessment Policy Statement in schools in the Durban area of South Africa.

This study draws on the experiences of four Mathematics teachers, purposefully selected from schools of varying social environment. These teachers were representative of a rural school, a Township school, an ex-Indian school and an ex-coloured school.

A focus group discussion was conducted to: determine these teachers' experiences in implementing Curriculum and Assessment Policy Statement; understand factors that inform these experiences; and understand teachers' views on the effectiveness of the Curriculum and Assessment Policy Statement.

In order to understand their experiences in their grade eleven Mathematics class, I analysed the recorded data collected from the focus group discussion and arranged and discussed them in the following themes: Ownership of the curriculum, Clarity and understanding of the policy document, Teacher training, Knowledge and skills in teachers, Curriculum material and resources, and Contextual factors affecting curriculum implementation.

Findings emanating from the analysis of the themes that data have been grouped in reveal a myriad of lived experiences of these teachers that inform how grade eleven Mathematics teachers coped with the implementation of curriculum reform.

I have recommended Future Trends to resolve critical conclusions drawn from the themes which emphasises the teacher as the primary component of curriculum implementation. Further, I have recommended future areas of research that emanate from this study.

LIST OF ACRONYMS AND ABBREVIATIONS

CAPS	Curriculum and Assessment Policy Statement
NCS	National Curriculum Statement
DBE	Department of Basic Education
FET	Further Education and Training
GET	General Education and Training
ANC	African National Congress
NEA	National Education Authority
LEA	Local Education Authority
MALATI	Mathematics Learning and Teaching Initiative
DET	Department of Education and Training
NAPTOSA	National Professional Teacher Organisation of South Africa
OBE	Outcomes Based Education
KZN	KwaZulu-Natal
UDO	Umdoni District Office
BCom	Bachelor of Commerce
HOD	Head of Department
NATED	National Education Curriculum
IME	Improving Mathematics Education

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CHAPTER ONE

THE RESEARCH AREA

1.1. INTRODUCTION

Post 1994 general elections in South Africa witnessed a significant revolution in education. The key strategy of the newly elected democratic Government was to rapidly transform the curriculum. This rapid transformation in the Further Education and Training (FET) phase gave rise to the National Curriculum Statement (NCS) which ended the apartheid curriculum that perpetuated discrimination and segregation between races (Msila, 2007). To ensure that the curriculum met the needs of the South African education system, NCS was revised to give rise to the Curriculum and Assessment Policy Statement (CAPS) (DBE, 2009).

As a Mathematics teacher, currently implementing grade eleven CAPS in a secondary school, my research study focuses on exploring how other grade eleven Mathematics teachers were experiencing the implementation of CAPS.

This chapter serves as an introduction to the study on exploring grade eleven Mathematics teachers' experiences in implementing the Curriculum and Assessment Policy Statement in schools in the Durban area of South Africa.

1.2. PROBLEM STATEMENT

The change in curriculum from the NATED 550 to the National Curriculum Statement (NCS) in the Further Education and Training Phase (grade 10, 11, and 12) was introduced in 2006 in grade 10. A panel of experts, appointed by the National Minister of Education, found challenges and problems with NCS and recommended the reform to CAPS (DBE, 2009).

This rapid change in curriculum and the necessary adjustments teachers had to make brought about much uneasiness amongst my colleagues who taught grade 11 Mathematics. My intention therefore is to focus my study on exploring how teachers coped with the implementation of the CAPS (Mathematics) in grade eleven. I specifically intend:

Exploring grade eleven Mathematics teachers' experiences in implementing the Curriculum and Assessment Policy Statement in schools in the Durban area of South Africa.

1.3. BACKGROUND

South Africa became a democratic country in 1994 (Dean, 2005; Bantwini, 2010). Its democratic government inherited a system of education that was racially divided and unequal (Dean, 2005; Msila, 2007). The apartheid government maintained nineteen education departments to enforce segregation by race, geographic location and ideological beliefs (Dean, 2005). This race based education system reinforced inequality, stereotyped learners' abilities and prepared them for positions they were expected to fill in political, economic and social life (Msila 2007). In the apartheid era, there was no transparency in decision making, and the government of the day made the decisions on curriculum planning for the various race based education systems, thereby leaving little room for the participation of teachers, parents as well as learners in decision making (Msila, 2007).

After the first democratic elections, the African National Congress-led government revised the curriculum and rationalised subjects and developed core syllabi to serve all the people of South Africa (Dean, 2005). It represented a pedagogy that committed itself to reinventing education in South Africa, and opposed the traditional separatist education, which was the reproduction of inequality (Msila, 2007).

The change in the education system was geared to promote democracy, unity and competitiveness, so that its citizens could become literate, creative and critical (DBE, 1996).

The NCS propagated a learner centred approach in focusing on learners' hidden knowledge and the realities of their daily experiences (Bowie, Davis, Pillay, Nxumalo, Pleass, Raju, 2014), but however critics such as Chisholm (2005) believe that the essence of education is to lead learning away from the known and familiar knowledge into one that is universal, thus expanding into knowledge with a broader perspective.

CAPS on the other hand is teacher-driven, with content-based topics and themes that are consistent, and expressed in plain language that facilitates ease of understanding and use (Bowie et al, 2014).

1.4. FOCUS AND PURPOSE OF STUDY

This study focuses on the experiences of grade eleven Mathematics teachers during the implementation of a change in curriculum from the NATED 550 syllabus of the apartheid era, to the National Curriculum Statement (NCS) and then to the present Curriculum and Assessment Policy Statement (CAPS).

The purpose of this study is to document experiences of grade eleven mathematics teachers of Durban schools, interpret and analyse these experiences, and then report on these experiences. The intended audience for this research study is the curriculum planners and decision makers in the Department of Education as well as Researchers in the academic fraternity.

1.5. RATIONALE FOR THIS STUDY

The apartheid government administered a politically defined curriculum that provided a racist model (Dean, 2005; Msila, 2007). The African National Congress-led Government made changes in education in order to redress the legacy of apartheid education that provided unequal education for the various race groups (Cross, Mungadi & Rouhani, 2002). It saw the need to transform the South African Education system for the benefit of all the people of South Africa (Brodie, 2002). The Government's vision for education was to integrate education and training into a system of "life-long learning" (Graven, 2002, p.1).

In order to overhaul the apartheid system of education, the Further Education and Training phase experienced a change in curriculum from the apartheid NATED 550 curriculum to the National Curriculum Statement (NCS) in 2006 at the grade 10 level, which then progressed to grade 11 in 2007 and to grade 12 in 2008 (Msila, 2007).

In 2009 the National Minister of Basic Education appointed a panel of experts to review the NCS (DBE, 2009). The panel of experts found challenges and problems with NCS and recommended the reform to the Curriculum and Assessment Policy Statement (CAPS) which was introduced in 2012 in grade 10, then progressed to grade 11 in 2013, and in 2014 it was introduced in grade 12 (DBE, 2011a). These changes in education required teachers to interpret and understand the curriculum in order to deliver it in the classroom. Since teachers are required to deliver the curriculum, it is important to understand their experiences and views on curriculum change and how they coped with such changes. This study can therefore

be used to inform curriculum planners and education officials of the concerns of teachers regarding the implementation of CAPS.

1.6. THE AIM AND OBJECTIVES OF THIS STUDY

This study intends to explore what experiences teachers have had during the implementation of the CAPS curriculum in teaching Mathematics to grade 11 learners. In order to achieve this, the study will undertake to realise the following objectives:

1. Determining the experiences of grade 11 mathematics teachers in implementing the Curriculum and Assessment Policy Statement.
2. Understanding factors that inform these experiences.
3. Understanding teachers' views on the effectiveness of the Curriculum and Assessment Policy Statement.

1.7. KEY RESEARCH QUESTION

The key question that needs to be asked in order to satisfactorily answer the problem statement is:

What are grade eleven Mathematics teachers' experiences in implementing the Curriculum and Assessment Policy Statement?

The following sub-questions will assist in completely answering the key question:

1. What are teachers' experiences in implementing the Curriculum and Assessment Policy Statement?
2. What informs such experiences when implementing the Curriculum and Assessment Policy Statement?
3. What are teachers' views on the effectiveness of the Curriculum and Assessment Policy Statement?

1.8. RESEARCH DESIGN AND METHODOLOGY

In this study I will use qualitative research and an interpretivist paradigm. According to Creswell in Fouche & Delport (2002), the interpretivist approach relates to how individuals construct meaning in their everyday settings. The interpretive paradigm will allow me to gain insight and form a clear understanding of the grade 11 mathematics teacher's experiences of implementing the CAPS. The study will make sense of the participants' life-worlds through an analysis of the recorded interactions with them aiming to appreciate and clarify the meanings that they ascribe to their experiences.

This qualitative study will assist me to understand the experiences of grade 11 Mathematics teachers in the implementation of the CAPS. The qualitative approach is appropriate as the interaction between me and the participants will take place through face-to face group interviews to elicit their experiences.

1.9. SAMPLING

In its attempt to transform education, the democratic government of South Africa reformed the apartheid curriculum, NATED 550, to NCS (Chisholm, 2005). Thereafter, NCS was revised to give rise to CAPS. In order for me to explore grade eleven Mathematics teachers' experiences in implementing CAPS, it is necessary to select a sample of teachers who were involved in implementing all the above curriculums so that I can get a deeper understanding of their experiences with curriculum reform. Further, this sample of teachers will represent schools located in varying social environments: a rural school, a township school, an ex-Indian school, an ex-Coloured school, and an ex-Model "C" school.

I will therefore purposefully select this sample of teachers who can adequately contribute to my research study by reflecting on their experiences in implementing curriculum reform (Cohen, Manion & Morrison, 2011).

1.10. DATA PRODUCTION

My research study requires participants to voice their experiences in implementing CAPS in a grade eleven Mathematics class. Words that reveal participants experiences are referred to as empirical data (Janesick, 2011). I will use the case study approach to appropriately and effectively present participants' experiences by detailing the actual words of their experiences in a case study report (Maykut & Morehouse, 1994).

I will also use the focus group interview as the data collection method of my research because it appropriately supports the case study approach (Yin, 2012). Data produced by the participants through this discussion will be recorded and transcribed (Morgan, 1996).

Since my study is about the phenomenon of participants' experiences in the real world context, the case study research method and the focus group interview as the data collection method are most appropriate to support data production in my research study.

1.11. DATA ANALYSIS

According to Schutz (1962), the data that will be produced in the focus group discussion will constitute the first degree construction by participants of their experiences in implementing CAPS in the grade eleven Mathematics class. This data must be interpreted and analysed. I will use the mimesis approach to engage with the collection of the data from the participants, translation of verbal data to text, and the analysis and interpretation of the data (Flick, 2006; Ricoeur, 1981). In my analysis, I will look for patterns in the data, and then categorise, code and organise the data into themes that would provide answers to my research question (Janesick, 2011; Maykut & Morehouse, 1994).

1.12. LOCATION OF STUDY

It was important to get a broad perspective on the issue of teachers' experiences with curriculum change in the grade 11 Mathematics class in secondary schools. The study will be done on a focus group that constitutes teachers from varying social environments. The group was representative of Mathematics teachers from a rural school, an ex-Indian school, an ex-Coloured school and a township school. The teachers chosen were FET Mathematics teachers, experienced in teaching the NATED 550, the NCS and the CAPS in the grade 11 class. An interview was conducted with the focus group in a neutral, convenient location, away from the school environment. The time period of this study is between January 2014 and December 2014.

1.13. PREVIEW OF THE CHAPTERS TO FOLLOW

Chapter 2 details the review of literature in the field of curriculum change and curriculum implementation by various authors, nationally and internationally. It also explains the conceptual framework that supports the change theory and the intended and enacted curriculum.

Chapter 3 explains the research design and methodology that underpins this study in order for it to be credible and valid for all intents and purposes. It further explains the limitations experienced in the course of this research.

Chapter 4 presents the analysis of the data gathered from the focus group interview, explicitly presenting concerns of participants regarding the implementation of CAPS.

Chapter 5 summarises the findings from the analysis done in chapter 4, and recommends future trends to curriculum reform.

1.14. CONCLUSION

This chapter provides a framework of how I will attempt to find answers to the research problem declared in this chapter. Insight into this research problem is provided in the background. My research study will be guided by this framework in order to achieve the objectives declared in this chapter.

CHAPTER TWO
LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1. LITERATURE REVIEW

2.1.1. INTRODUCTION

Curriculum change and implementation in South Africa has become a common topic of discussion in the education fraternity since the advent of democracy in 1994 (Soudien, 2004; Carl, 2005; Bantwini, 2010). This literature review indulges in a synopsis of scholarly literature that deals with curriculum change and implementation in the national and international arenas. This review has focused on literature of researchers whose findings are consistent with teachers' experiences with curriculum change in Mathematics. Greater insight is provided into the involvement of teachers in implementing the new curriculum (CAPS) in the classroom. Since implementing new curriculum brings about change, this study will be informed by the change theory as the conceptual framework. In this synopsis I have identified themes that best describe the aspects that affect curriculum change and implementation. The themes are:

- Ownership: the extent of teacher involvement in curriculum development, explains the need for teachers to be involved in developing curriculum in order to establish a sense of ownership of the curriculum that contribute to successful curriculum implementation.

- Policy document: Clarity and Understanding of the document, is the theme that identifies the Policy document as the framework that guides curriculum implementation and emphasises the need for its clarity and user-friendliness.

- Teacher training for curriculum implementation: the teacher is identified as the main stakeholder in curriculum implementation. For implementation to be successful, teachers must be appropriately trained to accurately interpret and implement the intended curriculum. This theme explains the importance of teacher training.

- Knowledge and skills of teachers: this is fundamental for the appropriate and accurate implementation of the intended curriculum for the benefit of the learners. This theme explains how the knowledge and skills of teachers, or the lack thereof, influences curriculum implementation.

- Curriculum materials and resources: the textbook is discussed as an important supporting tool that strengthens curriculum delivery.

- Contextual factors affecting curriculum reform: this theme exposes factors that directly and indirectly affect the teaching and learning process and in so doing, they influence curriculum delivery.

2.1.2. OWNERSHIP: THE EXTENT OF TEACHER INVOLVEMENT TO CURRICULUM DEVELOPMENT

According to Australian researcher Macdonald (2003), curriculum reform is a global phenomenon that is constant and optimistic. For change in curriculum to be successful, it requires the commitment of teachers, who are the main stakeholders in the delivery of the curriculum (Carl, 2005; Beck, Czerniak, & Lumpe, 2000; Battista, 1994; Ngubane, 2002), and the essential component in enacting new curriculum (Molefe & Brodie, 2010). The literature below emphasises what researchers have found relating to teachers concerns about their involvement in curriculum reform document.

Teachers as the major role-players should be part of the curriculum development process (Carl, 2005, Kilpatrick, 2009), since they are crucial in implementing structural reform (Flores, 2005). South African teachers were largely excluded from engaging in the curriculum development process outside the confines of the classroom (Carl, 2005). Curriculum reform in North America and United Kingdom propagated the top-down approach which nullified the influence of teachers because of the tightly packaged objectives, content and assessment designed by specialised writers of curriculum (Macdonald, 2003). Reform efforts in the Mathematics curriculum in the United States of America has only changed the curriculum but has failed to reform it, because of disunity and indifference of teachers, as well as misrepresentation and contradictions of the policy document (Kilpatrick, 2009). Kilpatrick (2009) further debates that the intended curriculum, implemented

curriculum and attained curriculum, advocates a top-down power flow from curriculum developers to teacher to learner, and this leaves little room for the intentions of the teachers and learners. Teachers want to be part of the knowledge construction and curriculum planning so that they can have a sense of ownership of curriculum reform. They also want to know and understand what the curriculum reform expectation areso that they can easily adjust to achieving its success during implementation (Cross, Mungadi & Rouhani, 2002).

Although teachers are specialists in their subject, little consideration, if any, is given to their concerns on curriculum development (Carl, 2005). They have been merely referred to as facilitators and this therefore makes them eligible at the implementation phase only (Carl, 2005; Kirk & MacDonald, 2001). They are mere recipients of curriculum, and their function is to correctly implement the curriculum that has been developed by subject specialists elsewhere (Carl, 2005). According to Carl (2005, p. 223), in the South African context, teachers are seen as: "(1) learning mediators, (2) interpreter and designer of learning programmes and materials, (3) leader, administrator and manager, (4) scholar, researcher and lifelong learner, (5) community, citizenship and pastoral role, (6) assessor, (7) learning area and subject specialist". This is a clear indication of what the Department of Basic Education (DBE) in South Africa expects from teachers regarding curriculum functions (Carl, 2005).

Carl (2005) therefore undertook a study to determine how teachers themselves felt about their role in curriculum development. He launched a research project to investigate the extent of teacher participation in curriculum development in South Africa. The key research question of Carl's (2005) research was to establish "whether teacher involvement in curriculum development is indeed being addressed, or whether the teacher's "voice" is merely a "voice crying in the wilderness" (Carl, 2005, p 224). Teachers expressed a strong need to participate in earlier stages of curriculum decision making (Carl, 2005). They felt that there was a lack of channels of communication and therefore teachers' voices remain unheard (Carl, 2005). The curriculum was prescriptive and it was imposed on them for implementation (Carl, 2005). Respondents felt that policy-makers have lost all contact with the school situation, including classroom practice (Carl, 2005). The advantage of prior consultation is that the perception that policy makers are out of touch with the school and classroom situation will be quelled. It would further ensure teacher participation and give teachers an incentive to take ownership of the curriculum (Carl, 2005), and be actively involved in its implementation because they share in the curriculum reform (Akker, Fasoglio & Mulder, 2010). This participation would

promote personal and professional growth (Carl, 2005) because teachers own the change (Macdonals, 2003). My belief is consistent with Carl in that as professionals, teachers want to be part of the decision making process and take ownership of the creation of a new curriculum that impacts directly on their task of delivery. Teachers are the principal agents in the process of bringing about curriculum change, and therefore, should be part of curriculum development process (Carl, 2005). Bantwini (2010) is another South African researcher who has contributed to research in curriculum development and implementation.

Bantwini (2010) researched teachers in the Eastern Cape Province of South Africa. His research focused on the Revised National Curriculum Statement and how teachers perceived meanings led to limited implementation and non-implementation in the classroom. According to Bantwini (2010), teachers attached negative and unconstructive meanings about curriculum reforms: too much paperwork and work overload; change to unfamiliar classroom routines and teaching methods. Bantwini (2010) established that these negative feelings emanated from: not completely understanding curriculum reforms; a lack of support in the classroom from subject advisors; professional development that was not ongoing; and teachers were left to fend for themselves after a once off orientation workshop conducted by the subject advisor. Bantwini (2010) therefore suggests that: Teachers should be involved in the conceptual and developmental stages so that they have a fundamental understanding of the curriculum. The school districts should structure developmental support to ensure that teachers appropriately understand reform (Bantwini, 2010). Teachers must be adequately provided with "tools, space, opportunities and other mechanisms to construct the knowledge and meaning" of the new curriculum reforms (Bantwini, 2010, p. 90). The tools, space, opportunities and other mechanisims will allow teachers to construct meaningful learning experiences for learners by engaging with a practical approach to learning and teaching.

Research has been done by Malinga (2005) in the field of exploring difficulties that grade 10 educators experienced after Outcomes Based Education (OBE) was implemented in grade 9. This research was undertaken in the UMgungundlovu district of KwaZulu-Natal, South Africa. Malinga (2005) exemplified the difficulties experienced by grade 10 Mathematics educators. These teachers were already experiencing difficulties before OBE was implemented, and before they could come to grip with these difficulties and take ownership of the curriculum, OBE brought with it more difficulties and therefore the lack of ownership of curriculum persisted (Malinga, 2005).

Macnab (2003) undertook a study to investigate how the process of implementation of the Mathematics curriculum worked its way down to the classroom and to the level of the learner in Scottish Schools. After the official report "Improving Mathematics Education" on teaching and learning of Mathematics in Scottish schools was published, Macnab (2003) examined its implementation and recommendations of the report. The National Education Authorities (NEA) took little responsibility in the implementation and therefore it was left to the Local Education Authorities (LEA) and their schools (Macnab, 2003). The NEA's reports are accepted with little debate and overt dissent and therefore implementation is not as successful as it should have been, because Scottish teachers have a "sense of resigned acceptance" (Macnab, 2003, p. 213). The change of curriculum takes place in a piecemeal fashion and alterations are made without attending to general questions and uncertainties (Macnab, 2003). Therefore, in the long-term, the Improving Mathematics Education (IME) reports lower success rate than expected (Macnab, 2003). Macnab (2003) recommends that: Firstly, constructive debate, situated in an external social and cultural context, is essential between policy makers and its implementers if curriculum development is to succeed; secondly, the primary aim for proposed change should have a Mathematical basis, thirdly, implementation must take place in a flexible, structured context in order to allow local differences to function under the overall perception.

If teachers are to be part of curriculum change, then they should be part of its creation so that they can correctly understand and interpret policy documents (Dean, 2005). According to Fullan (1991) and Dean (2005), change is difficult if teachers do not have a stake in the creation process. Through teacher participation curriculum can become consistent with teachers beliefs, and teachers can adjust their beliefs to suite new curriculum (Fullan, 1991; Dean, 2005). Graven (2002) argues that the roles that teachers play in the implementation of the new curriculum are conflictual and not complementary. Curriculum 2005 demanded that teachers implement learner-centred, locally relevant curriculum, whilst learner performance is judged by a national examination (Graven, 2002). In my view the Further Education Training (FET) phase is crucial because it ends with the National Senior Certificate Examination that assesses the success of the education system based on learner results. Curriculum implementation should be a process of engaging the curriculum so that it "becomes part of the teacher's way of being" and will result in teachers adjusting their beliefs and modifying their approach to suit the way curriculum should be delivered (Graven, 2002,

p3). Excluding teachers from decision making reduces their morale and therefore negatively influence successful implementation (Graven, 2002).

I therefore want to understand the beliefs of mathematics teachers that influence their functioning in the classroom in order to deliver the CAPS curriculum. There was a need for intervention to be in place so that teachers have the opportunity to interact with the reform documents, in order to make understanding and implementation more desirable (Beck et al, 2000).

2.1.3. POLICY DOCUMENT: CLARITY AND UNDERSTANDING OF THE DOCUMENT

The Curriculum Policy document is issued to teachers as a framework that must be followed in order to implement the curriculum (Bennine & Newstead, 1999). Bennie & Newstead (1999) report on the obstacles experienced by the Mathematics Learning and Teaching Initiative (MALATI) to implement the section of Statistics in the Mathematics, Mathematical Literacy and Mathematical Sciences learning area of Curriculum 2005. After holding discussions with teachers of mathematics in the Western Cape and reviewing literature on the teaching and learning of statistics, Bennie & Newstead (1999) identified the complexity and technical nature by which the curriculum document is presented as an obstacle to change. Such a document should serve as a framework to provide sufficient detail to ensure common learning, but to also allow space for interpretation by the teacher (Bennie & Newstead, 1999). The project group found difficulties in interpreting the document during their efforts in preparing teaching and learning materials (Bennie & Newstead, 1999). The following contributed to the document being problematic: the curriculum document was poorly constructed with a lack of clarity that confused teachers, omissions of important aspects of the topics in focus, content errors which incorrectly defined concepts, and content inappropriate for given phases (Bennie & Newstead, 1999; Ngubane, 2002).

Cross et al (2002) confirms that the Curriculum 2005 document had a skewed design and was written in cumbersome language. Due to South Africa being a multi-lingual country, poor understanding of the language structure in the policy document, written in English, may result in incorrect interpretation and implementation of the curriculum by teachers who speak

English as a second language (Cross et al, 2002). Malinga's (2005) study of the OBE document further adds to the clarity and understanding of the policy document.

Respondents in Malinga's (2005) study found the OBE document did not link the grade 9 OBE syllabus to the grade 10 NATED 550 syllabus, whereas there was a clear link in the old syllabus. Grade 9 OBE encouraged a practical approach as compared to theoretical approach in grade 10 (Malinga, 2005). This led to a lack of pre-knowledge of learners to cope with abstract concepts in grade 10 (Malinga, 2005).

The curriculum policy documents that guides the implementation of curriculum can contribute as an obstacle due to a lack of clarity of the document that confuse teachers, important aspects of topics being omitted, content errors which incorrectly defined concepts, inappropriate content for a given phase, and cumbersome language that teachers may be able to interpret.

2.1.4. TEACHER TRAINING FOR CURRICULUM IMPLEMENTATION

New curriculum need new practices and therefore training is essential for teachers to assimilate and make these new practices their way of life (Brodie, 2002). Failing the assimilation of new practices, teachers will revert back to old and outdated practices as alluded to in Brodie's (2002) research. Cavanagh (2006), in his study of curriculum change in Australian schools in New South Wales, found that one of the barriers to change is that most teachers preferred to remain with current practices rather than change to new ones. According to Cavanagh (2006) this is a result of teachers not understanding the reform and not wanting to embrace reform because they felt comfortable with the current practices.

Contrary to Cavanagh's findings, Spyker & Malone (2000), in their study on curriculum implementation in Western Australian schools, discovered that after teachers engaged with in-service training and workshops, their cooperation with implementation was the strongest. In-service training gave teachers the opportunity to seek help with problems that they encountered (Spyker & Malone, 2000). However, these workshops covered the new content and ignored new strategies to teaching (Spyker & Malone, 2000). Engaging in just a few workshops or in-service courses would not immediately get teachers to change strategies because they will be comfortable maintaining tried and tested approaches (Spyker & Malone, 2000). For successful implementation, it is important to change teachers' attitude towards the

new curriculum (Spyker & Malone, 2000; Ngubane, 2002). Bennie & Newstead (1999) recommends that these workshops and in-service training on new content must be done in a meaningful way that is not threatening, and Ngubane (2002) further adds that training should be friendly and sociable.

As a teacher I feel that teacher training is an essential part to equipping teachers with the skills and knowledge to interpret the curriculum document and deliver the content in the classroom. Further, if teachers are not trained, this will be an obstacle to curriculum delivery. The themes that emerged from Beck et al (2000) findings were staff development, planning and class time, and curriculum material. Teachers felt that staff development should be a long term activity that should focus on the salient beliefs that influence a positive attitude towards implementation (Beck et al, 2000). They wanted to be involved in positive experiences such as in-service training and workshops that can help them model correct and effective implementation strategies (Beck et al, 2000).

Graven (2002), as the co-ordinator of the Programme for Leader Educators in Senior-phase Mathematics Education (PLESME), established that teachers in South Africa needed in-service training to help them make sense of Curriculum 2005. There is also the perception that school administrators (school management team members) must also be part of the in-service training and workshops, to conscientise themselves with the reform requirements and process so that they can offer support to teachers and encourage a positive environment for reform (Beck et al, 2000).

Zappa-Hollman (2007) based her study on the reform in education in Argentina, and more specifically she investigated challenges that teachers faced during the implementation of changes in policy, curriculum and instruction regarding teacher training and development, teaching strategies and access to resources. This study found that there was a lack of trained teachers, with many of them not having the necessary teaching qualifications. It was also found that teachers lacked English language skills and pedagogical skills (Zappa-Hollman, 2007). Zappa-Hollman's (2007) study also showed that there was a mismatch between training and skills needed in the classroom. Although the education ministry mandated ongoing training workshops for teachers, this was not realised due to insufficient budgetary resources (Zappa-Hollman, 2007).

Battista (1994) exposes two areas of reform that are targeted by Mathematics reform, content, and the way in which teaching and learning is viewed. The reform in content called for the replacing the curriculum that propagates Mathematics that focuses on computation with a curriculum that propagates reasoning, understanding and problem solving (Battista, 1994). Teaching and learning should focus on Mathematical thinking and not on observable behaviour (Battista, 1994). Battista (1994) explains the reasons for teachers' beliefs not being aligned to reform as, teachers themselves have been educated by a system that promoted the traditional method of teaching and learning Mathematics as sets of dictated procedures rather than sense-making; and text books, testing programs, education officials, politicians and parents still accept and expect the traditional curriculum being taught in schools (Battista, 1994). To overcome these challenges, institutions involved in teacher training must train teachers to teach reformed curriculum (Battista, 1994). I feel that in-service training programs and workshops must be designed by education officials to help teachers transform. However, Graven (2002) warns that in-service training and workshops are not enough to bring about curriculum change if the mind-set of teachers' has not shifted. Some educators who had received training are not confident (Ngubane, 2002). Extensive training is essential to enhance learning by teachers in order to prepare them for curriculum implementation (Battista, 1994). However, whilst teachers accept and move towards new practices, they will need to draw from their old resources (Brodie, 2002) in order to find a hybrid practice that will suit their learners (Molefe & Brodie, 2010).

Malinga (2005), in his research on the implementation of Curriculum 2005 (Outcomes Based Education) found that there was a lack of training of teachers to help them in coping with curriculum change. Teachers needed in-service training, which was a challenge for the education department to provide (Malinga, 2005). In my research study, I intend to probe participants to establish whether they attended any in-service training to help them prepare for curriculum change and how they coped with curriculum change after undergoing(or not undergoing) in-service training.

2.1.5. KNOWLEDGE AND SKILLS OF TEACHERS

The content knowledge and pedagogical skill strongly influences the way teachers teach Brown & Borko, 1992). Battista (1994) believes that the key element to successfully reforming Mathematics education is the teacher. He further adds that many teachers' beliefs are not compatible with curriculum reform and therefore these beliefs hamper reform efforts.

The beliefs of teachers are critical not only to what is being taught, but how it is being taught (Battista, 1994). Teachers' experience as learners contribute greatly to the development of their belief systems and this has a huge influence on the teaching and learning process in the classroom (Macnab, 2003; Handal & Herrington, 2003). Teachers' beliefs can be considered as critical to the attitude that teachers have towards changes in curriculum (Cavanagh, 2006; Handal & Herrington, 2003; Beck et al, 2000). The poor success rate of reforming mathematics education is due to teachers' suspicion of reform and their submission to its implementation by tacit consent (Handal & Herrington, 2003). Teachers' knowledge of pedagogy and subject content will strongly influence how they teach, and therefore it is essential to acknowledge their knowledge and skills (Cavanagh, 2006). Handal & Herrington (2003) contend that pedagogical beliefs of teachers contribute to the complexity of bringing about reform in education. They further expound on the concept of beliefs as a person's perspectives on how to engage in mathematical tasks and the practice of pedagogy (Handal & Herrington, 2003). Mathematics teachers' beliefs directly influence their functioning in the classroom and have an impact on their actions to effect reform (Handal & Herrington, 2003; Beck et al, 2000). Teachers will experience a range of obstacles in trying to implement curriculum due to their own beliefs and ideas (Handal & Herrington, 2003). Policy makers must consider that teachers' beliefs will largely influence curriculum implementation (Handal & Herrington, 2003). These beliefs can facilitate or inhibit teachers' acceptance of the change (Handal & Herrington, 2003). Curriculum policies will not directly unfold in the classroom without some influence of the implementers (Handal & Herrington, 2003). For implementation to be successful there must be a change in teachers' knowledge, meaning and identity which will assist them in correctly interpreting and implement the document (Parker, 2006).

Conflict between the ideologies of the new curriculum and teachers' beliefs creates an obstacle to the implementation of the curriculum (Bennie & Newstead, 1999). In addition to the delivery of new content being an obstacle, traditional content required to be delivered in the new approach is also an obstacle (Bennie & Newstead, 1999). Bennie & Newstead (1999) identified teachers' content knowledge as an area of concern, since it has an influence over the quality of the learners' experiences in the mathematics classroom. One reason presented by Malinga (2005) was that unqualified teachers were forced to teach the subject because of the lack of qualified Mathematics teachers. Many teachers are themselves trying to gain confidence in topics they have weak conceptual knowledge of (Bennie & Newstead, 1999;

Malinga, 2005). Topics that are new will leave teachers feeling inadequate to teach and therefore they cannot do justice to delivering that aspect of the curriculum properly (Bennie & Newstead, 1999). Teachers' knowledge, skills, experiences, beliefs and practices therefore shape and influence their acceptance and implementation of change in curriculum. (Cavanagh, 2006; Handal & Herrington, 2003; Macnab, 2003).

Brodie (2002) undertook a case study of a South African teacher's changing practice over three years 1996, 1997 and 1998. Ms "A" from a well-resourced primary school in a township in the Northern Province of South Africa was selected as the focus of this research (Brodie, 2002). Learners of this school were Black[1] and came from homes that ranged from poor to middle-class (Brodie, 2002). In 1996 she used traditional practice with some new practices and in 1997 she engaged with both old and new practices which indicated that she was moving between the old and the new practices, using them when she felt most comfortable (Brodie, 2002). In 1998 she began to talk more and explain more to the learners, and therefore appeared to move back to the old practices and therefore it could also be seen as if she had moved towards the new but needed to draw from the resources of the old (Brodie, 2002). In my opinion, teachers who are uncomfortable and insecure with curriculum change due to the lack of knowledge and skills will find comfort in delving with the old practices, in the same way that teacher 'A' did. Teachers will take comfort in old practices because it is familiar to them. This investigation attempts to establish whether the focus group participants were comfortable with the changing curriculum or whether they also switched between the old and new practices.

Molefe & Brodie (2010) have researched the practices of two South African grade 10 Mathematics teachers in their classroom, implementing the new Further Education and Training curriculum. They set out to study the kinds of practices the two teachers used in the classroom. In the first case, School "A" is a formally Coloured school that served Coloured and Black learners and the teacher has a Secondary Teachers Diploma, Higher Diploma in Education and Bachelor of Science Honours degree in Mathematics education. In the second case, School "B" was in a Black township serving Black learners only and the teacher has a

[1] The people of South Africa were segregated along racial lines by the Apartheid Government into Indian, Black, Coloured and White. They lived in areas demarcated for the different racial groups and schools in these areas were strictly reserved for members of these communities (Thomas, 1996).

Secondary Teachers Diploma and a Further Diploma in Education. These schools were not adequately resourced.

Teacher "A" used many reform orientated practices and used high level cognitive tasks and encouraged learners to engage their thinking and self-evaluation mathematically. Whilst teacher "B" lowered task levels and placed emphasis on procedural efficiency and not on conceptual understanding. Learners were being groomed towards obtaining correct answers instead of engaging in Mathematical thinking. It is clear to see that teacher "A" engaged in reform-oriented practices whilst teacher "B" remained with traditional practices (Molefe & Brodie, 2010). Due to the schools being in different locations and teacher "A" having a higher qualification than teacher "B", I believe that these variables led to different approaches to teaching by the teachers. Learners in ex-Department of Education and Training (DET) schools were performing poorly in Mathematics (Reddy, 2006), therefore teacher "B" may have adapted her teaching style to get the learners to obtain correct answers. Implementation of change fails because the planners and decision makers of the policies of new practices are not in touch with the situation on the ground to be able to understand the situational constraints, such as values, ideas and experiences of the implementers of change (the teachers) (Fullan, 2007).

The National Curriculum Statement and the Curriculum and Assessment Policy Statement introduced new content and traditional content (DBE, 2011b). This demonstrates the need to understand how South African teachers have coped with these changes, and to investigate their experiences in the classroom.

2.1.6. CURRICULUM MATERIALS AND RESOURCES

Curriculum materials are important supporting tools used in curriculum delivery, and the textbook will remain the preferred tool which has the greatest influence as the medium assisting delivery in the classroom (Beck et al, 2000). The textbook substantially influences lesson content and presentation (Tarr, Chavez, Reys & Reys, 2006). However in Beck et al's (2000) study of the implementation of constructivism in schools in the Northwest region of Ohio (United States of America), teachers found that the text books and other available material did not adequately cover constructivist activities (Beck et al, 2000). There is a need for well designed curriculum material to help in building a positive attitude towards

implementing reform (Beck et al, 2000). The unavailability of instructional material contributes to restriction in curriculum reform (Bennie & Newstead, 1999; Ngubane, 2002).

Poor quality textbooks were used in grade 8 and grade 9, with the grade 9 textbooks having more activities and stories and less Mathematics and therefore proved useless to the respondents (Malinga, 2005). Due to the language used in textbooks, learners found that it required a lot of interpretation (Malinga, 2005).

Supporting materials to curriculum delivery must be available to the teacher if he/she is to adequately deliver the curriculum. Further, the available material must be user friendly so that teachers can use them to strengthen curriculum delivery in the classroom.

2.1.7. CONTEXTUAL FACTORS AFFECTING CURRICULUM REFORM

This theme summarises research findings that relate to factors that influence curriculum delivery and the teaching and learning process within the school environment.

Bennie & Newstead's (1999) study in the MALATI project in the Western Cape (South Africa) revealed that the Curriculum 2005 document required that learners study Statistics from grade 1 to 9, but however this topic was not covered in lower grades and therefore disadvantaged learners in grade 9. Learners' previous knowledge is essential when dealing with topics that were covered in previous grades (Bennie & Newstead, 1999). If learners were not exposed to these topics in previous grades then this puts a constraint on their learning experience in the current grade (Bennie & Newstead, 1999). This will lead to learners becoming frustrated and strain the teaching and learning process (Bennie & Newstead, 1999). Learners affected by a lack of parental support came from deprived homes where they were exposed to poverty, physical abuse, neglect, teenage motherhood, alcohol and drug abuse, gangsterism and crime (Dean, 2005). These learners developed low self-esteem which negatively changed their behaviour and contributed to learning problems in the classroom (Dean, 2005). Beck et al (2000) views planning and contact time with learners as contributing contextual factors affecting curriculum reform.

Teachers were concerned with the lack of planning and contact time that the reform would create (Beck et al, 2000). They felt that more time was needed in the planning of constructive teaching, and that students need more time to grasp and understand concepts (Beck et al,

2000). Beck et al (2000) suggested that teachers needed to interact more with other teachers to encourage them to develop a positive attitude about time needed for planning and teaching. There was also much concern about curriculum material that supported teaching and learning.

In Zappa-Hollman (2007) study, she found that the training did not consider the reality and context of the Argentine society. They lacked skills to handle students from poor areas, since they were more likely to take ill, truant classes, have short attention spans, be less motivated and are highly pressured to leave school and join the workforce (Zappa-Hollman, 2007). Teachers struggled with large class sizes and their access to resources were limited (Zappa-Hollman, 2007; Ngubane, 2002). The students' lack of discipline and their indulgence in school violence, bulling and vandalism were a grave concern for teachers due to them receiving no training to handle these issues (Zappa-Hollman, 2007). Academic program was challenged by students who were disruptive, noisy, disobedient, uncooperative and truanted classes (Zappa-Hollman, 2007). Teachers needed more resources to handle such extreme discipline problems (Zappa-Hollman, 2007).

Bantwini (2010), in his study, established that the teacher:learner ratio ranged from 1:50 to 1:80 which was unacceptable to most teachers. This high ratio was attributed to a shortage of teachers (Bantwini, 2010). This shortage of teachers was a major challenge in most schools in achieving the adequate delivery of the curriculum in the classroom, and the lack of parental support was an additional concern for schools since learners needed monitoring at home in order to consolidate learning (Bantwini, 2010; Ngubane, 2002). Teachers found that learners lacked basic skills and expected parents to teach learners these basics of education (Bantwini, 2010). Unplanned school meetings was disruptive and consumed teaching time (Bantwini, 2010). According to Bantwini's (2010) study, factors that influenced teaching and learning related to the lack of learners relevant previous knowledge, lack of parental support, poverty, physical abuse, neglect, teenage motherhood, alcohol and drug abuse, gangsterism and crime. These learners were more likely to take ill, truant classes, have short attention spans, are less motivated, disruptive, noisy, disobedient, uncooperative and truanted classes. Bantwini (2010) also found that teachers were concerned with the lack of planning and contact time brought about by new curriculum. They felt that more time was needed in the planning of constructive teaching, and that students need more time to grasp and understand concepts. Further, teachers lacked skills to handle students with discipline problems. Shortage of

teachers contributed to large class sizes which were difficult for teachers to handle. Limited resources at schools affected teachers' efficiency in the classroom.

Teachers as curriculum implementers must take ownership of curriculum reform by involving themselves in its development so that they know and fully understand the curriculum policy document, and in so doing, ensure its successful implementation. This involvement of teachers in curriculum development would ensure clarity and understanding of the policy document since teachers themselves contribute to its creation. Through knowing and understanding the curriculum policy document, teachers can identify the type and depth of training necessary to empower them for successfully implementation. The training and development of teachers will enhance their knowledge and skills which is essential to engage with curriculum delivery in the classroom and ensure quality education for learners. The delivery of this quality education requires the support of quality resources and materials such textbooks. Teacher training must also involve the training of teachers to cope with and overcome factors that hinder curriculum delivery.

The literature reviewed in this section has been presented in themes. The themes discussed were ownership of curriculum, clarity and understanding of the policy document, teacher training, knowledge and skills in teachers, curriculum materials and resources, and contextual factors affecting curriculum delivery. These themes are relevant to my study on the experiences of grade eleven Mathematics teachers in implementing Curriculum Assessment and Policy Statement, as they provide a broad perspective of possible of experiences that teachers can have in the course of implementing curriculum reform.

The literature reviewed here will be integrated with the findings of my study (refer to chapter 4) so that I can make sense of the data of grade eleven Mathematics teachers experiences in implementing Curriculum and Assessment Policy Statement.

2.2. CONCEPTUAL FRAMEWORK

This study will be informed by certain key curriculum concepts. The first of these is the change theory as generated by Ornstein and Hunkins. The other two concepts that will guide this study are the intended curriculum and the enacted curriculum.

2.2.1. CHANGE THEORY

According to Ornstein & Hunkins (1998), the aim of developing curriculum is to effect some change in order to make a difference in education. The essential component of curriculum development is its implementation in order to bring about the required change (Ornstein & Hunkins, 1998). Dean (2005), Brodie (2002) and Cross, Mungadi & Rouhani (2002) have all alluded to the fact that after the African National Congress Government came into power in April 1994, changes in the education system was inevitable in order to transform the apartheid curriculum and to bring about equality. The South African teachers were the essential component to bring about these desired changes by implementing the new curriculum in the classroom.

Change can come about in various ways. Ornstein & Hunkins (1998) cites Warren Bennis, who identified the following types of changes: Planned change that occurs when stakeholders participate equally in the process of change; coercion occurs when one group of stakeholders use power over other stakeholders to institute change; and interaction change is change that involves stakeholders sharing equal power in goal-setting but are uncertain of how to follow through with plans of development and implementation. This study will try to establish what type of change was experienced by the participants within the focus group that will be constituted to undertake this research.

2.2.2. OBSTACLES TO CHANGE

Ornstein & Hunkins (1998) further cited Thomas Harvey's obstacles to change as: the lack of a sense of ownership by stakeholders in implementing change; the lack of benefit that is perceived in the change process by teachers and learners; the increase in the workload of teachers; the lack of support from those who initiated the process of change; the lack or poor collegial support to teachers; the insecurity that teachers feel if their safety is under threat; the chaos that is perceived to be generated as a result of implementing the changes; the lack of knowledge of teachers about the change. The obstacles experienced by teachers in this research study will be compared with Harvey's obstacles of change in order to establish whether they are consistent with change theory.

2.2.3. FORCES OF CHANGE

Change is initiated by new knowledge as well as the need of people to effect change (Ornstein & Hunkins, 1998). Ornstein & Hunkins (1998) acknowledge Kurt Lewins as the

father of change. Lewins theory of change identifies two competing forces in his force field model, the driving forces and the restraining forces.

Figure 2.1. below represents the effect of driving and restraining forces on the issue of curriculum change.

Equilibrium can only exist when these two forces are equal (Ornstein & Hunkins, 1998). Change is initiated when the driving forces are greater than the restraining forces (Ornstein & Hunkins, 1998). Some of the elements that are identified by Ornstein & Hunkins (1998) as driving forces are: intervention of government, values of society, change in technology, knowledge explosion, and administration processes. The South African government through its intervention made changes to curriculum in order to make curriculum more relevant to the people of the country. Curriculum in South Africa also changed because of the advancement of technology and the internet. This study will investigate teachers understanding and commitment to implementing the new curriculum.

Ornstien & Hunkins (1998) continue to explain that the restraining forces are: fear of the unknown, threats to power, obsolete knowledge, traditional knowledge, and limited resources. In my study I will attempt to establish how teachers felt about change, and how these feelings contributed to resisting curriculum change. I will also attempt to investigate other contributing factors to resistance to change.

According to Ornstein & Hunkins (1998) there are three stages to the change process: the unfreezing of the driving forces when its elements are stimulated, the shift of the force field from the driving force towards the restraining force, the refreezing of the force field.

This research will attempt to establish what teachers perceived as the driving forces that prompted the change process, what restraining forces they encountered during implementation of the new curriculum in the classroom, and what obstacles they experienced during the process of implementing the new curriculum.

2.2.4. INTENDED AND IMPLEMENTED CURRICULUM

The concept of curriculum according to van den Akker, Fasoglio, & Mulder (2010), is the core plan that must be followed to achieve organised learning. Implementing curriculum policy is the interplay between what the intended curriculum statement says and the numerous interpretations by various agencies such as teachers, schools, and supporting curriculum materials (Knapp, 2002). These agencies exert an influence on the operational curriculum (the curriculum actually being implemented) (Atkin, & Black, 2003).

van den Akker et al (2010) classifies curriculum as: Firstly, the Intended Curriculum which is the ideal curriculum contained within the vision of the authorities in education who design curriculum policy (van den Akker et al, 2010) to achieve the goals of the state (Porter & Smithson, 2001). It presents the content standards for specific subjects as well as grade levels and therefore dictates the content that should be covered in the classroom (Kurz, Elliot, Wehby, & Smithson, 2010). Secondly, the written curriculum which represents the intentions of the policy put in writing such as a policy document, conveys the intended curriculum to curriculum interpreters and implementers(teachers) (van den Akker et al, 2010). This further includes other written materials such as text books that support the teaching and learning process (Herbel-Eisenmann, 2007). The textbook is the most trusted and most widely used curriculum material that is directly related to the teaching and learning process (Beaton, Mullis, Martin, Gonzalez, Kelly, & Smith, 1996), but we must acknowledge that the written curriculum may not be identical to the intended curriculum (Tarr et al, 2006). Thirdly, the enacted (implemented) curriculum which refers to the curriculum as perceived by the interpreters and implementers (teachers) (van den Akker et al, 2010) and delivered to the learners in the classroom as instructional content (Kurz et al, 2010, Porter & Smithson, 2001).

The focus is therefore on classroom practice to inform the extent of curriculum delivery (Porter & Smithson, 2001). It highlights the teaching and learning interaction between teachers and learners (Kurz et al, 2010). Teachers often change and modify curriculum intentions to suit the purpose of the lessons (Ozgeldi & Cakiroglu, nd). Finally, the Attained Curriculum which is the actual learning experiences that is perceived by the learners (van den Akker et al, 2010).

Since this study focuses on the experiences of teachers, attention will be given to the intended curriculum and the enacted curriculum. There will be an attempt to establish a link between the intended and enacted curriculum from the participants in this study. Further, the study will also endeavour to establish whether the supporting materials adequately supported the enacted curriculum to achieve the intended curriculum.

2.3. CONCLUSION

This review has expressed the findings of numerous researchers in the field of curriculum change. Much common concerns have been high-lighted about the way curriculum changes have been orchestrated and the challenges that teachers have had with its implementation. Curriculum change has been challenged by many obstacles such as the lack of teacher involvement in the creation of the curriculum document, poor construction of the document, inadequate knowledge and skills of teachers in interpreting the curriculum document implementing new content, and the lack of or little training of educators in understanding and implementing the new curriculum.

Recommendations have been made on how to overcome challenges in order to improve the success of implementation. My research will attempt to establish its own findings on the implementation of the Mathematics Curriculum and Assessment policy Statement, in the grade eleven class, from a selected group of teachers and compare them to the findings of this literature review. The guiding principles of change theory underpin the process of curriculum change and implementation. It suggests the forces that bring about change, the obstacles to change and how equilibrium can be achieved. This research will be guided by this theory to engage with the data and conclude its findings.

2.4. PROJECTION FOR THE NEXT CHAPTER

The next chapter details the research design and explains the intention for selecting such a design. It further details the appropriate data collection methods and instruments used in this research.

CHAPTER: THREE
RESEARCH DESIGN AND METHODOLOGY

3.1. INTRODUCTION

This study intended to explore the experiences that teachers had during the implementation of the Curriculum and Assessment Policy Statement (CAPS) in Mathematics to grade 11 learners. In order to achieve this, the study undertook to realise the following objectives: to determine the experiences of grade 11 mathematics teachers in implementing the Curriculum and Assessment Policy Statement; to understand what informs these experiences, and to understand teachers' views on the effectiveness of the Curriculum and Assessment Policy Statement.

For the above objectives to be achieved, the following sub-questions were answered by this research: What are teachers' experiences in implementing the Curriculum and Assessment Policy Statement?; What informs such experiences when implementing the Curriculum and Assessment Policy Statement? and What are teachers' views on the effectiveness of the Curriculum and Assessment Policy Statement?

Further, the importance of this chapter was to expose the research methodology and design used in this study. This was achieved by outlining the research design, declaring the method used in collecting data, explaining the method of data analysis and detailing the ethical issues surrounding this research study. It focused on, and explains the qualitative approach, interpretive paradigm and focus group method used to extract the data essential in answering the research questions.

3.2. RESEARCH PARADIGM

Paradigm is a belief system that guides how knowledge, reality and truth are understood by the researcher (Markula & Silk, 2011). The interpretive paradigm used in this research study is one of various applied in research (Markula & Silk, 2011). This paradigm was appropriately used in this study since it attempted to understand the experiences of teachers (Markula & Silk, 2011). The aim of working in the interpretive paradigm was to understand the subjective experiences of participants in their environment and then analyse and interpret the meanings that the participants gave to these experiences (Markula & Silk, 2011; Cohen,

Manion & Morrison, 2011). Participants were given the opportunity to "actively construct their social world" and thereby give meaning to their actions, interpret situations and context based on these actions in particular events (Cohen et al, 2011, p17). These events and situations, which were examined through the eyes of the participants, are represented by detailed and in-depth descriptions and could therefore be subjected to multiple interpretations since reality is multi-layered and complex (Cohen et al, 2011). Whilst the interpretive researcher sets out to understand the meaning that people give to their experiences as they interpret the world around them, it is this understanding of people from within that maintains the integrity and focus of my research study (Cohen et al, 2011).

In the subjective epistemology of the interpretive paradigm, the participants of my study made multiple meanings of their reality, relative to their experiences in the social context of their grade 11 Mathematics class within the school environment, influenced by the community in which the school exists (Markula & Silk, 2011). Participants were selected from different schools, therefore the social context of teachers' experience differed from each other and they made different meanings of their experiences (Markula & Silk, 2011). Whilst participants made different meanings of their experiences, these experiences were lived in the shared reality of implementing CAPS in the grade 11 Mathematics class (Markula & Silk, 2011). During the focus group discussion these meanings that participants made of their experiences, unfolded (Markula & Silk, 2011), and were captured by voice recording, transcribed to text and analysed to give meaning to my research study.

3.3. RESEARCH APPROACH

Research, according to Denzin & Lincoln (2003), is carried out according to ones feelings and beliefs of how the world should be studied and understood. Research in the quantitative and qualitative approach present a challenge on which method would be most appropriate for my research study. These two approaches provide different ways of thinking in research (Holliday, 2007), and will now be explained.

Historically, quantitative research was the preferred method due to much emphasis being placed on quantification in science (Holliday, 2007). According to this approach, there is much focus in this field of either falsifying or verifying some hypothesis (Guba & Lincoln, 1994), but there has been little need for the traditional deductive reasoning of the quantitative approach to research whilst there was an increasing need for the use of inductive reasoning

(Flick, 2006). There are less quantifiable areas of study such as the social sciences which rely on other contextual variables, which cannot be fulfilled by the quantitative research approach (Guba & Lincoln, 1994; Holliday, 2007). Therefore the qualitative approach redresses this imbalance by gathering the contextual information of the study (Guba & Lincoln, 1994). Whilst, in quantitative research, the researcher reports on established procedures, the qualitative researcher must justify how the strategy adequately fits the research setting (Holliday, 2007). Since my study involved uncovering empirical data of participants' experiences of implementing CAPS in the grade 11 Mathematics class, the qualitative approach best suited my research study. Using this approach I collected verbal data as participants revealed their experiences in a focus group interview, converted the verbal data to text, and then interpreted and analysed textual data to find answers to my research question (Morse & Richards, 2002). This approach is in keeping with Kitto, Chester & Grbich's (2008) description of qualitative research as being concerned with "collection, ordering, description and interpretation of textual data generated from talk" (p. 243). There is therefore clear justification that the qualitative approach was appropriate, since it "provides rich insight into human behaviour", by uncovering emic data within the context of my research study (Guba & Lincoln, 1994, p.106). The reflection on the essence of qualitative paradigm establishes that my research was engaged with empirically (Flick, 2006).

Since my study is a qualitative research, I made sense of "the situation through the eyes of the participant" as they related their experiences (Cohen et al, 2011, p. 293). Maykut & Morehouse (1994) believe that qualitative research focuses on people's words and actions, and my research study attempts to capture what participants revealed about their experiences during the implementation of CAPS in the grade 11 Mathematics class when trying to interpret their world. It can therefore be said that qualitative research has relevance in the social sciences and attempts to search for the truth in a multicultural society, and acknowledges diversity in people's individuality (Flick, 2006). However, according to Morse & Richards (2002), the qualitative approach to research is a demanding and challenging one because it is rigorous and leads to conclusions that are considered to be useful and defensible, as well as coherent and robust to enhance understanding. It was therefore a challenge for me to undertake this study. The challenges will be discussed later in this chapter as limitations of my study. I will now progresses onto explaining how the study was done.

In order to make sense of qualitative research, the experiences of the participants was organised as they occurred in the participants' natural setting (Morse & Richards, 2002), since qualitative data gives meaning and purpose to human actions and allows us to understand their lived experiences (Guba & Lincoln, 1994; Holliday, 2007; Denzin & Lincoln, 2003). Holliday (2007) further elaborates that research in the qualitative paradigm invites an array of variables and directly investigate them. Realities of people will remain mysterious unless it is told to others. This research study provided participants with the opportunity to reveal their hidden experiences of implementing Mathematics in a grade eleven class, through a focus group interview. Since the realities of the participants in my research study were mysterious, qualitative research attempted to understand and make sense of them by interpreting their realities (Holliday, 2007). My research interpreted the phenomena of teachers' experiences according to the meaning that the participants within this study gave to them, by bringing about "psychological and emotional unity to an interpretive experience" (Denzin & Lincoln, 2003, p.7).

The psychological and emotional unity evolved as the participants in my study revealed the mystery of their experiences during the implementation of CAPS in the grade eleven Mathematics class. When participants realised that there were similarities in their experiences, they were able to relate to each others' experiences. In terms of Holliday's (2007) characterisation of qualitative research, this qualitative study provided me with the opportunity to make an in-depth study of the "quality of social life" of the participants as they interacted with the policy document, learners and resources during the implementation of CAPS (p.6). "Good qualitative research requires purpose, skill and concentration" (Morse & Richards, 2002, p. 29), and therefore I ensured that the purpose of this research adequately satisfies the requirements of qualitative research. In keeping with the requirements of good qualitative research, my research study explored meanings of the experiences that participants had as they interacted with the curriculum policy document, learners and resources (Kitto et al 2008). I systematically collected verbal data using a focus group interview (Kitto et al, 2008). The verbal data was transcribed to textual data, then interpreted and analysed to provide answers to the research question (Kitto et al, 2008).

Skill and concentration, essential for making this a good qualitative research, was applied by obtaining help and guidance from a professional experienced researcher to act as the moderator (Janesick, 2011). The moderator is a senior lecturer in Criminology and Forensic

Studies Cluster at a university in South Africa with thirteen years experience moderating qualitative focus group discussions for market and academic research. To maintain a good qualitative research, I was actively involved in the creation, interpretation and progressive understanding of the data (Morse & Richards, 2002).

3.4. SAMPLING

The reason for curriculum change in South Africa, as alluded to in the background, was an attempt by the democratic government to eliminate the racist model of the apartheid government (Chisholm, 2005). This study was specifically focused on Mathematics teachers who have had experience in teaching the NATED 550 curriculum, the National Curriculum Statement as well as the Curriculum and Assessment Policy Statement in the grade 11 classroom, because they would have sufficient experience with curriculum reform. This sample of participants will therefore be a purposeful one. Purposeful sampling allowed me to "hand-pick" (Cohen et al, 2011, p. 156) the participants of my research because they needed to have a particular characteristic that is specific to this research. With reference to Cohen et al (2011), I will elaborate on purposeful sampling and its applicability to my study.

According to Cohen et al (2011), purposeful sampling requires access to people who have deep knowledge about some specific issue that needs to be studied. The participants of my research study were selected because they were experienced teachers who taught grade 11 Mathematics during the implementation of the NATED 550 curriculum document of the apartheid era of education, implementation of NCS and currently the implementation of CAPS. The teaching experience of the participants ranged from 10 years to 30 years. I was guided by Cohen et al's (2011) categorisation of this method of selection as purposeful sampling. If purposive sampling was not used then a random sample would have provided little benefit because many participants would be ignorant of these specific issues, and would not be able to relate and contribute to my research study (Cohen et al, 2011). These participants were chosen because of the similarities they share and were therefore referred to as a homogeneous sample (Cohen et al, 2011; Struwig & Stead, 2001). This sample of participants were chosen for a "specific purpose", since they share the common experience (Cohen et al, 2011, p. 156) of teaching the grade 11 Mathematics curriculum in the apartheid era as well as the experience in the curriculum of the democratic regime. Whilst Struwig & Stead (2001) advocate that this homogeneous sample allow for five to eight participants with similar backgrounds to present their realities, Maykut & Morehouse (1994) advocate that

there should be at least four participants and not more than 12 participants. I identified and selected 5 participants, however only four participants availed themselves for the focus group interview. This research will attempt to voice the experiences of these four participants who have taught grade eleven Mathematics during both eras.

It is important to get a broad perspective on the issue of teachers' experiences with implementing curriculum change to CAPS in the grade 11 Mathematics class in secondary schools. The sample in this study will constitute teachers from schools located in varying social environments. The group will be represented by Mathematics teachers from a rural school, a ex-Department of Education and Training (Black[2]) school, an ex-House of Delegates (Indian) school, an, an ex-House of Representive (Coloured) school and ex-House of Assembly) model-C school (Soudien, 2004; Reddy, 2006).

Rural schools are located away from towns and cities, and are attended by Black learners from lower and working class families (Soudien, 2004; Reddy, 2006). Township schools are located within cities and towns in areas that were demarcated by the apartheid[3] government for Black people to reside in and therefore learners in these schools are still Black and are from lower, working and middle class families (Soudien, 2004; Reddy, 2006). Teachers at rural and Township schools are largely Black (Soudien, 2004; Reddy, 2006). Ex-Indian schools are schools that catered for Indian learners in the apartheid era and were located in areas reserved for Indians, but have now become multiracial, however the teaching staff is mostly Indian (Soudien, 2004; Reddy, 2006)). Learners from these schools are from lower, working and middle class families (Soudien, 2004; Reddy, 2006).

Ex-Coloured schools located in previously declared Coloured areas have become multiracial and learners in these schools are from lower, working and middle class families, but the teaching staff is mostly Coloured (Soudien, 2004; Reddy, 2006).

Ex-Model "C" schools, located in historically white areas, which were reserved for white learners have become multiracial, but have maintained an elite image due to their high school fees and well managed and maintained facilities (Soudien, 2004; Reddy, 2006). Learners in these schools are from middle class families (Soudien, 2004; Reddy, 2006).

[2] The people of South Africa were segregated along racial lines by the Apartheid Government into Indian, Black, Coloured and White. They lived in areas demarcated for the different racial groups and schools in these areas were strictly reserved for members of these communities (Thomas, 1996).

[3] "Racialised and institutionalised race discrimination and segregation in South Africa" (Lipton, 1986, p. 2)

The participants chosen were Further Education and Training (FET) Mathematics teachers, experienced in teaching the NATED 550, the NCS and the CAPS curriculum in the grade 11 class. A focus group interview was conducted with the participants in a neutral, convenient location, away from the school environment.

3.5. RESEARCH METHODS

I used the case study as the research method and the focus group interview as the data collection method. The essence of case study and focus groups is discussed.

3.5.1. CASE STUDY

The data produced in the qualitative approach, as discussed above, is generated by the direct experiences of the participants in my study, and is referred to as empirical data (Janesick, 2011). The case study approach was appropriately selected to effectively present a "rich narrative" (p. 47), of the participants in my study by detailing the actual words of their experiences in a case study report (Maykut & Morehouse, 1994). It is therefore imperative to discuss the essence of case study.

Stake (2013) refers to case study as the focus on a single event with a small sample size. The focus in my study is on exploring experiences that grade eleven Mathematics teachers had during the implementation of CAPS. He further adds that it is an open-ended process by which events unfold to provide the empirical data that needs to be analysed in order to generate the reality of the event. The case study approach used in my research is a focus group interview because the researcher intended to uncover the hidden realities of the four individual participants selected to participate in this study (Stake, 2013). Whilst the case study method also propagates the use of analysing documents as well as observation, documents and observation cannot be used in my study since the use of documents only seeks to understand the context in which the reality exists, and observation focuses on the ordinary of the reality (Stake, 2013).

My case study research began with a compelling need to gain an in-depth understanding of a single case of exploring the experiences of a small group of participants who in their real world context were implementing CAPS in the grade eleven Mathematics class (Yin, 2012). Since my study emphasises the obtaining of empirical data about the phenomenon of participants experiences in the real world context, it favoured the case study research method

(Yin, 2012) and the focus group interview as the data collection method (Morgan, 1996). Whilst the case study method appropriately suits my study by enabling me to portray the depth of the participants' experiences, the credibility of the case study procedures is not trusted because it does not protect the research against the researcher's bias (Yin, 2012). To guard against this weakness, I engaged the service of a moderator who conducted the focus group interview, which was used as the data collection method of my research. In spite of scepticism around the use of case study, deep insight about the experiences of the participants in my study in implementing CAPS in the grade eleven Mathematics class would not be attained through other methods (Rowley, 2002).

3.5.2. FOCUS GROUP INTERVIEW

Empirical data collection methods are largely based on focus group interview referred to as an art of urging respondents to detail answers to pertinent questions and interviewing is the ability of the researcher to utilise his skill in asking questions, that will elicit the desired information, and intently listening to their responses (Denzin & Lincoln, 2003). There is a situated understanding between the interviewer and participants in an interactive environment (Denzin & Lincoln, 2003).

This research used a focus group and a semi-structured interview, with open-ended questions, in an informal setting (Denzin & Lincoln, 2003) in order to gather appropriate data. The source of the data was located in the discussion between the participants and the moderator was responsible for creating and directing the discussion that generated the appropriate and relevant data (Morgan, 1996).

In setting the stage to the focus group interview, firstly, the moderator explained the expectation of the discussion, and thereby made the purpose of the research very clear; secondly, introduced members to each other using first names; thirdly, started the discussion using a stimulus; and finally, allowed a period of adaptation by the group members (Flick, 2006).

To ensure that my case study research was effective and engaged the essential skills addressed by Janesick (2011), the moderator who conducted the focus group interview: asked questions that were good and appropriate to uncover essential data to answer the research questions; was an attentive listener and provided opportunities for all participants to

contribute to the discussion; was flexible during the focus group interview and adapted as the situation demanded by rephrasing questions to the understanding of the participants in order to extract the appropriate and relevant data; was sensitive, respected participants and made them comfortable enough to provide relevant and comprehensive data; had a good grasp of the issues in focus and understood the data as it unfolded; capably dealt with multiple ideas and verified possibilities of participants answers with them; and, was able to identify relevant and irrelevant data to my research study (Janesick, 2011).

"Knowledge is constructed in the process of social interchange" (Flick, 2006, p. 80). The social interaction between participants in this focus group interview influenced the validity of the knowledge that emanated from the discussion (Flick, 2006). This focus group interview which consisted of selected individuals required to discuss their experiences in implementing CAPS in the grade eleven Mathematics classroom (Cohen et al, 2011), brought together people with different perspectives to interact and share their experiences of what they perceived about this particular focus of inquiry "through a process that is open and emergent" (Maykut & Morehouse, 1994, p.103). There was simultaneous systematic questioning of this group of individuals in an informal environment (Denzin & Lincoln, 2003). The informal environment selected was my home, which was conducted out of school time in order to avoid disrupting teaching and learning time; and away from the school environment to avoid the noise of learners from disrupting the process. The informal setting of my home provided a relaxed, comfortable and convenient environment to facilitate adequate and in-depth discussions between the participants concerning the focus of this study.

The focus group interview yielded a collective and not an individual perspective because the participants interacted with other group members during the interview (Cohen et al, 2011). The focus concentrated on a particular issue of participants' experiences with implementing CAPS in the grade eleven class, as detailed in the research question, and allowed the moderator the opportunity to scrutinise the issues and engage the participants in lengthy discussions (Wisker, 2001). As participants spoke, issues and ideas took shape (Wisker, 2001). The focus group interaction produced data that would otherwise not have been obtained from individual interviews (Janesick, 2011), since the focus group is less intimidating than a one-to-one interview (Marshall & Rossman, 2011). The interaction that took place between participants lead to greater understanding of view-points (Janesick,

2011). This allowed for immediate clarification and follow-up of data by the participants and the moderator (Marshall & Rossman, 2011).

As a Mathematics teacher, I have knowledge of the CAPS curriculum, but did not anticipate answers from the participants of the focus group, therefore a semi-structured interview was conducted to generate data from the participants of the focus group that was purposefully selected (Morse & Richards, 2002). The focus group constituted open-ended questions that followed a logical order to cover the research questions (Morse & Richards, 2002). Open-ended questions gave the moderator the opportunity to expand on the responses of the participants by prompting and questioning to follow-up on responses (Wisker, 2001). This focus group interview was guided by seven open-ended questions to propel discussions towards achieving the intended inquiry of exploring participants' experiences in implementing CAPS in the grade eleven class (Maykut & Morehouse, 1994). These questions were presented in a manner that invited detailed responses from participants (Morse & Richards, 2002). Each of the seven questions had further sub-questions in order to probe and generate in-depth responses (Kvale & Brinkmann, 2009). The moderator used appropriate skills essential for a successful focus group, such as being "flexible, objective, empathetic, persuasive, and a good listener" (Denzin & Lincoln, 2003, p. 72). According to Kvale & Brinkmann (2009) this is called the miner approach, where the researcher assumes that knowledge exists and the moderator must dig for these nuggets of knowledge from the participants' experiences.

Dominating of the focus group interview by an individual or small group, and the non-participation of any person in the group were anticipated problems that were avoided at all costs (Merton, Fisk, & Kendall, 1956). Participants' responses were taken in turn to avoid domination by any one participant (Wisker, 2001). The participants were allowed to finish speaking before any interjection into the conversation. The moderator, as detailed above, who is experienced in conducting research and focus groups interviews, was selected to conduct the interview of the focus group. The moderator's role was three fold: gave formal direction to the agenda of the research; steered the discussion towards the purpose of the research using additional questions that achieved a deep understanding of the participants' views on the topic; and reflated the discussion by provoking responses from reserved participants (Flick, 2006). However intervention by the moderator was only essential in supporting group dynamics and functioning and therefore created an open space for discussion (Flick, 2006).

The moderator pleasantly and in a friendly approach ensured that all participants contributed to the discussion without any interjections; directed questions at participants who were not contributing; and steered the discussion towards exploring participants' experiences with implementing CAPS in the grade eleven Mathematics class.

The interview was audio recorded to ensure that all data presented by participants were captured (Morse & Richards, 2002). The recording was transcribed to text for analysis of responses in answering the questions (Morse & Richards, 2002). The audio-tapes provided me with the opportunity to view and review the focus group interview by replaying the tape (Morse & Richards, 2002). This gave me the opportunity to make an accurate analysis of the responses of the participants (Morse & Richards, 2002). In conducting the focus group, the moderator adhered to the following.

3.5.3. CONDUCTING A FOCUS GROUP

According to Maykut & Morehouse (1994) a focus group brings participants together to engage in open conversation on a predetermined topic in which they share a common interest. In order to ensure credibility of the focus group, there should be at least four participants and not more than twelve participants (Maykut & Morehouse, 1994). He further states that the moderator must create a positive climate that encourages full involvement of all participants.
Five participants were selected to participate in my focus group interview, however only four participants participated. The participant from the ex-model "C" school did not attend due to consent not being granted by the principal of the school.

The moderator established a rapport with the participants and assured them that the information that they contributed to the research would be treated as confidential and would not be used for any other purposes other than this research (Behr, 1988). She maintained eye-contact with all participants by ensuring that they were comfortably seated around a table, whilst she was at the head of the table (Stewart, Shamdasani & Rook, 2009).

According to Behr (1988) the characteristics that the moderator should possess are: a pleasant demeanour; a good listener who avoids interjecting the conversation; not easily distracted by irrelevant information; not compromise the validity of the discussion by giving hints by way of facial expressions, tone of voice or implied questions. The experienced moderator, credentials declared above, who conduct this focus group interview knows and understands

the requirements thereof. The moderator was pleasant in the way she asked the questions and maintained the same tone of voice and facial expression throughout the focus group interview. She listened carefully to the responses of the participants without interjecting and probed further for more relevant data. She redirected the discussion when it did not pertain to the relevance of the question, and questioned further when responses were vague.

The advantages of the focus group interview as alluded to by Schmuck (2006) enabled me to: firstly, gather data by audio-taping the focus group discussion so that I could play and replay the recording during the transcription stage, thereby ensuring that no detail was overlooked; secondly, to help collect data from the participants who preferred to talk rather than write about their feelings and thoughts; thirdly, it allowed the moderator the opportunity to develop a rapport and closeness with the participants, and thereby probe for in-depth responses by further questioning participants for clarification and elaboration.

Using the focus group interview method to collect data was easy and quick and inexpensive to undertake (Neuman, 2009). It allowed interaction between participants of the focus group and encouraged and empowered them to interact freely and engage in open debate on discussing their experiences in implementing CAPS in the grade eleven Mathematics class (Neuman, 2009).

Schmuck (2006) and Neuman (2009) cite the following disadvantages: a focus group sample is not representative of the larger population and therefore generalisations cannot be made from the data; there is a lack of anonymity between moderator and participants; respondents may fear that the data they provide may be used against them; the moderator may unwittingly hinder open discussion; and researchers may find difficulty in analysing differences between responses. Every effort was made to prevent these disadvantages from interfering with the validity and reliability of this research study. Whilst every effort was made to ensure that the interview is credible, reliable and valid, the site at which the data is collected is also an important consideration.

3.5.4. THE DATA COLLECTION SITE

The place at which data was collected from the participants for research purposes is declared as the site (Creswell, 1994). My home served as the data collection site since it was readily available, convenient to all participants and moderator, comfortable and free of any

disturbances. It was the most appropriate site to conduct the data collection function that generated the essential and accurate data. Since this research requires the moderator to extract data about the teachers' experiences with implementing CAPS in the grade 11 Mathematics class, the study was conducted away from the classroom and school environment and out of normal teaching time. This avoided interruption of the teaching and learning process in the classroom environment. Letters of consent from the teachers involved have been obtained declaring their voluntary participation. Further, letters of consent for the participation of these selected teachers were obtained from the principals of the schools they teach at.

I followed the advice of Maykut & Morehouse (1994) in ensuring that the data collection site was convenient and suitable, as well as free from noise and disruptions. Participants were comfortably seated around a table, enabling the moderator to maintain eye contact with each participant (Matkut & Morehouse, 1994). Since the focus group interview was voice recorded, I ensured that the digital recording device was ready and working well before the day of the focus group interview (Maykut & Morehouse, 1994).

3.6. VALIDITY, RELIABILITY AND TRUSTWORTHINESS ISSUES

Data generated by qualitative research must be verified as credible, reliable and valid, and Curtin & Fossey (2007) describe trustworthiness as the process to establish this.

In Patton's (2002) view, data collection through focus group interview is highly efficient and provides quality control when data is collected. However, the data may not easily be open to cross-checking and therefore may be considered as selective, biased, personal and subjective (Cohen et al, 2011). On analysis of the data, results cannot advocate any generalisations because data is not representative of the larger population of teachers (Robinson, 1999).

During this focus group interview, participants themselves sanctioned the validity and consistency of the data by agreeing or disagreeing with different points of view during the discussion (Patton, 2002). Views expressed by participants were debated by all members, then accepted or rejected, and therefore became representative of the group since it is a shared view (Patton, 2002). The group therefore served as a tool in reconstructing individual opinion much more appropriately after debating and modifying views that were fully representative of the group (Flick, 2006).

Trustworthiness of this qualitative process was achieved through member checking, which involved participants checking for accuracy in the data collected (Cho & Trent, 2006; Curtin & Fossey, 2007). The validity of the research depends on how accurately participants' realities were captured and represented in the inferences that have been drawn from the data (Creswell & Miller, 2000). It was essential therefore to engage the participants in assessing the accuracy of my capturing and interpreting the data (Creswell & Miller, 2000). Validity and credibility was achieved through member checking (Creswell & Miller, 2000). The participants verified the credibility of the information representing their realities (Creswell & Miller, 2000). A focus group was therefore reconvened to review the researcher's findings to ensure that the researcher's interpretations correctly represent their realities (Creswell & Miller, 2000). After transcribing the focus group interview recording to text, I invited all four participants to a verification session. The participants gathered at the data collection site for the verification process. Printed copies of the transcript were given to each participant for their perusal. Participants were then acquainted with their pseudonyms used in the transcript. After perusal, all participants acknowledged the validity, credibility and reliability of the transcript and indicated that it was a true representation of their reality. In addition to member checking, researcher reflexivity was also an essential process to ensure validity and credibility.

As a qualitative researcher I was directly involved as an instrument in the process of data collection and analysis and therefore there are shortcomings and biases which may influence the research study (Merriam, 2002). Curtin & Fossey (2007), supported by Pyett (2003), advocate that reflexivity allows the researcher the opportunity to acknowledge that his/her involvement in the research process will significantly influence the research process. I therefore ensured that the representations of participants' realities were free of any biasness of my beliefs and assumptions. It was therefore essential that I report my "personal beliefs, values and biasness that may shape their inquiry", at the beginning of the research process (Creswell & Miller, 2000, p.127). Readers of this research will be able to understand my position as the researcher in the study (Creswell & Miller, 2000).

The focus group interview was audio-taped to ensure trustworthiness and credibility. In this way the problem of misrepresenting participants' views was overcome (Kleiber, 2004). The intrusive impact of audio-taping can inhibit data (Kleiber, 2004) so the voice recorder was put in an area that was not easily noticeable to participants.

3.7. DATA ANALYSIS

Participants were allowed to speak for themselves and relate their experiences without interpretation and I accurately reconstructed the data to represent the reality of the participant (Maykut & Morehouse, 1994). The recorded data was converted to text.

Text serves as the basis to represent interpretations of data as well as to present and communicate findings (Flick, 2006). The recorded focus group interview which comprised the data were transcribed into text and interpreted to present the findings (Flick, 2006).

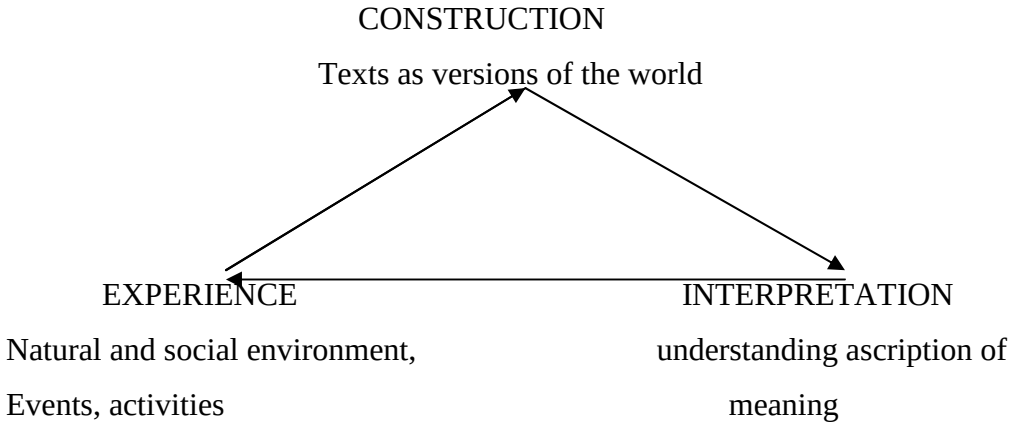
According to Schutz (1962), there is no such thing as pure facts. “Facts are selected from a universal context by the activities of our mind” (Schutz, 1962, p. 5). Facts are therefore an interpretation of what is in one’s mind and is referred to as first degree construction (Schutz, 1962). Calder (1977) explains construct as “simplifications and idealisations of reality” (p. 354).

The participants constructed their first degree representation of their reality during the focus group interview (Schutz, 1962). My study explores the phenomenon of teachers’ experiences in implementing CAPS in the grade eleven Mathematics class, and Calder (1977) elaborates that phenomenology concerns itself with representing knowledge as a conscious experience. During the focus group interview, participants of the focus group shared their conscious experiences with each other through common sense conceptions and explanations, characterised as inter-subjectivity (Schutz, 1967). The experiences of any two participants, will not be the same, and knowledge gained through these experiences will not be useful and reliable unless it is shared through interpersonal contact with the other participants (Schutz, 1967). In order for me as the researcher to describe this inter-subjectivity between participants, I have interacted closely with participants and the transcript of the focus group interview (Calder, 1977).

The scientific interpretation of these experiences that participants have, referred to as the clinical approach, engages with second-degree construct that represent the intra-subjectivity of participants (Calder, 1977). Since my study does not engage with the clinical approach, second-degree construct will not be used.

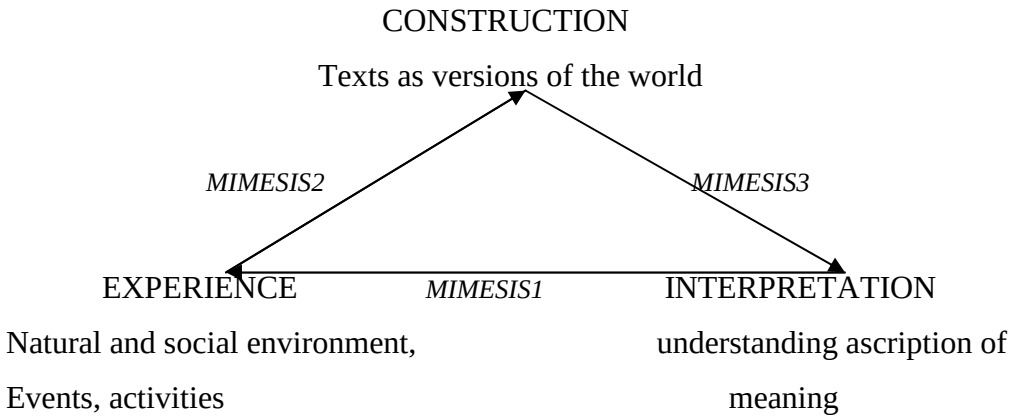
Flick (2006) states that subjective construction is undertaken on the part of participants of the focus group who are being studied and scientific construction is undertaken during the collection and interpretation of data, and the presentation of their findings. The figure below represents the understanding between construction and interpretation.

Figure 3.1. represents the understanding between construction and interpretation.



In order to make the process of translation of data a concrete one, the concept of mimesis offers insight into text based on social science (Flick, 2006). Mimesis deals with the transformation from the natural to symbolic world (Flick, 2006). Ricoeur (1981) categorises mimesis into three steps, namely, mimesis1, mimesis2, and mimesis3. Mimesis1 is the pre-understanding that human action is symbolic and temporary, and characterises a life experience that must be told (Ricoeur, 1981). Mimesis2 deals with the transformation of experience into text and is referred to as the process of construction (Ricoeur, 1981). Mimesis3 involves transforming text through a process of interpretation so that it can be understood (Ricoeur, 1981). The focus group participants constructed their reality by giving meaning to the events in their natural environment which Flick (2006) refers to as mimesis1. They were able to give voice to their experiences in implementing CAPS. I engaged with mimesis2 during the translation of the verbal data to text (Flick, 2006). This data in the form of text was analysed and interpreted by the researcher to give meaning to these experiences of the participants is the mimesis3 stage of data analysis.

Figure 3.2. emphasises the interplay between construction and interpretation.



There probably was more data than needed and therefore there was a need to organise the data to select the most relevant data that were needed to answer the research question (Wisker, 2001). Data were analysed in batches (small units) and then integrated (Janesick, 2011). Patterns in the words and phrases were closely examined and identified in order to categorise, code and organise the data into themes that contributed to answering the questions of this research study (Janesick, 2011; Maykut & Morehouse, 1994). In summarising and generalising, I scrutinised the responses that kept recurring as well as those that deviated (Janesick, 2011). As a qualitative researcher, I identified patterns that emerged from the data, and then presented these patterns, as closely as possible to the original experience of the participants, to the intended audience (Maykut & Morehouse, 1994).

3.8. ETHICAL ISSUES

Markula & Silk (2011) assert that any research on people must be guided by ethical issues. Since people are the subject of this research they were treated with dignity and respect (Markula & Silk, 2011), and it was important that they were carefully and truthfully informed about the intentions of the research and thereby obtained their informed consent to being part of the research (Denzin & Lincoln, 2003; Markula & Silk, 2011; Flick, 2006). A signed letter of informed consent, was obtained from the participants (Markula & Silk, 2011; Flick, 2006). The pre-conditions to informed consent require that: consent be given by persons who are competent to do so; by persons who are adequately informed; and by persons who give the consent voluntarily (Flick, 2006). This letter explained the intention of the research, what was

expected from the participants and how the researcher intended to follow ethical guidelines (Markula & Silk, 2011). The letter further indicated the right of the participant to withdraw from the research study whenever he/she so pleases (Markula & Silk, 2011). These participants have the right to privacy and therefore their identities were protected (Denzin & Lincoln, 2003). This study followed the main perspective on research ethics, and that is that researchers in their attempt to present their research findings must ensure that participants are not harmed in any way (Flick, 2006). Participants in this research were respected and protected from emotional or physical harm as a result of their participation in the research, and their needs and interests was always considered (Denzin & Lincoln, 2003; Flick, 2006). The researcher guaranteed complete confidentiality to participants, highlighting that the information supplied by them was presented in a way that does not identify them or the schools at which they are stationed (Flick, 2006). Pseudonyms have been used to represent the responses of participants, thereby protecting their identity as well as the identity of their schools (Morse & Richards, 2002; Markula & Silk, 2011).

The researcher's intention in undertaking this research is to add to the existing knowledge of curriculum change and implementation and its intended audience is the scholarly community and education authorities (Marshall & Rossman, 2011).

The ethical issues that emerge from transcribing an interview are whether the participants views are correctly represented (Marshall & Rossman, 2011). This was overcome by sharing the transcript with the participants so that they could confirm its accuracy (Marshall & Rossman, 2011). Ethically, power issues between participant and researcher can arise (Kleiber, 2004) and this was avoided by making participants as comfortable as possible in a neutral location that is beneficial to all.

3.9. LIMITATIONS

The primary limitation of my study is that its focus was a preconceived idea to explore Mathematics teachers' experiences in implementing the NATED 550, NCS, and CAPS syllabuses in a grade eleven class. This preconception immediately precluded Mathematics teachers who did not teach the NATED 550, NCS and CAPS syllabi in the grade eleven class, as well as grade eleven Mathematics teachers who did not experience teaching any one of the above syllabi.

In keeping with the above I was confined to using a purposeful sample of participants with the above profile. It was a difficult task identifying teachers with this profile and therefore took longer time than expected to locate them. Even after locating such teachers, it was difficult convincing some of them be part of my research study since it encroached on their personal time.

Even after identifying and negotiating with this purposeful sample of teachers, the teacher from the ex-Model "C" school did not present himself at the data collection site on the agreed date of the focus group interview due to the principal of his school refusing him permission to be part of my research study. My study therefore continued with four participants. Fortunately, four participants were sufficient enough to continue with the focus group interview. This study was therefore limited to expressing the feelings, understandings and views of this hand-picked sample of participants.

Although this sample size was small, there is no reason why other grade 11 Mathematics teachers will have different experiences during the implementation of CAPS. However I cannot use the findings of my study to make generalisations to the whole of South Africa.

As a grade eleven Mathematics teacher, I acknowledge that my beliefs and preconceived ideas of experiences in implementing CAPS in grade eleven may have caused biases in my research study.

3.10. CONCLUSION

This chapter focused on the methodology used in data collection for the purposes of this research. This study used focus group interviews with purposefully selected individuals who have experience in a focused issue. The participants themselves have been used to supply data as well as validate it. Although there are limitations to this research, it serves as the basis of any future research.

3.11. PROJECTION FOR THE NEXT CHAPTER

Chapter 4 that follows presents the data gathered and provides an analysis and interpretation of research results.

CHAPTER FOUR:
INTERPRETATION AND FINDINGS OF THE EMPIRICAL DATA

4.1. INTRODUCTION

The focus of my research study was to explore how teachers experienced the implementation of CAPS in the grade eleven Mathematics class. To support this study, an intensive literature review was undertaken and an empirical investigation conducted. This chapter reports on the empirical investigation I conducted using qualitative methods and a focus group interview with four participants from selected schools.

As discussed in chapter three, purposeful sampling was required in this study to select the participants, because Mathematics teachers' experiences with implementing CAPS in the grade eleven classroom is being explained. Being a specific area of research, there was a need to select specialised participants. This therefore did not allow for random sampling since a participant selected at random may not be a grade eleven Mathematics teacher who is experienced in implementing NATED 550, NCS and CAPS curriculums, and therefore this participant may not contribute to this study, thereby negatively affecting the reliability of this study.

TABLE 4.1. PROFILE OF PARTICIPANTS

PARTICIPANT	YEARS OF EXPERIENCE	QUALIFICATIONS	SCHOOL
A	30	Junior Secondary Education Diploma (Mathematics and Accounting) and a Bachelor of Arts Degree (Education and History)	former Indian School
B	20	Higher Diploma in Education (Mathematics) and an Advanced Certificate in Education	former Coloured school
C	10	National Diploma in Cost and Management Accounting and a Post-graduate Certificate in Education	Rural school
D	17	Secondary Teachers Diploma (Mathematics), a Higher Diploma in Education and a Bachelor of Education Degree(Honours)	former Black Township school

According to table 4.1, the four participants selected for the focus group were from schools that were historically classified as Indian schools, Black schools, Coloured schools and Rural schools. (The description of the classification of schools was discussed in chapter three.) These participants were selected because of their experience in teaching the NATED 550, NCS and CAPS curriculums. Participants A, B and D were qualified to teach Mathematics and had between 15 to 30 years of experience in the teaching of Mathematics. Participant A has 30 years of teaching experience, holds a Junior Secondary Diploma in Education (Mathematics and Accounting) as well as a Bachelor of Arts degree (Education and History) and is a teacher at a former Indian school. Participant B, who holds a Higher Diploma in Education (Mathematics) and an Advanced Certificate in Education (Mathematics), has 20 years of teaching experience in a former Coloured school. Participant D, a teacher at a former Black school for the past 17 years, has a Secondary Teachers Diploma (Mathematics), a Higher Diploma in Education and a Bachelor of Education Degree (Honours). Participant C, with a National Diploma in Cost and Management Accounting, and a Post-graduate Certificate in Education, has no undergraduate qualification in Mathematics education, but

has amassed 10 years of teaching experience in Mathematics. Participant C only has Mathematics at matriculation level, but due to the unavailability of qualified Mathematics teachers as indicated in the Manoma (2012), he was recruited to teach Mathematics at his school. While statistics show that nationally there has been an increase in the percentage of qualified teachers from 94% in 2008 to 97% in 2012, in KwaZulu-Natal the percentage of qualified teachers increased from 88% in 2008 to 92% in 2012 (DBE , 2013).

The issue of qualified Mathematics teachers in South Africa is still a concern because there is a shortage of suitably qualified Mathematics teachers (Manoma, 2012; SAIRR, 2013). In 2012 it was reported that 561 schools in KwaZulu-Natal needed additional Mathematics teachers (Manoma, 2012) and 84 schools in South Africa did not offer Mathematics at grade ten, eleven and twelve because of a lack of Mathematics teachers (SAIRR, 2013). Participant C is one of those teachers who fill the gap due to the lack of qualified Mathematics teachers in KwaZulu-Natal.
These teachers from varying backgrounds provided a broad spectrum of information to this investigation.

To ensure that the credibility of this study was maintained, an independent and experienced moderator was enlisted to conduct the focus group interview. The moderator, as detailed in chapter 3, is an experienced lecturer and researcher at a university in South Africa. Her expertise ensured that all principles of appropriately conducting a focus group interview were adhered to.

The suitable site for the focus group interview was selected for its convenience, accessibility and privacy. The focus group required to be tape recorded to provide evidence for reference during transcription to text. The recording equipment was examined and declared to be in good working order well in advance of the focus group interview. The focus group interview was successfully and completely tape recorded, transcribed and safely stored.

4.2. THE TRANSCRIPTION PROCESS

I attentively listened to the recordings and transcribed the verbal data into text. The repeated playing and listening to the recordings ensure that all verbal data was transcribed to text. The focus group was reconvened for participants to verify that the transcription correctly represented their experiences. Participants were also given the opportunity to elaborate on

any of the issues discussed in the focus group. After transcribing, I engaged with the analysis process.

4.3. THE ANALYSIS PROCESS

The transcription process provided an opportunity for me to familiarise myself with participants' responses, however, in order to thoroughly understand the responses and engage with the data for the purposes of analysis, I read through the transcript several times. During the readings I identified themes, trends and patterns that emerged and grouped responses pertaining to the same theme. In order to put these themes, patterns and trends into perspective, they were cross-referenced with the research question as well as the aims of the study to ensure that this research study was on track.

4.4. RESEARCH FINDINGS

To answer the research question "What are grade eleven Mathematics teachers' experiences in implementing the Curriculum and Assessment Policy Statement?" the themes that emerged from this empirical investigation are categorised as:

- Ownership of the curriculum and the extent of teacher involvement in curriculum development.
- The policy document – clarity and understanding of the document.
- Teacher training to prepare teachers for curriculum implementation.
- Knowledge and skills of teachers in delivering the content of the new curriculum.
- Curriculum material and resources used in curriculum delivery
- Contextual factors affecting curriculum implementation

These themes that categorise the findings are discussed as subsections. I begin with the theme of the Ownership of curriculum.

4.5. OWNERSHIP OF CURRICULUM AND THE EXTENT OF TEACHER INVOLVEMENT IN CURRICULUM DEVELOPMENT

I have identified this theme to highlight the need for teachers, who are the major role-players to curriculum implementation, to be part of curriculum planning and development so that they create a bond with the curriculum by attaching a sense of ownership to it, and in so doing, they have complete understanding of the curriculum and commit to its successful implementation.

Researchers such as Carl (2005), Flores (2005), Macnab (2003), Battista (1994), Beck, Czerniak & Lumpe (2000) and Kilpatrick (2009), state that teachers are the major stakeholders in delivering the curriculum. It is therefore their prerogative to be part of curriculum development. To generate discussion around theme one, participants' were asked questions about the ownership of curriculum.

4.5.1. THE EXTENT OF TEACHER INVOLVEMENT IN CURRICULUM DEVELOPMENT

In response to the extent of their involvement in the development of CAPS, Participants B, C and D stated that they were not involved in any way with the development of the curriculum document.

Participant B maintained:

"*I must say that I haven't been involved in any form of input in any way. Perhaps, because the information hasn't been passed down to me, but I was not involved. I wasn't asked. I haven't been informed, not aware of it. So no I haven't put any input into any of the curriculum as such.*"

Participant C responded:

"*I think I have the same thing, because things were just introduced to us*."

Participant D reaffirmed B's and C's responses:

"*Yeah I can say the same. I wasn't involved. It was just like imposed to us. Maybe there was a need from the universities or so, so they made a change, so we were told about it.*"

Only Participant A alluded to the fact that the union that she belongs to, National Professional Teacher Organisation of South Africa (NAPTOSA), provided an opportunity at a meeting for teachers to submit input as reflected in the following statement:

"*I think at district level we did have a meeting with the draft policy or draft that says CAPS document, and we did have an opportunity to provide input and we did that at the meeting. But I don't think any of our input was considered, because we did talk about the length of the syllabus and how many new aspects were brought in and all that. And I think through union level everyone was given an opportunity to provide input, because that came out to all of us but some of us just didn't provide input.*"

According to Participant A, recommendations concerning the breadth of the curriculum that was agreed on at the meeting were not considered during the development phase. Participants belonging to other unions were unaware of any opportunity given to teachers to participate in any discussion concerning the development of CAPS. They felt that CAPS was imposed on them. There was therefore no sense of ownership of the curriculum. The participants in Carl's (2005) study were also of the perception that curriculum was developed somewhere else and forced onto them. Participant D assumes that the universities found a need for the curriculum to change and that they were responsible for the change.

Clearly there was no consistency with which all teacher organisations worked with their members. Whilst at union level, Participant A had the opportunity to make inputs, the other participants did not.

Participants were split in their views on the extent to which teachers should be involved in curriculum development. Participants A and B were adamant that teachers should be involved at some point in the development of the curriculum.

Participant A:

> "*Teachers should be involved because that's the basic classroom level. I think they are the best critics of the curriculum, they are going to implement it in the classroom. They know the problems that they are going to experience and knowing the previous curriculum and the connection to the new curriculum, they should be involved*."

Participant B added:

> *"I agree with that. We are frontline. We first hand with the children, we know exactly how to implement concepts, skill. So I do agree that we should be involved in it, or, at least considered more so than other people making decisions that really don't affect them*."

Participant B believes that teachers are frontline to curriculum implementation and they know and understand the problems that affect the teaching and learning process, which therefore make them the best critics of curriculum, and determining its suitability concerning its appropriateness, clarity, breadth and depth for the South African classroom. This is consistent with Carl (2005) and Kilpatrick (2009) in their belief that teachers are the major role-players and should be part of the curriculum development process, however in South Africa teachers are largely excluded from the development process. Teacher participation would give them

the incentive to take ownership of the curriculum and it would promote their personal and professional growth (Carl, 2005).

Participant D does not share the same sentiment:

> "*I think differently. I think we are not in the level to like change the curriculum. It's just that when they see the need, the country's need then they can do whatever. Then all they need to do is to equip us, train us. But we are not in the level to change the curriculum. I think at the final stage, implementation, not in the development*."

Participant C concurs:

> "*Ok. I think basic education. That is the right stage to implement.*"

Participant C and D do not see their role as curriculum developers. Participant D believes that curriculum developers are at a different level to herself as a teacher. Their response is consistent with Carl's (2005) findings that teachers see themselves merely as interpreters of curriculum and designers of learning materials so that they can function as learning mediators in the classroom.

In their disagreement with participants C and D, participant A and B justify their reasons for wanting to be part of curriculum development.

Participant A:

> "*But then I disagree when you say that teachers should be involved in the final, implementation stage because obviously there's certain things that you want to implement in the curriculum that you going to have a problem with and you foresee problems. It should be maybe in the three-quarter way. You know where, you have specialist developing this curriculum, and maybe then three-quarter way you need input from teachers to say you know but this is the problem I'm going to have or whatever, and then during implementation everybody's content.*"

Participant B clarifies:

> "*I think not so much changing it. Giving input. I think we do need to give input because people are making a decision for us in the classroom. You really need to be in it to understand it and to see if it would work or not*."

This view is consistent with Carl (2005) and Fullan (2007) in their findings that policy makers are out of touch with the classroom situation and they need guidance from teachers in the field. These participants felt in the way as the respondents in Carl's (2005) study did,

there was a lack of communication channels and therefore teachers' voices remain unheard and that participation in curriculum development would give teachers an incentive to take ownership of the curriculum. Participation would promote the personal and professional growth of teachers (Carl, 2005). Bantwini (2010) agrees that teacher involvement must be at the conceptual and developmental stages so that teachers will have a fundamental understanding of the curriculum. Constructive debate between policy makers and curriculum implementers is essential if curriculum development is to succeed (Macnab, 2003). Change is difficult if teachers are not part of the creation process (Dean, 2005).

Within the above theme, participants spoke of the curriculum developers. Participants A and B believe that those who are involved in curriculum development are out of touch with classroom practices. Teachers view these curriculum developers as subject specialist from elsewhere (Carl, 2005).

Participant B:

> "*I have always imagined that its people involved with Mathematics per se, but people who are out of the classroom, you know people who have perhaps have studied Maths or are studying Mathematics or maybe even politicians, I have always imagined that… or ministers.*"

Participant A elaborates:

> "*I think it's the experts on Mathematics and maybe part of tertiary institutions are involved in it because it's what they want at university out of Maths students. That's my knowledge of what happened with CAPS, because it's what the universities wanted as well that made a lot of changes in CAPS.*"

According to Participant D:

> "*No. only the tertiary people, as she's saying. They see the gaps in the varsity, that this is needed then they sit down maybe to change the curriculum. Not the teachers.*"

Participants A and D believe that the universities have had great influence in the curriculum change to CAPS. However, the Minister of Basic Education appointed inclusive education specialists, Department of Basic Education officials, selected teachers, excellent subject persons and a phase specialists to plan and develop the CAPS policy document (DBE, 2011a).

In this study, participants A and B want to be part of and take ownership of curriculum reform so that they can identify with its implementation. They want to be involved at a stage after curriculum specialists design and develop a draft curriculum document. This would give them the chance to ratify the draft document with regard to its appropriateness, clarity, length and depth of topics before it is finalised. It would also give them the chance to understand the document, and identify and highlight expected problems and loop-holes in the document that would be problematic during implementation. Rectification of the draft document can then take place to provide a more suitable curriculum document that teachers can easily engage with and ensure successful implementation. Teacher participation therefore would quell the notion that policy makers are out of touch with classroom practices (Carl, 2005).To support the need for teacher participation in curriculum development I examined the reasons for the failure of OBE.

Jansen & Christy (1999), in their study of the Outcomes Based Education (OBE) found that OBE implemented as a reform in curriculum failed because there was no consultation with teachers in the classroom. With the sudden emergence of OBE, teachers had no part in conceptualising this curriculum reform (Jansen & Christy, 1999). The complex language made understanding the curriculum document more difficult and therefore teachers could not take ownership of OBE, and as a result OBE failed (Jansen & Christy, 1999).

On the contrary, Participants C and D felt that they were happy with just being implementers of curriculum. All they needed was training to prepare them for implementation and guidance during implementation. They felt that development was best left to the curriculum planers, and the higher echelons of the educational structure. Teachers in Macnab's (2003) study accepted curriculum change with little debate, and therefore implementation resulted in a lower success rate because of the attitude of resigned acceptance, which maybe the case with Participant C and D. Further, if teachers' beliefs are not compatible with curriculum reform, then successful reform will be hampered because teachers' beliefs are crucial to what is being taught and how it must be taught (Barrista, 1994). If curriculum is consistent with teachers' beliefs then they can adjust their beliefs to suite new curriculum (Macnab, 2003). Change in South Africa maybe taking place through coercion since the DBE (minister and officials) as stakeholders, use power over teachers as the other stakeholders to institute change (Ornstein & Hunkins, 1998).

4.5.2. KNOWLEDGE OF CURRICULUM CHANGE TO CAPS

In response to knowing about the Department of Basic Education's intention to change the curriculum from NCS to CAPS,

Participant A:

> "*It was quite a while, because grade 10 CAPS was three years ago, that was when it was introduced. So it was a year before that. Did we go for workshops during the year on CAPS. But I think the first time we got to know about it was the media*."

Participants B and D concurred, Participant B:

> "*Was through the media*."

Participant D:

> "*The media*."

Although they are the key component to the implementation of the CAPS, Participants A, B and D first heard of curriculum change from NCS to CAPS through the media. According to Participant C, CAPS had already been implemented when he first heard of it. This participant was not in touch with the media that the other participants were in touch with. This shows a huge void in the relationship between teachers and the Department of Education officials, including the Minister of Basic Education in South Africa. This exemplifies the great divide that exists between teachers and these officials. This top-down approach prevents teachers from developing the sense of ownership of the curriculum. There appears to be a distinction between 'them' and 'us', "them" being the curriculum developers and administrators and "us" being the implementers of the curriculum.

4.6. THE CURRICULUM POLICY DOCUMENT

The curriculum policy document is the core plan that represents the intended curriculum statement and the most important instrument between the teacher and the implementation of the curriculum (Akker et al, 2010).

4.6.1. KNOWING THE CAPS DOCUMENT

In response to knowing the curriculum policy document,

Participant B responded:

> "*I wouldn't say well enough. Just basically you use what you need. Your guidelines, your assessment guidelines, perhaps the syllabus itself. You know all the airy fairy stuff, the background and all of that. It's just really*

what we need. I wouldn't say I know it well enough and it is a big document."

Participant A added:

"*Yeah. It's a thick booklet. We still are going through it this year with grade 12. But I mean the changes in Mathematics, was vast changes, but the basic Mathematics that you got to teach is still there. It's just chunks of new topics are brought in. That's about all. But the chunks are brought in with no time change*."

The reference to "new topics" covers Nature of roots, Euclidean Geometry (Circles), and Probability, which were not in the mainstream NCS document but were optional topics tested in paper 3. Results of paper 3 did not contribute as a promotion requirement to the next grade. Therefore learners choose to write paper 3, on condition that they were tutored on these topics. The participants of my study considered these as long and difficult topics to teach. In the CAPS document, the removal of Transformation Geometry and Linear Programming considered by participants as easier topics to teach, were replaced by the new topics as stated above. "no time change" refers to the time allocation per week for contact time in the grade eleven Mathematics classroom remained as four and a half hours from NCS to CAPS (DBE, 2009; DBE, 2011b).

Participant C on the other hand has not read the policy document:

"*I just look at the work schedules. By looking there I just see things that must be done per term*."

The participants will engage with what they know of the CAPS document and how they interpret what they know in order to enact (implement) the curriculum (van den Akker et al, 2010), and deliver instructional content to learners in the classroom (Kurtz et al, 2010, Porter & Smithson, 2001).In order to clarify how well participants know the CAPS document, the moderator used a scale of 1 to 4, 4 being the best, Participants A, C and D placed themselves at 2 whilst Participant B chose 1. The participants admit to not knowing the CAPS document well enough because they seem to take a "read the document as and when needed" approach. The CAPS policy document represents the intended curriculum of the curriculum developers in a written format. Participants are required to read, understand and interpret the written curriculum in order to appropriately implement the intended curriculum. Participant C has contradicted himself by first indicating that he did not read the CAPS document, but only follows the work schedule, and then rating his knowledge of the document at 2. By Participants A and D rating their knowledge of the document at level 2 and Participant B at 1,

indicates that they may have a weak knowledge and understanding of the CAPS document and therefore may not be able to implement the intended curriculum. As van den Akker et al (2010) pointed out that the intended curriculum is the ideal curriculum contained within the vision of the authorities in education and the written curriculum is conveyed in the policy document. Participants in this study will therefore deliver curriculum intentions from what they understand of the CAPS document to suit the purpose of the lesson in the grade eleven Mathematics classrooms (Ozgeldi & Cakiroglu, nd). The policy document provides a guideline for all participants to consistently follow when delivering the curriculum, thereby enacting the intended curriculum.

Within the theme of knowing the document, participants were questioned about attending work-shops concerning the policy document.

Participant A explained:

> *"But you see how the workshops work is that if you are going to be teaching grade 10 next year and next year is going to be the implementation of the document then only that particular educator will attend the workshop. But that educator is expected to come and cascade the information to the others, and when you look at time constraints at school, they just pass on documents, so the other educators are expected to just read on."*

According to Participant A, not all Mathematics teachers from her school attended the workshops. Participant A states that due to logistical problems and the needs of the school only one teacher, per grade (grade 10, grade 11 or grade 12), attended the workshop. This teacher was then expected to cascade information to colleagues when he/she returned to school. According to the DBE circular (KZN circular no. 3 of 2012; Circular UDO 1 of 2012; Circular UDO 1 of 2013; Circular UDO 1 of 2014), only teachers who were teaching grade 10, eleven and 12 Mathematics in 2012 were required to attend the workshop. Due to logistical reasons, as declared by Participant A, only one teacher attended the workshop, and this teacher was then expected to cascade information to other Mathematics teachers who taught grade 10 in 2013.

Participant D:

> *"We were just called to the workshops. Yeah they gave us these documents for grade 10's to be implemented the following year, yeah."*

Participant C:

> *"It was already existed when I heard about the CAPS."*

Participant B:

> *"No, I haven't attended any Maths CAPS workshops, simply because of the needs of the school. Someone else has gone instead of me but I've ended up teaching grade 11. So, it's the needs of the school."*

With the introduction of Curriculum 2005, The Department of Education in South Africa adopted the cost effective Cascade model to train teachers in the implementation of the new curriculum. Subject experts and specialist were trained to train teachers, and these teachers who were trained were then required to pass on their knowledge to their colleagues (Ono & Ferreira, 2010). However, the failure of this model of training is that the information that is cascaded is watered down and therefore misrepresented due to the loss of crucial information (Fiske & Ladd, 2004; Hayes, 2000). The advantage of the Cascade model is that there is a quick flow of information from subject experts and specialists to a large number of teachers (Ono & Ferreira, 2010).

As stated by Participant A, this model failed in her school because teachers did not find the time to train colleagues, but merely passed on copies of the documents. Whilst Participant B did not attend any CAPS workshops, she did not receive training from other colleagues at her school. Participant C did not attend the initial orientation workshop because CAPS was already implemented when he got to teach CAPS in FET. He however attended subsequent workshops as indicated later in this chapter. Participant D has admitted to attending the initial CAPS workshop in preparation to implement CAPS in grade 10, but she has not indicated whether she cascaded any of the information to her colleagues.

Due to logistical problems, school principals were not sending all Mathematics teachers to the CAPS workshop, but Participant C feels otherwise:

> "*All those who are involved in Mathematics must go to the workshop*."

Workshops were scheduled by the DBE to: orientate teachers towards the curriculum reform from NCS to CAPS, present the relevant documents pertaining to the reform, and train teachers in the implementation of the reform (KZN circular no. 3 of 2012; Circular: UDO 1 of 2012; Circular UDO 1 of 2013; Circular UDO 1 of 2014). Facilitators were trained to train teachers at workshops, in implementing the reform.

In line with the theme of knowing the CAPS document, the moderator tried to establish whether the entire policy document was explained at the workshop.

Participant D confirmed:

> "*I have been to one. It was basically the content workshop. Not the policy document workshop. They are dealing with the new topics only*."

Participant D initially stated that she attended the introductory CAPS orientation support workshop (Circular no. 3 of 2012; Circular UDO 01 of 2012) at which she received the CAPS documents. She further claims that the policy document was not discussed, but curriculum content was. It seems to me that the Department of Basic Education Trainers at the workshop attended by Participant D discussed the content of the new topics in the CAPS document and not the requirements of the document itself. As per Circular no. 3 of 2012, the initial CAPS workshop organised by DBE, concerned the subject specific orientation of teachers towards CAPS. Those teachers who did not receive the subject specific CAPS document at school were each given a copy at the workshop, and those who received the document were required to take it to the workshop for discussion purposes (KZN circular no. 3 of 2012; Circular: UDO 1 of 2012; Circular UDO 1 of 2013; Circular UDO 1 of 2014). According to the circulars, there was no distinction of a policy document work, or a content workshop.

Concerning the discussion of the document at the workshop, Participant B contends that the entire document cannot be discussed at one go.

Participant B believes that:

> "*there are some parts that you can go through on your own, but perhaps the changes, different ideas, maybe that yes, but the whole document I would go crazy*."

Participant C feels that he does not need to know the policy document

> "*I just look at the work-schedules. By looking there I just see things that must be done per term*".

Only Participants A has indicated that the entire document was discussed at the orientation CAPS workshop she attended. However, she states that teachers at this workshop got into groups and analysed different part of the document. According to her, an elected group leader was responsible for presenting the analysis.

Participant A:

> "*I remember the CAPS one, we got into groups. This was the Durban Central region that did this. We got into groups and we took different parts of that document and we discussed, and then we had one leader that did the summary*."

The participants in this study seem to have different views on how to use the CAPS policy document. Some participants read parts of it each year as they progress through the grades with their learners, whilst others merely follow the work-schedule provided by DBE, without reading the document. Much responsibility is left with the participant to read, understand and interpret the document.

The written curriculum represents the intentions of the policy put in writing such as a policy document which conveys the intended curriculum to curriculum interpreters and implementers (van den Akker et al, 2010). However participants in my study have different views on interacting with and knowing the intentions of the CAPS document. The enacted curriculum refers to the curriculum as perceived by the interpreters and implementers (van den Akker et al, 2010) and delivered to the learners in the classroom as instructional content (Kurz et al, 2010, Porter & Smithson, 2001). Participants in my study are at different levels of understanding of the CAPS document due to their varying levels of interaction with the document. Their enactment of the curriculum will also vary according to their understanding of the document.

4.6.2. CLARITY OF THE CAPS DOCUMENT

Bennie & Newstead (1990) identified the poor clarity of the curriculum policy document, with omissions, content errors and inappropriate content, as an obstacle to implementing curriculum 2005. There was general consensus among the participants that the CAPS document was clear and user-friendly in detailing its expectations of the teaching and learning process, as compared to the NCS (Bowie & Davis & Pillay & Nxumalo & Pleass & Raju, 2014).

Consistent with Bowie et als' (2014) findings, Participants A, B and D agree that there is clarity in the structure of the CAPS document, the language used and its user friendliness. This finding of the CAPS document is contrary to Bennie and Newstead's (1999) findings about the clarity of the Curriculum 2005 document. They found that the Curriculum 2005

document lacked clarity and confused teachers. Further, Curriculum 2005 had a skewed design and was written in cumbersome language which made it difficult for teachers to interpret and successfully implement (Cross et al, 2002). With CAPS, participants found that there is greater detail and order in the topics with more guidance on the content (Bowie et al, 2014). The clarification column in the CAPS document provides the expectations, and breadth and depth of the topics, thus giving teachers more direction and clarity on how the curriculum is expected to be delivered (CAPS document). The participants seemed more comfortable with CAPS.

4.6.3. RELEVANT PREVIOUS KNOWLEDGE

Learners' previous knowledge forms the basis on which new knowledge is built (Malinga, 2005). GET (grades 1 to 9) is the phase that precedes the FET (grades 10 to 12) phase. Therefore the link between the GET curriculum and FET curriculum will provide the relevant knowledge of learners for pure Mathematics in FET (Malinga, 2005) on which new knowledge can be built. If learners have adequate previous knowledge then I feel that the experiences of participants in delivering the grade eleven Mathematics CAPS syllabus would be more positive and participants would achieve greater success in building on the previous knowledge of learners. I believe that without relevant previous knowledge, grade 11 Mathematics teachers would have to teach topics from the basics, which may be extremely difficult for the teacher to cope with due to limited time available.

While all participants in this study found that the policy document of CAPS provided a link between the GET and FET education, the study conducted by Malinga (2005) found that the Outcomes Based Education (OBE) grade 9 curriculum was not linked to the grade 10 curriculum, and therefore it did not prepare learners with the relevant previous knowledge for pure Mathematics in the FET phase.

Whilst these participants have identified the link between GET and FET phases in the CAPS document, in practice Participant A found that some teachers were sacrificing certain topics by shallow teaching or not teaching them at all, and this led to learners not having adequate relevant previous knowledge on which new knowledge can be developed, and as a result, I feel it may negatively affect the experiences of the grade eleven Mathematics teacher in delivering the CAPS curriculum because of the lack of learners knowledge of Mathematics in previous grades. Shallow teaching by participants means that they were teaching the basics of

the topic and not delving into the depth of the topic for a deeper understanding by learners therefore creating knowledge gaps.

Participant A's response to whether there is a link between GET and FET:

"*There is in CAPS. There wasn't when it was NCS. Teachers were leaving out or doing a very shallow teaching of certain topics that were not required in high school like the geometry. We found that it was sacrificed by primary school teachers.*"

Shallow teaching or not teaching topics, I feel, will result in the omission of important aspects of the curriculum which is essential for the building on of new knowledge, therefore learners will have a knowledge gap that will prevent the building of new knowledge. In my opinion grade 11 Mathematics teachers will have to teach previous work before continuing with the grade 11 CAPS syllabus.

Curriculum policy being the core plan to achieve organised learning, is not followed by these participants (van den Akker, Fasoglio, & Mulder, 2010) and therefore the intended curriculum which represents the vision of the authorities in education who design curriculum policy, differs from the enacted (implemented) curriculum delivered in the classroom as instructional content (van den Akker, Fasoglio, & Mulder, 2010; Kurz et al, 2010, Porter & Smithson, 2001).

In response to whether learners have the relevant previous knowledge, Participant A responded:

"*And I think teachers become overwhelmed by these changes, And then suddenly what they doing is, sacrificing a little of their teaching.*"

According to Participant A, there are teachers who felt overwhelmed by the rapid change in curriculum that also brought about changes in terminology that were unfamiliar to them. Due to being overwhelmed by the demands of the new curriculum Participant A has observed that some teachers sacrificed a little of their teaching thus creating knowledge gaps in learners. This lack of learners' relevant previous knowledge puts a constraint on their future learning experience as alluded to by Participant B:

"*You feel the effects of it when you teaching higher up. You can see there are definite gaps. Obviously with Maths, you cannot go into the concept without the background. You can see the gaps.*"

According to participant B, gaps in the knowledge of learners are clearly evident in the FET phase, and as a result, new concepts cannot be taught in grade 11 without this background

knowledge. This previous knowledge, according to the findings of Bennie & Newstead (1999), is essential when dealing with topics in grade 11 that were covered in previous grades (Bennie & Newstead, 1999).

Participant C has the perception that learners are too lazy to study, which then also contributes to these gaps in knowledge, and this also hinders their ability to learn new concepts.

Participant C:

"*learners don't want to read. to learn, to participate, even to study., They are lazy, but just a few who show they were taught something*."

By learners not consolidating their learning, there will be a lack of understanding of the work done by the grade 11 Mathematics teachers, and therefore the teacher has the added burden of finding other means of getting these learners to consolidate their work.

Participant D feels that the lack of qualified teachers teaching Mathematics is also a problem that affects the quality of teaching and learning and therefore the build-up of relevant previous knowledge. To support this I refer to Mji & Makgato (2006) who report that under-qualified or un-qualified teachers have contributed to poor teaching standards in schools. According to Mji & Makgato (2006), teachers' pedagogical content knowledge impacts on learner achievement and it is therefore essential that teachers get involved in refresher courses.

Participant D:

> "*But again there are no Maths teachers….qualified Maths teachers. That's the problem*."
>
> "*dropout from university or with a BSc are filling in. Professionally with no teaching…. No there are no Maths teachers."*

According to Participant D, she knows of teachers filling vacant teaching posts who are university dropouts or Bachelor of Science graduates with no professional teaching qualification. She feels that they lack the didactical knowledge to adequately deliver the curriculum in the classroom. Literature on the shortage of Mathematics was discussed earlier in this chapter.

Whilst, according to all participants, there is a link between the intended curriculums of the GET and FET phases, the enacted curriculums can differ because of shallow teaching by

teachers who are overwhelmed by the demands of the CAPS curriculum, learners are lazy to study and assimilate knowledge, and unqualified teachers who have no formal training are teaching the subject.

4.6.4. DELIVERING THE CURRICULUM POLICY DOCUMENT

Bowie et al (2014) in their comparative study of the NCS and CAPS documents found that there was an increase in content (breadth) as well as the depth into which the topics must be explored. With the reform in content teachers need more time for teaching, due to the increased breadth and depth of CAPS (Bowie et al, 2014). The grade 11 syllabus has been reformed by the removal of Transformation Geometry and Linear Programming (considered as easier topics by the participants of this study), and the inclusion of Probability, Euclidean Geometry and Nature of Roots (considered to be difficult topics by the participants of this study) (Bowie et al, 2014). In support of Probabilities as a difficult topic to teach, I refer to Bennie and Newstead's study.

Bennie & Newstead (1999), in their study of the Mathematics Learning and Teaching Initiative (MALATI) project found that the topic of Probabilities was a difficult concept for teachers to teach and therefore they needed to be intensively work-shopped on the content of Probabilities to appropriately prepare them for delivery in the classroom.

In response to the delivery of the curriculum, participant A's assessment is:

> "*You need more time. They just took out a little chunk of linear programming in grade 11 and put in a big chunk of probability and circle geometry and we got nature of roots. The only thing we took out was linear programming*."

Participants C/D(chorus):

> "*And transformation geometry*."

Participants alluded to more content to be delivered in CAPS than there was in NCS, which is consistent with Bowie et als' (2014) findings. Therefore participants in this study are finding it difficult to cope with meeting the deadlines as recommended by the curriculum guidelines. Participant B is under pressure to complete the syllabus and prepare of learners for common tests set by the Provincial Education Department.

Participant B:

> "*And we also were given guidelines… in our work schedules. You must do circle geometry from this date to that date. And I feel that guideline is*

also not realistic, because within that there's no time for testing and of course, our school, I don't know if you are aware, we are a non-performing school, so you have to write the department of education paper, our common tests… for the exams.. and they give you the date and sometimes even the exam date is set before you would have completed that particular section. So it's just the time. Too much work and too little time."

With the introduction of more and difficult content, teachers need more time for the delivery of the curriculum and learners need more time to grasp and assimilate the knowledge. Beck et al (2000) in their research on implementing new curriculum in schools in the United States of America, also found that more time was needed for planning and constructive teaching, and learners needed more time to grasp and understand concepts. It is therefore evident from Participants A and B's responses that the changing curriculum does not consider the time frame available for engaging with constructive teaching and learning. They believe that the guidelines given in the work-schedule are unrealistic because it does not allow time for testing, and further, the work-schedule must be completed in a specified time so that learners are prepared for common tests and examinations set by the Provincial Department of Education.

Participant C has experienced learner difficulty in understanding the difficult topics such as Euclidean Geometry and more time needs to be spent on teaching these topics. In my opinion, the time frame provides a timeline for an ideal class of learners who do not find Mathematics difficult to understand, and who can work independently. Disruptions in the daily program of the school, results in loss of teaching time and reduces the time available for teaching and learning.

Participant C:

"*It takes long because even one section is very long eg. Euclidean Geometry. It is very long and difficult for them to understand. Then you take even trigonometry, there are many sections. Even if you take data handling… too long section, only to find that in the workshop we are given the time frame to do this up until.. only to find there are some disturbances during the course of your teaching maybe there are days where there are no classes because of something that is happening in the school, like the memorial service… there will be no classes. Time will be shortened. There*

will be some disturbances along the way only to find that you wouldn't finish the syllabus. At the same time you are expected to do the assessment to write the test , there are many learners in the class to find you have to mark the scripts. So time frame is too small."

Participant C loses precious teaching and assessment time because of disruptions at his school. Participants are therefore forced to use extra-time, after school hours, Saturday and holidays as alluded to by Participant D:

"*The content is too long. If it wasn't for the holidays and Saturdays, I wouldn't finish teaching*."

Participant's personal time is being used to cover CAPS content because of the lengthy syllabus.

Curriculum reform has changed the pace at which the participants of this study work, resulting in adjustments in the teaching and learning process.

Participant A:

"*Teachers are rushing. They are spending less time on certain topics. No consolidation being done. Consolidation is only being done by way of an assignment or a test*."

Participant A has observed teachers rushing through topics and not consolidating the work done. Only assignments and tests are used as consolidation tools.

Participants B and D admit to compromising on the consolidation of work and remedial work because they focus on completing the syllabus, and therefore they rush through the topics at a fast pace and thereby compromising learner results in the tests and examinations.

Participant B:

"*I must say I have compromised. I think my focus when I teach is to try and cover as much as possible. The kind of children that I have, the level that they are at. They are not Maths whizzes but they want to do it. Some of them want to learn. Some of them are interested in it. So what I try to do is just manage. I give them what I can. Maybe one or two I push them a little bit. I must be very honest with you. I have compromised consolidation*."

Participant D:

"*There's actually no time for remedial work. Yeah we have to rush. You don't give individual attention to learners. You are having only 20% pass because you are rushing for the syllabus*."

Participant A:

> "*With CAPS the amount of homework should increase, because there's so much more to do, and they not doing their homework, so obviously it's going to impact on learning. There is too much content in CAPS.*"

Whilst all the participants agree that the increase in the length and breadth of CAPS has hastened the pace at which the CAPS curriculum was delivered, I feel that there is therefore a demand for learners to cope with the increased pace of the teacher. In my opinion, more responsibility is given to the learner to work independently since the teacher does not have sufficient time to address difficulties that learners are experiencing. According to Participant D, learners who do not cope with the pace fail at the end of the year.

4.6.5. SUBJECT CHOICE

According to Participant C, another contributing factor affecting the teaching and learning process is that learners who don't like Mathematics are forced to do it because they also do Accounting. KZN Circular number 09 of 2013 regarding subject combinations for FET learners was issued in support of learners offering appropriate subject combinations in their career paths. It was a directive to all principals to ensure that learners who offered Accounting and/or Physical Science must also offer Mathematics, and not Mathematical Literacy. Principals of schools that had learners offering Mathematical Literacy with Accounting and/or Physical Science were required to reverse these combinations and get learners to take Mathematics (KZN Circular 09 of 2013). The combination of Accounting and/or Physical Science with Mathematical Literacy provided learners with little flexibility to pursue post school studies (KZN Circular 09 of 2013).

According to Participant C, some learners in grade 11 have failed grade 10 Mathematics but have passed due to passing the other subjects. He maintains that there is therefore this gap in their knowledge of Mathematics at the start of the grade 11 year, and it compounds the problem of: learners not coping with the subject of Mathematics, and the teacher having to cope with these learners in the Mathematics class.

Participant C:

> *"It seems as if the learners; they don't like Maths at all. Yeah that's the problem. Like in my school they don't do their homework. Most of them like in grade 11, the majority have changed from Maths Lit, forced because they are doing Accounting, so they are compelled to do Maths. In fact they*

don't like Maths. That's a challenge."

Participant D:

"*They've been promoted the previous years, having not passed Maths. Passing all the subjects, but not Maths. They are still doing Maths. So there is no background at all. They are not loving Maths*."

Participant B:

"*Yeah it's true, so yes I would say it has impacted on the children's learning of the subject, negatively, yes.*"

According to Participants B, C and D, learners being forced to do Mathematics even though they don't like it, or learners continuing with Mathematics even though they have failed the subject in the previous year, contribute negatively to the grade 11 Mathematics teachers experience in the classroom since learners have this knowledge gap. Learners, who have struggled with Mathematics in grade ten, pursue Mathematics in grade 11 without properly understanding what went on in grade ten. I feel that this creates a burden on the participants teaching grade 11 Mathematics because they have to teach the grade ten concepts before teaching the grade 11 work, and therefore contributes negatively to their experiences in delivering the CAPS curriculum.

Circular S13 of 2014 has restricted learners' subject choice to grouping Accounting and/or Physical Science with Mathematics. Although learners have the alternative to offer Mathematics or Mathematical Literacy this circular withdraws this alternative if these learners are offering Accounting or Physical Science. Participants in my study feel that they have to contend with learners who do not like Mathematics or cannot cope with the subject. Their teaching experience in the grade 11 Mathematics class, in my opinion, is negatively affected because they must work harder to make Mathematics understandable to these learners, since learners' performance is a reflection of the teacher.

4.7. TEACHER TRAINING

In this theme I tried to establish how well prepared teachers were to enact the CAPS policy document. The types of support that will be investigated in my research are in-service training workshops by subject advisors and support by management.

Graven (2002) concluded in her findings after observing teachers making sense of new curriculum and reflecting on learning processes, that teachers learn best within an in-service

training (INSET) programme. In-service training provide more than the usual internship, it also provides a follow-up period under personal supervision (Allen, 1940). It supports correct and effective implementation of the curriculum (Beck et al, 2000).

Traditionally, professional development, otherwise known as staff development, is referred to as in-service training (Ono & Ferreira, 2010). Villagas-Reimers (2003) categorises in-service training as the method to: disseminate information related to curriculum; up-grade teacher's knowledge; prepare teachers to take on new roles; and certification of under-qualified or un-qualified teachers. In-service training was conducted in the form of: courses, conferences, workshops or seminars (Villagas-Reimers, 2003; Ozer, 2004). According to Wilmot (2004), the in-service course initiated by the South African government was the Advanced Certificate in Education (ACE) which is offered by South African Universities. These in-service courses enabled teachers to specialise in areas of need, such as Mathematics (Wilmot, 2004).

When participants were questioned about whether they attended in-service workshops, the chorused response was:

"*No*."

Participants of this study stated that they were unaware of any in-service training for teachers related to the implementation of CAPS. It seems to me that teachers are unfamiliar with the terminology "in-service training". Participants A and D have attended the orientation workshop on CAPS, which serves as in-service training.

In my study participants A and D received additional support from workshops (in-service training) organised by the Department of Education.

Participant A:

> *"We have excellent support. I recently got to know certain things and I think the support is excellent in my district, Durban Central. From the subject advisor, at our moderation workshops he generally takes a half an hour slot or a one hour slot where he will do something relevant to a topic or the exams."*

Participant D:

> *"From the department, they are organising content workshops and they are enough. even though they are stealing a bit of our time in the afternoons and Saturdays, but they are giving us support…enough support.*"

Participant C received support from the Head of Department (Mathematics) at his school as well as other CAPS workshops that he attended.

Participant C:

> *"if anything that is challenging me, although I have been to a workshop, I just go straight to my HOD and discuss the matter. That's where I am having a problem at, so we discuss that thing, then maybe there'll be a solution thereafter*."

However, participant B has received no support at all from any in-service training on CAPS.

Participant B:

> *"If I ask for it perhaps I would. I must be honest, I haven't….and we just so busy, there's no time for it. We haven't had any workshops at school per-say."*

Participants A and D have received support from their subject advisors, whilst Participant C has attended workshops, he further received sufficient support from the Head of Department at his school. Participant B has not attended any workshops, nor does she receives any support from the Head of Department at her school. The difference in the curriculum support received by all four participants indicates to me that they entered the grade 11 Mathematics classes not having similar training and knowledge of the CAPS document

Beck et al (2000), in their study of the implementation of constructivism in schools in the Northwest region of Ohio (United States of America), advocates that the school management team must be part of in-service training and workshops to equip themselves with reform process and requirements so that they can offer support to teachers for effective implementation. As a Head of Department (Mathematics) myself, I agree with Beck et al in their recommendation that the school management must be trained, because, I feel that the management of the implementation of the curriculum can constructively done if the head of the subject also knows and understands the curriculum reform in order to assist his subordinates.

Participants B had no support from workshops, nor from the school management. This lack of support can be compared to Bantwini's (2010) findings in his study where the participants indicated that there was a lack of continuous support from the subject advisors after the once

off orientation workshop. This shows an inconsistency in the training and support structures offered to all grade 11 Mathematics teachers in assisting them with delivering the new curriculum. Bantwini (2010) affirms that school districts should structure continuous support for teachers to ensure that they appropriately understand the curriculum reform and what it expects of them. In this way misunderstandings of the intended curriculum can be avoided. Teachers must be adequately equipped to construct knowledge as well as meaning of the curriculum reforms (Bantwini, 2010). Mtshali (2008) recommends that teacher development models must be improved with regular workshops. Workshop sessions that conducted beyond one week provides the opportunity for interactive learning between teachers and facilitators (Mtshali, 2008).

4.8. CONTENT KNOWLEDGE AND SKILLS OF TEACHERS

Content knowledge and pedagogical skill strongly influences the way teachers teach (Brown & Borko, 1992). The knowledge and beliefs of teachers are crucial not only to what is being taught, but how it is being taught (Battista, 1994). For implementation to be successful, teachers must apply their knowledge and skills in correctly interpreting and implement the document (Parker, 2006). Teachers' weak conceptual knowledge will therefore be an obstacle to effective curriculum implementation (Bennie & Newstead, 1999; Malinga, 2005).

Participant B responds positively to teachers having sufficient skills and knowledge:

> *"I would say yes. Thinking about the teachers at my school. I would say that they are adequately skilled, and most have been teaching for a very long time, and so I don't think they have a problem in terms of that.*"

Participant B feels that because the teachers at her school have taught for a long time, and are familiar with the topics, they are well skilled and have sufficient content knowledge to deliver CAPS. Whilst teachers at Participant B's school may have sufficient content knowledge and skills to teach Mathematics in the grade 11 classroom, participant D feels that there is a need for more support in methodology, especially in teaching the new topics that have been included in CAPS.

Participant D:

> "*The methodology, yeah, they should be given some new methods on how to teach certain topics like Geometry, because really, learners can't understand. So only in the methodology part*."

According to Participant D, teachers need more didactical training. She feels that there is a need for teachers to learn new methods of teaching these difficult topics in order to make learners understand better. In my opinion, teachers are also life-long learners themselves and must therefore engage with learning to find answers to the difficulties they experience. Participants, as teachers, must teach themselves and not rely on the Department of Education to conduct such training programmes.

New teachers have difficulty, especially if they have not covered these sections as learners at school, nor at tertiary level.

Participant A:

> *"I have two new teachers that teach Maths. One came with a normal BCom degree and she has adapted well. We have guided her… she has received guidance from school. She came with no teaching background, nothing at all, and she equipped herself well, she's learnt a lot of stuff and then we do a lot of guidance at school. And then we have another teacher that came with a teaching degree, with Mathematics, but then he said to us he wasn't taught any Euclidean geometry at Edgewood at all. But then he had Mathematics but during his matric year he wasn't in that phase where they did geometry, but he eventually learnt, I mean we guided him, how to do it. He is fine with it. We equipped him in stages, grade 10, then grade 11 and then grade 12, so he does not become overwhelmed with time*."

Participant A, being a Head of Department (HOD) provides support to new teachers to ensure that they cope with the curriculum delivery in the classroom. Participant C also receives support from the HOD at his school. Since Participant C shares teaching the same grades with his HOD, they are able to work closely together. Buddy-teaching seems to work for participant C. Participant C:

> "*The reason why I mentioned my HOD is that we are sharing the subject. We are teaching the same grade. Grade 10 and grade 12. I am working closely with him." "If there is something challenging me I just go straight to my HOD and discuss the matter. I teach those sections very effectively, only to find in the exams the question paper is just as I taught in class*."

Participants agree that buddy-teaching is a method that works in providing support among teachers. Participant A confirms:

> "*it works very well*."

Participants who have experience in teaching NATED 550 and Paper 3 (Optional paper) in the NCS curriculum, draw from this previous knowledge when teaching the CAPS curriculum. In response to the question: How much of your previous knowledge and skills has assisted you in implementing CAPS? Participant C responded:

> "*Right now in CAPS there is Euclidean geometry, it is in CAPS, it was not in NCS, and previously it was in NATED 550, so I was used to that part before.*"

Participant D:

> "*Yeah it does link, especially when you have taught even paper three 'cos actually this geometry is paper three from the NCS. So there is a link.*"

Participant A:

> "*Yeah it is from paper three, and well we've taught these before but when you look at counting principles in grade 12, we got to teach ourselves. We taught ourselves this section. It's equipping ourselves with new knowledge and using the old knowledge*."

According to Participant B, teachers even draw from their knowledge as learners to assist in delivering the curriculum. Participant B:

> "*So for me I have to draw on previous years, not only as a teacher but also as a pupil myself because I last remember doing Euclidean geometry when I was at school specifically. So I have drawn from that*."

Participants have accepted the new CAPS curriculum that have familiar topics and therefore draw from their old practices in order to deliver this curriculum, similar to Brodie's (2002) research where the teacher drew from old practices as she moved towards the new.

According to participant D, the change in curriculum has made some teachers insecure because of the introduction of the difficult topics, so she helps them by teaching these difficult topics. According to Bennie & Newstead (1999), many teachers with weak conceptual knowledge are trying to gain confidence in teaching new topics.

Participant D:

> "*Some of them are insecure because of the content so they come to me to go and teach for them, the geometry part. Yeah we just do the team teaching. Some are afraid of some topics, even though they were taught to them, they are a bit afraid*."

Participant A attributes teacher insecurity to the rapidly changing curriculum. Participant A:

> "*I suppose it was too quick. It was OBE, it was NCS and now it's CAPS. You know, the time frames were too quick and, mathematics itself didn't change. Very little of the content changed. The teaching of Mathematics did not change. The admin work changed. It becomes overwhelming and teachers now suddenly look … there's so many other problems that are compounded now. So this admin work, is compounded by discipline problems and everything else that comes with it, and that's why teachers get upset.*"

This rapid change, according to Participant B irritated teachers because as soon as they became comfortable with one curriculum, a new curriculum was ready to be introduced.

Participant B:

> "*Irritated that it keeps changing. Although change is necessary. If you just about get to learn something then you got to start again. So that irritates me more than anything else*."

Participants became overwhelmed with the introduction of the new curriculum and needed to adjust quickly in order to cope with the change. The rapid changes from NATED 550 to NCS to CAPS placed greater demands on teachers' ability to cope.

4.9. CURRICULUM MATERIALS AND RESOURCES

Since curriculum materials and resources are important supporting tool used in delivering the curriculum (Beck et al, 2000), this theme investigates the quality of the curriculum materials and resources. This theme will be discussed as two sub-themes: Textbooks, and the CAPS document.

4.9.1. TEXTBOOKS

The textbook substantially influences lesson and content presentation (Tarr, Chavez, Reys & Reys, 2006). It is therefore one of the main sources of information teachers use in the delivery of the curriculum. Participants feel that whilst the learners may be given one textbook, the use of one textbook by teachers is insufficient.

Participant C:

> "*To use one textbook is not enough. It is better if you use as many as you can, because only to find that this text book covers things that this one doesn't have. It is better and secured if you use as many as you can. Just to combine*

things together."

Participant D:

"*Yeah that's true, textbooks supplement each other so you can't just stick to one.*"

Participant A:

"*it is sufficient but you've got to use a wide variety again, The department policy where they say each child must have a textbook... you got to still work with other textbooks, run out worksheets and things for the kids*."

As teachers, participants feel that they need to consult a variety of textbooks in order to obtain adequate information to prepare and deliver the curriculum so that learners receive the best benefit from the teaching and learning process.

Participant C:

"*The advantage of using many textbooks is that the versions are not the same. Some are explaining better than the other*."

Whilst textbooks cover all topics of the syllabus, according to Participant C the depth to which they cover topics may vary, which compels the teacher to reference a variety of textbooks that would adequately supplement the needs of the teacher and learners. By consulting different textbooks, participants can source the best explanations of topics, methods to solving problems, and practice exercises. Worksheets can be prepared by participants, using the information gathered from the various textbooks, to suite the ability levels of the learners so that they can work at their own pace.

The curriculum document also serves as a resource that guides participants in the delivery of the curriculum.

4.9.2. THE CAPS DOCUMENT

The national curriculum policy statement which serves as a resource document is designed to regulate and standardise the curriculum that participants deliver in the classroom. The policy document provides a guideline on the timeframes to teaching each topic. Without these guidelines teachers may go deep into topics that they are passionate about whilst sacrificing other topics.

Participant A:

> "*Yes the depth of the topic. Because there are some topics you can go very deep into, and if a teacher gets too passionate about a topic and goes deep into then you doing it at the sacrifice of another section. But I think teachers are guided by those timeframes and the policy document, and then you stop at a certain point.*"

The pace of the curriculum is dictated by the timeframes provided on the curriculum policy document, which is a clear indication that it is geared towards curriculum completion rather than curriculum realisation. It does not consider time needed by weak learners to assimilate Mathematics.

Participants B and C found that the curriculum policy document and textbooks follow the same sequence, thereby creating a link that makes it easier for teachers to work. Participant D reaffirms this by indicating that the link guides teachers on not over-teaching.

Participant C:

> "*It is better now in the FET phase because everything just corresponds, unlike in GET, only to find if you look at the work schedule it is different from what is in the textbook. In this case FET, everything just corresponds.*"

Participant B:

> "*There's a lot of thought adding on into those textbooks. You can see there is definitely a link between the policy document and the work schedule, so to speak, and the textbook. There's a lot of thought.*"

Participant D:

> "*Yeah they are a good guide because you don't have to over-teach. You know where to stop, because of timeframes.*"

Well designed curriculum material and resources are essential in helping to build a positive attitude towards implementing new curriculum (Beck et al, 2000).

4.10. CONTEXTUAL FACTORS

This theme examines the factors that promote or hinder effective curriculum delivery. Pre-existing problems of late coming, huge class sizes, noisiness of learners, learner's not

carrying stationery and books to class, learners playing with cell-phones in the classroom, as mentioned by Participant A, have a negative impact on the delivery of the CAPS curriculum.

Participant A:

> *"We have late-coming, late-coming to school is one aspect, late-coming to class is another aspect. Not coming with stationery and books is another aspect. The noise factor, you have to keep telling the learners to keep quiet. It's something new to me. The cell phones that the learners want to hide and use. That's a distraction, obviously they are not going to learn. If they are on the cell phone for two minutes, they are not going to grasp what you said for two minutes. Those are the discipline problems. Then our class sizes. They are huge class sizes, ±40 in the class. No parental support*."

Discipline problems stated by Participant A are similar to Zappa-Hollman's (2007) study in Argentina, in which learner ill-discipline identified by teachers were that learners: truanted classes, have short attention spans, indulge in school violence, bulling each other, are disobedient, noisy and un-cooperative. Participants in this study have found similar problems to that in Zappa-Hollman's study, but have further found that learners in their schools are distracted by the cell phones they carry to class.

Participant A, as well as all other participants, believe that the lack of discipline of learners to get tasks, assignments and projects (requirements of CAPS) done, have a negative impact on continuous assessment and consolidation of work. This is an indication of a lack of parental support resulting in learners completing tasks that should be done at home as was the case in Bantwini's (2010) and Ngubane's (2002) findings.

Participant A:

> *"Because there is deterioration, it has impacted on delivering in the classroom. Delivering on time, and getting tasks done. Oh yes with CAPS when you look at all the tasks that are to be done, you look at a project that a child is supposed to take home, get done, that's all the requirements in the CAPS policy documents, but kids are not disciplined to get it done. Sometimes you will literally have to get all the stuff in the classroom and get the child to do it in the classroom. You'll get it out but you'll have those,*

almost 30% of learners that will have to do it in the classroom."

Participant B:

> *"Pretty much the same. Children have not been taught how to discipline themselves. "When I get home I must do my homework", or "When I sit in class I must work quietly", that kind of thing. It's like it's not being taught at all. The personal development …that's what I'm talking about. That is what's the difficulty in implementing anything."*

Participant C:

> *"I don't know if the learners are lazy or they don't want to learn. It's just a few who have that discipline. Most of them like to be chaotic in the class, even if you give them the task to do, they just copy. Only to find one or two, those are the few who are doing their tasks that were given the previous day, and the rest will copy. What I can say is that they don't have a discipline. I don't know how to train them to make them focus on their work, effectively"*

Participant D:

> *"I think the factors are still the same, laziness, class sizes, but mostly learners are afraid of new topics. This word geometry to them, these shapes they are just afraid of the new Maths."*

Class sizes contribute to the effective management of the learners and the delivery of the curriculum (Zappa-Hollman, 2007). As indicated by Participant B, smaller class sizes would make a huge difference in the teachers' ability to manage the class. According to Participant B, in a smaller class teachers would be more relaxed and be able to give individual attention and therefore achieve more in terms of coverage of CAPS and getting learners to cope with the demands of the curriculum.

Participant B:

> "*The managing of the class. When you're trying to deliver a lesson you feel so much more relaxed*."

According to Participant C, larger classes have more learners needing individual attention in the same timeframe, therefore increasing the stress level of teachers. Larger classes have more discipline problems such as learners talking to each other which disrupts the teacher during the lesson and slows down curriculum coverage. Due to time constraints, teachers are

forced to continue with the work-schedule even though learners in large classes cannot cope with the curriculum. High teacher-learner ratios is a common problem, even Bantwini (2010) discovered this in his study. Large class sizes will limit access to resources and reduce teacher effectiveness in the classroom (Zappa-Hollman, 2007).

Participant C:

> "*In grade 11 I have a class of 28 learners and a class of 52 learners for different streams. Only to find I cover everything in the learners that are few but when I come to this one which are many, only to find that I don't even finish even because there are those who need attention, because I just go. I don't want to go and leave the learners behind without gaining anything. Sometimes it compels. I am forced by situation to go through.*"

Learners not having support material such as Mathematical instruments, calculators and stationery jeopardises their chance of learning the skills being taught by the use of these support material. Textbooks have been written to suite relevant user-friendly calculators so that correct answers are easily obtained.

Participant C:

> "*If you are still talking about calculators, I can agree with that because in this new system like CAPS, there are calculators which are relevant to textbooks. There are calculators which simplify problems. Like in the instructions, you can find the instruction which says without the use of a calculator, you can chance using the calculator because you can leave your answer in the surd form, maybe the question says so. Leave your answer in a surd form. The other calculators just leave the answer in the decimal. Only to find that this one has used the calculator*."

Learners who do not possess these calculators have difficulties with assessments requiring the use of calculators. These contribute to learners' knowledge gaps which become evident by the poor performance of these learners during assessments as demanded by CAPS.

Participant B feels that learners' lack of participation in sport contributes to their ill-discipline. I also agree with Participant B because in my opinion a disciplined body

contributes to a disciplined mind. Participation in sport contributes to discipline because every code of sport has its own code of discipline which is instilled in its participants by the coach. Learners can use sport to build their character as team players, and this will improve their discipline in the classroom and change the experiences that teachers have in the classroom.

4.11. THE STRENGTHS AND WEAKNESSES OF CAPS

4.11.1. Strengths

According to Participant A and B, the CAPS document adequately covers all aspects of Mathematics to prepare learners for tertiary education.

Participant B:

> *"I think a broad spectrum. The five different sections that covers mathematics. Like data handling, functions you know. I think there are five sections and I think that because it is broad, it covers quite a nice variety."*

Participant A:

> *"It does prepare the child in a better way for university, because we found that all the kids didn't opt for paper three in NCS. So it was a big gap. They only realised when they got to university, that they needed Euclidean geometry. So that's a strength of CAPS. I agree with B about the other sections."*

Participant A further elaborates that the NCS syllabus did not adequately prepare learners for university if they did not opt to do paper three which covered Euclidean Geometry and Probabilities. With CAPS, all topics are compulsory, so therefore learners are adequately prepared for university.

According to Participant D, after NCS, CAPS has brought back the joy of Mathematics by including previous topics such as Euclidean Geometry.

Participant D:

> *"CAPS just brought back the joy of Maths. Its' now real Maths. We were missing out the old topics."*

There is a link in the GET and the FET curriculums, thus creating continuity and providing the basis for relevant previous knowledge required in the FET phase. Topics in the CAPS policy document are familiar to most, if not all Participants in this study.

The restraining forces outlined by Ornstein & Hunkins (1998) are fear of the unknown, threats of power, obsolete knowledge, traditional knowledge and limited resources. Participants in my study did not resist curriculum change to CAPS since they were familiar with adjusting to change in curriculum, topics covered traditional topics that they were familiar with and further, they were able to use available resources to implement CAPS.

4.11.2. Weaknesses

CAPS has too much of content to be taught. According to Participants A and D, the restricted timeframe does not allow teachers sufficient time to adequately cover the topics in the classroom. From NCS to CAPS there is more content to be covered in the same period of time.

Participant A:

"Weaknesses: yeah timeframe. Nobody considered time frame."

Participant D:

"The time framework, especially in grade 11, too much topics."

According to Participant B and C the NATED 550 curriculum gave learners the option to choose higher grade or standard grade Mathematics. Standard grade Mathematics gave weak learners the opportunity to pursue Mathematics at a lower level. CAPS offers Mathematical Literacy which is not considered pure Mathematics, and these learners are restricted with career choices (KZN Circular 09 of 2013).

Participant B:

"In the past in the old NATED 550, they had the higher grade and the standard grade, and standard grade was for students who really loved Maths but were not Maths whizzes, so to speak, as opposed to the higher grade. This doesn't cater for the in-between, it is for the very strong Maths learner. Maths Lit caters for those who just need Maths to get around, everyday life Maths, but it doesn't cater for the in-between."

Participant C:

"When it comes to the weaknesses what I can say is that there is an imbalance between the two, Maths Lit and pure Maths because those are two different classes, whereas before standard grade

and higher grade there were the relationship."

Participants B and C prefer learners have a choice between Higher grade Mathematics and Standard grade Mathematics, rather than Mathematics and Mathematical Literacy, because Standard grade Mathematics gave weak learners an opportunity to pursue Mathematics at a lower level, whilst Mathematical Literacy does not.

Whilst participants have accepted the CAPS policy and are currently implementing the new curriculum, they have not been involved in its creation and therefore do not appear to own the CAPS curriculum. They are forced to implement a curriculum that they had no part in creating. As eluded to by Ornstein & Hunkins (1998) the driving forces to change was greater than the restraining forces. The initial driving force to curriculum change was a political move by the South African Government in changing the Apartheid era education system to a system that catered for all its citizens equally. However in its attempt to bring about appropriate and adequate change, the South African Education system was forced to transform to Outcomes Based Education, then to National Curriculum Statement and now to Curriculum and Assessment Statement. These rapid changes de-stabilised participants' confidence in their knowledge and skills each time that the curriculum changed, forcing them to readjust to the re-reformed curriculum. Destabilising participants' confidence may have also affected the teaching and learning process and ultimately the learners.

Whilst participants accepted curriculum change to CAPS, there were obstacles that hindered the smooth and easy transition. According B and D, there was insufficient support from subject specialist, school management teams and colleagues. According to Participant A, there were two young teachers at her school who lacked knowledge of the new topics that was introduced into the mainstream curriculum of CAPS such as Euclidean Geometry, Probabilities and Nature of roots. Whilst Participant A guided these teachers to cope with the new topics, there may be more young teachers in other schools who were left to find their own way in coping with these topics.

4.12. CONCLUSION

The themes: Ownership of the curriculum and the extent of teacher involvement in curriculum development; The policy document – clarity and understanding of the document; Teacher training to prepare teachers for curriculum implementation; Knowledge and skills of teachers in delivering the content of the new curriculum; Curriculum material and resources

used in curriculum delivery; and Contextual factors affecting curriculum implementation. Adequately cover the participants' experiences with implementing CAPS. Participants' lack of involvement in curriculum development has prevented the development of a sense of ownership by participants of the CAPS curriculum. Whilst participants have found the CAPS document to be well structured and have clarity, there is still room for more in-service training of participants to cope with the implementation of CAPS to improve on their vast knowledge and skills to make implementation more meaningful. Participants have found curriculum document adequate to implement CAPS in the grade 11 Mathematics classes, however using one textbook was inadequate. They found the need to consult a wide variety of textbooks. The contextual factors have negatively impacted on participants' experiences in implementing the CAPS curriculum in the grade 11 Mathematics class.

4.13. PROJECTION FOR THE NEXT CHAPTER

In chapter five, I presented a summary of the findings and the conclusions that inform Future Trends in curriculum reform in education.

CHAPTER FIVE:
FUTURE TRENDS

5.1. INTRODUCTION

The purpose of this study was to explore grade eleven Mathematics teachers' experiences in implementing the Curriculum and Assessment Policy Statement. This was achieved by realising the following objectives:

1. Determining the experiences of grade 11 mathematics teachers in implementing the Curriculum and Assessment Policy Statement.
2. Understanding factors that inform these experiences.
3. Understanding teachers' views on the effectiveness of the Curriculum and Assessment Policy Statement.

These objectives were achieved through the presentation of a literature review in chapter two and an empirical study using a focus group of purposefully selected sample of four teachers from schools located in varying social environments as discussed in chapter three. It was important to get a broad perspective on the issue of teachers' experiences with implementing curriculum change to CAPS in the grade 11 Mathematics class in secondary schools, which was discussed in chapter four.

In chapter five, I present a summary of the findings. Conclusions have been made arising from these findings that inform Future Trends in curriculum reform in education that relate to the conceptualisation and implementation of CAPS. Future trends presented in this chapter begins with ownership of curriculum

5.2. OWNERSHIP OF CURRICULUM

Since participants claimed that they want to be involved (consulted) in the developmental phase of curriculum reform so that they can make inputs based on their expertise and experience in the subject, and the fact that these reform affect them directly as implementers of curriculum, one suggestion for the future is to involve participants from the point of conceptualisation as "Participants want to gain a better understanding of the curriculum by being directly involved in its development, so that it could be successfully implemented". For the curriculum to be successfully implemented, teachers who are one of the primary role-players should all participate in compulsory workshops that provide knowledge on what the

reform is, and why it is necessary. As part of the workshop the new policy document should be discussed and analysed critically in a participatory manner to facilitate its understanding.

Another suggestion is for Subject advisors to co-ordinate compulsory cluster workshops that includes all implementers and to duplicate these workshops to encourage maximum attendance and to as far as reasonably possible accommodate the necessary participants.
Curriculum reformers should avoid using the cascading model since it appears to be ineffective in meeting its desired outcomes. For example, in this study participants claimed that workshops introducing CAPS were conducted over one or two days. However not all Mathematics teachers attended due to logistical reasons. Workshops were conducted during school time, therefore only one teacher per grade attended the workshop. Those participants who attended the workshops were required to cascade information to other Mathematics teachers on their return to school; however this did not happen due to time constraints. These participants merely handed out copies of the document, expecting others to read for themselves.

Workshops designed should disseminate overarching consistent material since participants in this study maintained that there was no consistency in the way these workshops were conducted. At some of the workshops, only new content were discussed, whilst at the workshop for teachers from the Durban Central schools, the entire document was discussed.

Curriculum reform in the future should be gradual and teachers should first gain expertise in one aspect before continuing to the next aspect as participants in this study argued, “participants sacrifice teaching certain topics because they are overwhelmed by the rapid changes in curriculum content;” Additionally the gradual approach is suggested because participants asserted: educators not having sufficient content knowledge of difficult topics; unqualified teachers who have no didactical training; “lazy learners” who do not spend sufficient time committing knowledge to memory, render implementation of the reformed curriculum ineffective.”

The increase in the length and depth of grade eleven CAPS (Mathematics) without any increase in teaching time, forced participants to work out of school time to ensure adequate coverage of all topics of the curriculum. Further, participants were forced to increase the pace at which they delivered the curriculum, thereby forcing learners to increase the pace at which

they learnt. Learners who did not cope with the demands of CAPS failed at the end of the year. As a future trend, there is an urgent call for curriculum planners to review and increase the current prescribed contact time of 4.5 hours per week for teaching FET Mathematics. This must be done after wide consultation with all stakeholders to establish appropriate and adequate contact time per week for the teaching of FET Mathematics so that teachers can comfortably cover all topics of the curriculum and learners have sufficient time to assimilate Mathematical concepts and gain a clear understanding of the subject.

Forced subject combination of Accounting and Mathematics should not be perpetuated by the schools and the Education department in order to avoid learners being compelled to do Mathematics when they cannot cope and often fail the subject at the end of the year. As a future trend, subject choices should be left entirely to learners, however only after they are given a thorough explanation of the consequence of not offering Mathematics with Accounting.

Teachers want to take ownership of the curriculum, which is the driving force towards curriculum reform however; by the DBE not providing opportunities for teacher input and participation it creates a restraining force preventing teachers from taking ownership of curriculum reform and ensuring successful implementation.

If teachers have not taken ownership of the curriculum, their knowledge and understanding of the curriculum needs is insufficient to implement the intended curriculum of the DBE. Teachers will only implement the curriculum as they understand it. Therefore the implemented curriculum will not correlate with the intended curriculum.

5.3. TEACHER TRAINING

While in-service training attended by some participants was in the form of workshops, other participants did not attend these workshops due to logistical reasons. Those participants who attended the workshops were required to cascade information to other Mathematics teachers at their schools, but this did not happen because of time constraints, however copies of the documents were passed on for teachers to read. The Cascade model of training has failed due to the watering down of critical information that is passed on, and therefore the Department of Basic Education must ensure that future workshops are made mandatory for all Mathematics teachers to attend. To avoid logistical problems at schools due to the absence of

many teachers who attend the workshops, these workshops should be scheduled over weekends or school holidays. This will avoid the situation of teachers having to “fend for themselves” by seeking help from Heads of Department (School Management team) who themselves may not have all the answers to teachers needs.

Adequately trained teachers, is the driving force towards successful implementation of curriculum reform. The one or two day workshop and the Cascade model of training advocated by DBE to orientate teachers towards the new curriculum is insufficient and does not provide for teachers needs in implementing new curriculum. This is the restraining force denying teachers of the essential training needed for successful implementation. If teachers are not trained to implement the intended curriculum, then the curriculum (implemented) delivery by the teacher in the classroom will not reconcile with the intended curriculum.

5.4. KNOWLEDGE AND SKILLS

For those teachers who have experience with teaching the NATED 550 and NCS syllabi, have sufficient knowledge and skills to implement CAPS, however, as a future trend there is a need for training, not so much on content, but on new methodologies of teaching, so that teachers can make Mathematics easier for learners to understand.

New teachers, who have not taught the NATED 550 syllabus, nor paper three of NCS, need guidance and intensive training in the new topics of CAPS. For the future, the Department of Basic Education must provide regular, strategically planned in-service training for these teachers in order to ensure successful implementation of CAPS.

The rapid change in curriculum and the introduction of difficult topics in CAPS have overwhelmed participants, forcing them to re-adjust, thus destabilising their confidence in their knowledge and skills and creating a sense of insecurity about delivering the CAPS syllabus. As a future trend, Curriculum planners and developers must consult widely with Mathematics teachers in the conceptual stage of curriculum reform, by opening communication channels that are easily accessible to teachers. In this way teachers will be aware of impending curriculum reform and individually prepare for the change when it happens, thus avoiding the sudden “drop of a bomb”. Also, those who require content training or training in policy implementation should be afforded that opportunity in the form of in-service training.

Teachers with adequate knowledge and skills to implement the intended curriculum will be a driving force to curriculum reform however, by the DBE not providing a strategically planned and coordinated in-service training program for teachers who lack the necessary knowledge and skills for curriculum implementation, a restraining force is created that prevents the intended curriculum from being implemented. Therefore that implemented curriculum will differ from the intended curriculum.

5.5. RESOURCES

Whilst participants have found that the CAPS textbooks follow the same sequence as the CAPS document and therefore they are compatible when used together, they also found that different CAPS textbooks do not cover topics to the same depth. Some textbooks delve deeper into certain topics whilst others do not. Therefore participants have found it necessary to use a variety of textbooks in order to deliver the curriculum for the maximum benefit of the learners. While the DBE provides funding to schools for the purchase of textbooks with the view that each learner should have a textbook, as a future trend, schools should ensure that a copy of each available textbook in Mathematics is provided as teacher reference.

The use of multiple textbooks by teachers is the driving force that aspires to implement the length and depth of the intended curriculum. The unavailability of these essential textbooks and financial constraints preventing access to these essential textbooks are restraining forces that hinders adequate length and depth research by teachers to implement of the intended curriculum. Therefore the implement curriculum will be in line with the intended curriculum.

5.6. CONTEXTUAL FACTORS

Contextual factors that negatively impact on the delivery of CAPS are: late-coming of learners to school and to the classroom; high levels of noise due to learners continuously talking to each other during the lesson; learners playing with cell-phones during lessons; short attention span of learners; learner disobedience; and a lack of parental support. As a future trend, schools should engage its power vested in the South African Schools Act in formulating an effective Code of Conduct in consultation with all other legislation concerning human rights, as well as all stakeholders in the school. The school management team must ensure the all stakeholders enforce the Code of Conduct with equal conviction and apply recommended disciplinary action fairly and justly.

Teachers' knowledge of the curriculum, and, their skills and enthusiasm to implement the intended curriculum in the classroom is a driving force to curriculum reform. The contextual factors of: learners coming late to school and to class; high levels of noise due to learners continuously talking to each other during the lesson; learners playing with cell-phones during the lesson; short attention span of learners; learner disobedience; and a lack of parental support, are the restraining forces that interferes with teachers delivery of the curriculum in the classroom. Teachers adjust to the "climate" of the classroom and deliver the curriculum as best as the contextual factors allow them to do so. The contextual factors will prevent the intended curriculum from being implemented.

5.7. SUGGESTIONS FOR FURTHER RESEARCH

It is evident that teachers want to be involved in the conceptual and design phase of curriculum reform. Considering the shortcomings that participants have found, of an increase in length and depth of CAPS, as well as insufficient contact time to cover the topics in the grade eleven CAPS, future research can explore "How can CAPS be reformed to be adequately suitable for the grade eleven Mathematics class in South African schools?"

Considering that contextual factors negatively impact on the delivery of CAPS, future research can explore "How can contextual factors be harnessed to positive influence teaching and learning of Mathematics in South African classrooms?"

5.8. CONCLUSION

My research study has revealed some relevant concerns emanating from grade eleven Mathematics teachers' experiences when implementing CAPS. The suggestions that I have made about the future trends in resolving these concerns need the urgent attention of the relevant stakeholders concerned, in order to enhance the successful implementation of CAPS.

REFERENCES

Allen, C. H. (1940). In-Service Training of Teachers. *Review of Educational Research*, 210-215.

Atkin, J. M., & Black, P. (2003). *Inside science education reform: A history of curricular policy change*. New York: Teachers College Press.

Bantwini, B. D. (2010). How teachers perceive the new curriculum reform: Lessons from a school district in the Eastern Cape Province, South Africa. *International journal of educational development, 30*(1), 83-90.

Battista, M. T. (1994). Teacher beliefs and the reform movement in mathematics education. *Phi Delta Kappan*, 462-470.

Beaton, A. E., Mullis, I. V. S., Martin, M. O., Gonzalez, E. J., Kelly, D. L., & Smith, T. (1996). *Mathematics achievement in middle school years: IEA's third International Mathematics and Science Study (TIMMS).* Boston, MA: Centre for the study of Testing, Evaluation, and Educational Policy, Boston College.

Beck, J., Czerniak, C. M., & Lumpe, A. T. (2000). An exploratory study of teachers' beliefs regarding the implementation of constructivism in their classrooms. *Journal of Science Teacher Education, 11*(4), 323-343.

Behr, A.L. (1988). *Empirical research methods for human sciences***.** Durban: Butterworth.

Bennie, K., & Newstead, K. (1999). *Obstacles to implementing a new curriculum.* Paper presented at the Proceedings of the National Subject Didactics Symposium.

Bowie, L., Davis, Z., Pillay, P., Nxumalo, H.B., Pleass, L.C., Raju, M.G. (2014). *What's in the CAPS package?* A comparative study of the National Curriculum Statement (NCS) and the Curriculum and Assessment Policy Statement (CAPS). Pretoria: Umalusi.

Brodie, K. (2002). *Between the old and the new: A study of a mathematics teacher's changing practices in South Africa.* Paper presented at the Proceedings of the 3rd international Mathematics Education and Society conference (MES3).

Brown, C., & Borko, H. (1992). Becoming a Mathematics teacher. In D. A. Grouws (Ed.), *Handbook of research on Mathematics teaching and learning* (pp. 209-239). New York: Macmillan.

Calder, B. J. (1977). Focus groups and the nature of qualitative marketing research. *Journal of Marketing research*, 14(August), 353-364.

Carl, A. (2005). The\" voice of the teacher\'in curriculum development: a voice crying in t

wildernes. *South African Journal of Education, 25*(4), 223-228.

Cavanagh, M. (2006). Mathematics teachers and working mathematically: Responses to curriculum change. *Identities, cultures and learning spaces*, In P. Grootenboer, R. Zevenbergen, & M. Chinnappan (Eds.), *Identities, cultures and learning spaces* (Proceedings of the 29th annual conference of the Mathematics Education Research Group of Australasia, Vol. 1, pp. 115-122). Adelaide: MERGA..

Chisholm, L. (2005). The making of South Africa's National Curriculum Statement. *Curriculum Studies*, 37(2), 193–208.

Cho, J., & Trent, A. (2006). Validity in qualitative research revisited. *Qualitative research, 6*(3), 319-340.

Cohen, L. Manion, L. & Morrison, K. (2011). *Research methods in Education* (seventh edition). London: Routledge.

Creswell, J. W. 1994. *Research Design: Qualitative & Quantitative Approaches.* London: SAGE.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into practice, 39*(3), 124-130.

Cross, M., Mungadi, R., & Rouhani, S. (2002). From policy to practice: Curriculum reform in South African education. *Comparative Education, 38*(2), 171-187.

Curtin, M., & Fossey, E. (2007). Appraising the trustworthiness of qualitative studies: Guidelines for occupational therapists. *Australian Occupational Therapy Journal, 54*(2), 88-94.

Dean, J. (2005). *Coping with Curriculum Change in South Africa*: Leeds: Leeds.

Denzin, N.K. & Lincoln, Y.S. (Eds). (2003). *Collecting and interpreting qualitative materials*. (2nd ed.). London: Sage.

Department of Basic Education. (1996). *Revised National Curriculum Statement grades R-9* (schools). Pretoria: Department of Basic Education.

Department of Basic Education. (2009). Report of the Task Team for the Review of the Implementation of the *National Curriculum Statement.* Pretoria. Department of Basic Education.

Department of Basic Education. (2011a). *Curriculum news*. Pretoria: Department of Basic Education.

Department of Basic Education. (2011b). National Curriculum statement: *Curriculum and assessment policy statement*. Pretoria: Department of Basic Education.

Department of Basic Education. (2013). Education for All (EFA) 2013 *Country Progress*

Report: South Africa. Pretoria: Department of Basic Education.Fiske, E. B., &

Ladd, H. F. (2004). *Elusive equity: Education reform in post-apartheid South Africa*. Brookings Institution Press.

Flick, U. (2006). *An introduction to qualitative research*. London: Sage.

Flores, M. A. (2005). Teachers' views on recent curriculum changes: tensions and challenges. *The Curriculum Journal*, 16(3), 401-413.

Fouché, C. B. & Delport, C. L. (2002). Introduction to the research process (77-92). In De Vos, A. S. (Ed.). *Research at grass roots: For the social sciences and human services professions* (2nd ed.). Pretoria: Van Schaik Publishers.

Fullan, M. G. (1991). with Suzanne Stiegelbauer. *The New Meaning of Educational Change*, 71.

Fullan, M. G. (2007). *The new meaning of educational change.* (4th ed.). New York: Teachers college press.

Graven, M. (2002). Coping with new mathematics teacher roles in a contradictory context of curriculum change. *The Mathematics Educator*, *12*(2), 21-27.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, *2*, 163-194.

Handal, B., & Herrington, A. (2003). Mathematics teachers' beliefs and curriculum reform. *Mathematics Education Research Journal*, *15*(1), 59-69.

Hayes, D. (2000). Cascade training and teachers' professional development. *ELT journal*, *54*(2), 135-145.

Herbel-Eisenmann, B. A. (2007). From intended curriculum to written curriculum: Examining the" voice" of a mathematics textbook. *Journal for research in mathematics education*, 38(4), 344-369.

Holliday, A. (2007). *Doing & writing qualitative research*: Sage.

Janesick, V. J. (2011). *"Stretching" exercises for qualitative researchers.* (3rd ed.). Thousand Oaks: Sage.

Jansen, J. D., & Christie, P. (Eds.). (1999). *Changing curriculum: Studies on outcomes-based education in South Africa*. Juta and Company Ltd.

Kilpatrick, J. (2009). *The mathematics teacher and curriculum change.PNA*, 3(3), 107-121.

Kirk, D., & MacDonald, D. (2001). Teacher voice and ownership of curriculum change. *Journal of curriculum studies*, 33(5), 551-567.

Kitto, S. C., Chesters, J., & Grbich, C. (2008). Quality in qualitative research. *Medical Journal of Australia*, *188*(4), 243.

Kleiber, P. B., (2004). Focus Groups: More Than a Method of Qualitative Inquiry. In Foundations for Research: Methods of Inquiry in Education and the Social Sciences. Kathleen deMarrais Stephen D. Lapan (Eds). (87-102). New Jersey: Lawrence Erlbaum and associates Inc.

Knapp, M. S. (2002). *Understanding how policy meets practice: Two takes on local responses to a state reform initiative.* Washington, DC: Centre for the Study of Teaching and Policy, University of Washington.

Kurz, A., Elliott, S. N., Wehby, J. H., & Smithson, J. L. (2010). Alignment of the intended, planned, and enacted curriculum in general and special education and its relation to student achievement. *The journal of special education, 44*(3), 131-145.

Kvale, S. & Brinkmann, S. (2009). *Interviews: Learning the craft of qualitative research interviewing*. (2nd ed.). Thousand Oaks: Sage.

KwaZulu-Natal Department of Basic Education (2012). *Grade 10 CAPS orientation and grades 11-12 orientation cluster support sessions for educators*. Circular UDO 01 of 2012. Port Shepstone: KwaZulu-Natal Department of Basic Education.

KwaZulu-Natal Department of Basic Education (2012). *Curriculum and Assessment Policy Statement: Workshop for the orientation of grade 10 educators*. KZN circular no. 3 of 2012. Petermaritzburg: KwaZulu-Natal Department of Basic Education.

KwaZulu-Natal Department of Basic Education (2013). *Subject combinations for learners in grade 10-12. KZN circular no. 09 of 2013*. Petermaritzburg: KwaZulu-Natal Department of Basic Education.

KwaZulu-Natal Department of Basic Education (2013). *Grade 10-12 orientation cluster support sessions for educators*. Circular UDO 01 of 2013. Port Shepstone: KwaZulu-Natal Department of Basic Education.

KwaZulu-Natal Department of Basic Education (2014). *Grades 10-12 Cluster support for teachers*. Circular UDO 01 of 2014. Port Shepstone: KwaZulu-Natal Department of Basic Education.

KwaZulu-Natal Department of Basic Education (2014). *Mandatory offering of Mathematics as a choice subject in all secondary schools for the completion of the National Senior Certificate*. Circular S13 of 2014. Petermaritzburg: KwaZulu-Natal Department of Basic Education.

Lipton, M. (1986). *Capitalism and Apartheid: South Africa, 1910-1986*. New Africa Books.

Macdonald, D. (2003). Curriculum change and the post-modern world: Is the school curriculum-reform movement an anachronism? *Journal of curriculum studies*, 35(2),

139-149.

Macnab, D. S. (2003). Implementing change in mathematics education. *Journal of curriculum studies*, 35(2), 197-216.

Malinga, M. A. (2005**).** *Current difficulties experienced by grade 10 mathematics educators after the implementation of the new curriculum in grade 9.* Unpublished thesis submitted or master's degree in Mathematics education. University of Kwazulu-Natal.

Markula, P. & Silk, M. (2011). *Qualitative research for physical culture*. New York: Macmillan.

Marshall, C. & Rossman, G.B. (2011). *Designing qualitative research.* (5th ed.). Thousand Oaks: Sage.

Maykut, P. & Morehouse, R. (1994). *Beginning qualitative reseach.* London: Routledge.

Merriam, S. B. (2002). Introduction to qualitative research. *Qualitative research in practice: Examples for discussion and analysis*, 3-17.

Merton, R., Fisk, M., & Kendall, P. (1956). *The focused interview: a report of the bureau of applied social research*. New York: Columbia University.

Mji, A., & Makgato, M. (2006). Factors associated with high school learners' poor performance: a spotlight on mathematics and physical science. *South African journal of education*, *26*(2), 253-266.

Molefe, N., & Brodie, K. (2010). Teaching mathematics in the context of curriculum change. *Pythagoras*(71), 33-12.

Monama, T. (2012, June 18). Teacher shortage crisis affects half SA's schools. *The Sowetan*, p. 3.

Morgan, D. L. (1996). Focus groups. *Annual review of sociology*, 22(1996), 129-152.

Morse, J. M. & Richards, L. (2002). *Readme first for a user's guide to qualitative methods*. Thousand Oaks: Sage.

Msila, V. (2007). From apartheid education to the revised national curriculum statement: Pedagogy for identity formation and nation building in South Africa. *Nordic Journal of African Studies*, *16*(2), 146-160.

Mtshali, M. A. (2008). A*n Exploration of Grade 10 Teachers' Experiences of the New Further Education and Training (FET) Economics Curriculum. Unpublished thesis submitted or master's degree in Education development*. University of

Kwazulu- Natal.

Neuman, W.L. (2009). *Understanding Research.* New York: Pearson.

Ngubane, B.M., (2002). *An evaluation of the Outcomes-based Education Policy in public schools in the Empangeni region.* University of Durban-Westville.

Ono, Y., & Ferreira, J. (2010). A case study of continuing teacher professional development through lesson study in South Africa. *South African Journal of Education*, *30*(1), 59-74.

Ornstein, A.C., & Hunkins, F.P. (1998). *Curiculum foundations, principles and issues*. (2nd ed.). Boston. Allyn and Bacon.

Ozer, B. (2004). In-service training of teachers in Turkey at the beginning of the 2000s. *Journal of In-service Education*, *30*(1), 89-100.

Özgeldi, M., & Çakıroğlu, E. (n.d). A *study on Mathematics teachers' use of textbooks in instructional process.*

Parker, D. (2006). Grade 10–12 mathematics curriculum reform in South Africa: A textual analysis of new national curriculum Statements. *African Journal of Research in Mathematics, Science and Technology Education*, *10*(2), 59-73.

Patton, M. Q. (2002). Qualitative evaluation and research methods. (3rd ed.). London: Sage.

Porter, A. C., & Smithson, J. L. (2001). Defining, developing, and using curriculum indicators. *Philadelphia, PA: University of Pennsylvania, Consortium for Policy Research in Education*.

Pyett, P. M. (2003). Validation of qualitative research in the “real world”. *Qualitative Health Research*, *13*(8), 1170-1179.

Reddy, V. (2006). *Mathematics and science achievement at South African schools in TIMSS 2003*. HSRC Press.

Ricoeur, P. (1981). "Mimesis and representative. *Annals of Scholarship*, 2: 15-32.

Robinson, N. (1999). The use of focus group methodology—with selected examples from sexual health research. *Journal of advanced nursing*, *29*(4), 905-913.

Rowley, J. (2002). Using case studies in research. *Management research news*, *25*(1), 16-27.

SAIRR. (2013). Not adding up: too few maths teachers to satisfy demand. *Press Release*. 10 December, 2014, http://irr.org.za/reports-and-publications/mediareleases/Toofew mathsteachers.pdf/view

Schmuck, R. A. (2006). *Practical action research for change*. (2nd ed.). Thousand Oaks: Sage

Schutz, A. (1962). *Collected papers.* (Vol I,II). Den Haag. Nijhoff.

Schutz, A. (1967). *The phenomenology of the Social World*. Evanston, Illinois: Northwestern University Press.

Soudien, C. (2004). Constituting the class: An analysis of the process of 'integration'in South African schools. *Changing class: Education and social change in post-apartheid South Africa*, 89-114.

Stake, R. E. (2013). *Multiple case study analysis*. Guilford Press.

Stewart, D. W., Shamdasani, P. N., & Rook, D. W. (2009). Group depth interviews: Focus group research. *Bickman, L. & Rog, DJ The sage handbook of applied social research methods. New Delhi: SAGE Publications*, 589-617.

Spyker, G., & Malone, J. (2000). *Impact of mathematics curriculum changes upon senior high school teachers in Western Australia*. 10 December, 2014, http://www.fi.uu.nl/wisweb/en/overig/Icme-8/WG13_18.html

Struwig, F. W. & Stead, G. B. (2001). *Planning, designing and reproting research.* Cape Town: Pearson.

Tarr, J. E., Chávez, Ó., Reys, R. E., & Reys, B. J. (2006). From the written to the enacted curricula: The intermediary role of middle school mathematics teachers in shaping students' opportunity to learn. *School Science and Mathematics*, *106*(4), 191-201.

Thomas, D. (1996). Education across generations in South Africa. *The American Economic Review*, Vol 86, no. 2, 330-334.

van den Akker, J., Fasoglio, D., & Mulder, H. (2010). *A curriculum perspective on plurilingual education*: Council of Europe.

Villegas-Reimers, E. (2003). *Teacher professional development: an international review of the literature*. Paris: International Institute for Educational Planning.

Wilmot, D. (2004). Emerging models of teacher training: The case of South Africa. *International Research in Geographical and Environmental Education*, *13*(2), 153-158.

Wisker, G. (2001). *The postgraduate research handbook.* New York: Macmillan.

Yin, R. K. (2012). Applications of Case Study Research. (3rd ed.) London: Sage. 26(1), 58-65.

Zappa-Hollman, S. (2007). EFL in Argintina's schools: Teachers perspectives on policy changes and instruction. *TESOL Quarterly*, 41(3), 618-625.

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

27 August 2014

Mr Nivendhar Krishnapersad Ramdhani 8116214
School of Education
Edgewood Campus

Protocol reference number: HSS/0843/014M
Project title: Exploring grade eleven Mathematics teachers' experiences in implementing the Curriculum and Assessment Policy Statement in schools in the Durban area of South Africa.

Dear Mr Ramdhani

Expedited Approval

In response to your application dated 22 July 2014, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....
Dr Shenuka Singh (Chair)

/px

cc Supervisor: Dr LR Maharajh
cc Academic Leader Research: Dr P Morojele
cc School Administrator: Mr Thoba Mthembu

Humanities & Social Sciences Research Ethics Committee
Dr Shenuka Singh (Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
Telephone: +27 (0) 31 260 3587/8350/4557 **Facsimile:** +27 (0) 31 260 4609 **Email:** ximbap@ukzn.ac.za / snymanm@ukzn.ac.za / mohunp@ukzn.ac.za
Website: www.ukzn.ac.za

ANNEXURE B

INTERVIEW SCHEDULE

1. Ownership: a) To what extent were you involved in the development of the new curriculum (CAPS)?
   b) What should be the extent of teacher involvement in curriculum development?
   c) How(when/where) did you get to know of the curriculum change?
2. Curriculum Policy Document:
   a) Clarity of the document- Is the document clear about what is Expected? Is the document understandable and user friendly?
   b) Is there a link between the GET and FET syllabi to ensure continuity? Does the learner have the relevant previous knowledge? Explain.
   c) How is teachers' workload (paperwork, planning, teaching-time, assessment) affected by the CAPS curriculum?
   d) How did the reform in content affect curriculum delivery?
   e) How did teaching-learning change to suit CAPS?
3. Teacher training:
   a) What was the extent of teacher training in prepare them for implementing CAPS? (Workshops/In-service training)? Explain.
   b) What support was offered by school SMT, Subject advisors and other education officials? Explain.
4. Knowledge and skills of teachers:
   a) Did teachers have sufficient skills and content knowledge to implement CAPS? Explain.
   b) How much of your previous knowledge and skills as a teacher has facilitated (assisted) in implementing CAPS?
   c) Did teachers engage between the old curriculum and the new curriculum due to their insecurity? Explain.
5. Curriculum Materials/Resources:
   a) Did the text books appropriate cover the demands of the policy document? Explain.
   b) Were there sufficient and appropriate resources to support teaching and learning topics in the CAPS document? Explain.
   c) How have supporting documents, such as curriculum policy documents and text books, impacted on your implementation of CAPS? Explain.
6. Contextual factors:
   a) How did contextual factors (such as: location of school, class size, learner discipline) affect the implementation of CAPS?
7. What in your view have been the strengths and or weaknesses in implementation of CAPS? Explain?