

**The emotional geographies of learning mathematics:  
Narratives of twelve learners at Kwa Dukuza  
Primary School on the north coast of Kwazulu  
Natal.**

**Shamilla Hajaree**

**Student number: 214584645**

**A research study submitted as the dissertation  
component in the fulfilment of the requirements for  
the Master of Education Degree in the School of  
Social Justice Education, University of KwaZulu-  
Natal, South Africa.**

**Supervisor: Dr. Claire Gaillard- Thurston  
December 2015**

# Contents

i. Declaration	1
ii. Acknowledgements	2
iii. Abstract	3
<b>Chapter One: Introduction</b>	<b>4</b>
1.1. Introduction	4
1.2. Context and rationale of the study	4
1.3. Objectives of the study	5
1.4. Research questions	7
1.5. Conceptual framework	7
1.6. Overview of the study	12
<b>Chapter Two: Literature Review</b>	<b>13</b>
2.1. Introduction	13
2.2. Literature Review (part 1)	13
2.2.1. School curriculum changes around the globe	13
2.2.2. School curriculum changes in South Africa from 1994 to 2015	18
2.2.2.1 Curriculum and Assessment Policy Statement (CAPS)	18
2.2.2.2. Annual National Assessments	22

2.3 Literature Review (part 2)	25
2.3.1. Children’s emotional geographies in a context of curriculum change	25
2.3.1.1. Children’s emotional geographies and diversity	29
2.3.1.2. Children’s emotional geographies and inclusivity	32
2.4. Conclusion	34
<b>Chapter Three: Research methodology and design</b>	<b>35</b>
3.1. Introduction	35
3.2. Research approach	35
3.3. Research paradigm	40
3.4. Research gathering process	42
3.4.1. Sampling	42
3.4.2. Data gathering techniques	44
3.4.3. Data gathering tools	49
3.5. Data analysis	51
3.6. Validity and reliability	52
3.7. Limitations of the study	56
3.8. Ethical considerations	57
3.9. Conclusion	60
<b>Chapter Four: Presentation and discussion of findings</b>	<b>61</b>
4.1. Introduction	61
4.2. The resilience of schoolchildren in a context of confusion and frustration	62

4.2.1. The resilience of schoolchildren in a context of confusion and frustration: At school	65
4.2.2. The resilience of schoolchildren in a context of change: At home	70
4.3. Conclusion	75
<b>Chapter Five: Conclusion</b>	<b>77</b>
5.1. Introduction	77
5.2. Synopsis of the study	77
5.3. Main findings of the study	79
5.4. Implications of the study	81
5.5. Limitations of the study	82
5.6. Researcher reflections and concluding thoughts	82
<b>References</b>	<b>84</b>
<b>Appendices</b>	
Appendix 1: Consent letter to principal	
Appendix 2: Consent letter to parents	
Appendix 3: Interviews Schedule	
Appendix 4: Transcriptions of participants	

## DECLARATION

I, Shamilla Hajaree, declare that this dissertation entitled:

**The Emotional Geographies of learning Mathematics :  
the Narratives of twelve learners,**

is my own work and that all sources I have used or quoted have been indicated and acknowledged by means of complete references. This dissertation has not been submitted previously for any degree or examination at any university or other higher education institution.

---

Shamilla Hajaree  
December 2015

---

Dr. Claire Gaillard-Thurston

## **ACKNOWLEDGEMENTS**

My thanks go first and foremost to the Almighty for giving me the ability to complete this dissertation. May He accept this as a way of seeking knowledge.

My sincere gratitude and appreciation to:

1. My supervisor, Dr Claire Gaillard Thurston, for her calm and invaluable guidance throughout this study.
2. The participants for their willing contribution in imparting their knowledge and ideas.
3. My children Ridhwan, Faheem and Saudah for all the motivation and encouragement.
4. My husband, Ahmed, for his unwavering support, patience and sacrifice.
5. My mum for her support and my late dad for instilling in me the appreciation and value of education. He is the inspiration behind my achievements.

## **ABSTRACT**

The focus of this study was to investigate the contextual factors that impact on mathematics learning and how school children negotiate these factors in order to facilitate their learning. At a time in South Africa when all stakeholders associated with the Department of Education are engaging in activities and endeavours designed to facilitate academic excellence, especially in mathematics, it is appropriate to explore a dimension that brings to light the life experiences of school children. It was with this intention that this research sought to examine the emotional geographies of children who are learning mathematics. The framework of this study was built around the concept of children's emotional geographies, which provided the foundation for this research. In order to understand the views and experiences of the child participants in this study, a qualitative research approach was employed to gather rich, descriptive data. As a narrative inquiry, the study allowed children to tell their stories. The study was conducted at a primary school in a town on the north coast of Kwa-Zulu Natal, and the participants were twelve learners aged between nine and thirteen, in grades four, five and six. Guided critical conversations with the child participants formed the structure of the data gathering process. The findings reveal that children come from a milieu of social and cultural backgrounds, each with a unique interpretation of the new curriculum. The child participants were able to come up with innovative strategies to navigate their way around factors such as language barriers, overcrowded classrooms and disruptive co-learners.

# **Chapter one**

## **Introduction to the study**

### **1.1. Introduction**

This research focuses on the emotional geographies of schoolchildren during mathematics learning. More specifically, it investigates the emotional experiences of children while learning mathematics under the implementation of the new Curriculum Assessment Policy Statements (2012) in South African schools. Against this backdrop, the study intends to explore the contextual factors that influence mathematics learning and how learners navigate through these factors.

### **1.2 . Context and rationale of the study**

This research interest is prompted by the observation that little or no data exists regarding the impact of changes made within the mathematics curriculum on the emotions of learners in ordinary public schools. This study agrees that change and emotion are inseparable. Each implicates the other and there is no human change without emotion. Further, there is no emotion that does not embody a momentary or momentous process of change (Hargreaves, 2004). In line with this perspective, the study seeks to investigate the emotional geographies of learners by conducting research at a public school in the province of KwaZulu-Natal, South Africa, in an environment of curricular change, due to the 2012 implementation of the new Curriculum Assessment Policy Statements.



Schools are central to the social geographies of the everyday lives of most children and young people. They are, almost invariably, relatively diverse places and cater for children and young people of different ages, inclinations and abilities. Public schools also reflect the degrees of socio-economic, linguistic, religious and cultural differences in surrounding communities (Collins and Coleman, 2008). With this in mind, research was carried out at a primary school in the town of Stanger (also known as KwaDukuza), in the Ilembe district, on the north coast of KwaZulu-Natal.

A Convenience Sampling strategy was used to select the school as the research site. It is a public school which has English as the language of learning and teaching, and IsiZulu as the first additional language. The school caters for learners from grades R to grade seven. The management team of the school is made up of a principal, a deputy principal, two heads of department in the foundation phase and two heads of department in the intermediate and senior phase. In addition there are two administration clerks, a librarian and 22 teachers. This school has an enrolment of approximately 1,000, with about 450 learners in the intermediate phase. The learner population comprises students from diverse religious, cultural and socio-economic backgrounds. This school embraces the principles of inclusive education, in that immigrant, special needs, gifted and autistic learners, those who speak different languages and others from various racial and cultural denominations make up the learner population. The school provides a holistic development of learners by offering students different codes of sport and field trips, and engaging them in extra- and co-curricular activities.

### **1.3. Objectives of the study**

It is within this demographically rich context that this research will go beyond what children learn and will explore how they feel about what they learn. As this is a small-scale study, the focus was narrowed to one subject. It was chosen because the study author is a mathematics educator at the school.

In recent years, the focal topic in education circles has been the improvement of mathematics results at schools in South Africa. An attempt at improvement has come from the Department of Basic Education in the form of a new curriculum. With the introduction of the Curriculum Assessment Policy Statements, every subject in each grade has a comprehensive and concise policy document that provides details on what teachers need to teach and assess on a grade-by-grade and subject-by-subject basis. This curriculum review aims to lessen the administration load on teachers and ensure that there is clear guidance and consistency for teachers when instructing. Any change in the learning situation of children comes with its own set of challenges. Learners are expected to work around these changes and adapt to the new curriculum.

It is against this backdrop that this study seeks to establish a deeper understanding of the experiences and emotions of learners who are exposed to the mathematics curriculum policy, the contextual factors that influence their learning and how they negotiate these aspects.

In line with the above, the objectives of the study are:

- To explore the emotional experiences of learning mathematics;
- To investigate the contextual factors that influence mathematics learning; and
- To identify the ways in which schoolchildren negotiate these contextual factors.

#### **1.4. Research Questions**

To address the abovementioned objectives, the following will be the key research questions:

- What are schoolchildren's emotional experiences of learning mathematics?
- What contextual factors influence schoolchildren's emotional experiences of mathematics learning?
- How do schoolchildren negotiate these contextual factors?

#### **1.5. Conceptual framework**

As mentioned previously, the central concern is to explore children's emotional geographies during the process of learning. This concept, as associated with the paradigm shift from traditional conceptualisations of childhood to what is referred to as New Childhood Studies (James, Jenkins, and Prout, 1998), provided the foundation upon which the framework of this study was built. In addition, the notion that emotions are shaped by our beliefs and perceptions (Boler, 1999) and the view that children develop networks of relationships and systems of meaning that are unique to their own social and physical spaces (Corsaro, and Miller, 1992; James, and Prout, 1997), enabled this study to elucidate the factors

which contribute to the emotional geographies of learning mathematics.

The notion of 'geographies' refers to a focus on detailed and explicit attentiveness to everyday spatialities in the lives of individuals (Van Ingen, and Halas, 2003). To this end, the study is guided by what the following theorists have written on children in relation to geographies: Ball (1994), Deem et al. (1995), James and Prout (1997), Corsaro (1997), Boler (1999), Christensen and Prout (2002), Mayall (2002) and Wyness (2003). They hold the shared view that children need to be viewed as active partners and competent interpreters of their own world, as they are not passive objects but competent agents and social actors who shape their own identities. Children in a classroom situation should therefore be seen as already having preconceived ideas about each other, the learning content and other activities at school.

While it is recognised that some schools (for example, school governance in England and Wales) over the past two decades have incorporated the interests of teachers, parents, school governors and inspectors within complex networks of school accountability and that these networks have been directed towards the improvement of the academic performance of students in schools (Ball, 1994; Deem et al., 1995), it has also been noted that little attention has been paid to the position of students themselves (Wyness, 2003).

Childhood, however, is a social and collective process, whereby children enter social systems and establish shared understanding with others, which they continually build upon (Corsaro, 1997). This has become common practice in many households, where parents spend very little quality time with their children. Corsaro (1997) suggests various reasons for this, including the decline of the two-

parent family, the increase of women in the workforce and greater parental work demands. The result has been a structural change in families where children spend more time in non-parent care.

Whereas in the past it was considered safe for children to roam the neighbourhood, it is now considered a risky and dangerous space, and parents are reluctant to leave their children in the care of an unknown community (Corsaro, 1997). Instead of spending their childhoods as free-spirited individuals, children are exposed from a young age to the emotion of fear and the need to be alert to danger. Emotions experienced in the formative years of their lives, whether they be ecstasy or tragedy, have a huge impact on the way children interact with peers, teachers and society at large.

The current study will therefore attempt to analyse the ways in which the emotions in learners' lives are mobilised in response to curriculum changes. The focus will be on the fact that children develop and maintain social practices, networks of relationships and systems of meaning that are unique to their own social and physical spaces.

For the purpose of this study, which examines the emotional geographies of children, the concept of 'emotions' will be defined as feelings that are constructed by the social interactions of teachers with students, and which in turn produce and reproduce social relationships and interactions (Hargreaves, 2008). Furthermore, my research will also lean on the view that teaching and learning are socially situated practices that are deeply embedded in emotional experiences (O'Connor, 2006) and the perception of Hargreaves (2008), that teaching is conceptualised as an emotional practice. This is so because teaching will activate, colour and express not

only teachers' feelings and actions, but also those with whom they interact.

According to Hargreaves (2000), the emotional geographies of teaching refer to 'the spatial and experiential patterns of closeness and/or distance in human interactions and relationships that help create, configure and colour the feelings and emotions we experience about ourselves, our world and each other'. Teachers, learners and leaders all, at various times, worry, hope, enthuse, become bored, doubt, envy, brood, love, feel proud, get anxious, are despondent, become frustrated, and so on (Hargreaves, 2000). Drawing on these understandings, this study aims to contribute to this scholarship by examining how learners negotiate their emotions in the context of major externally imposed curriculum changes.

The field of children's geographies is associated with the paradigm shift from traditional conceptualisations of childhood to what is referred to as New Childhood Studies (Prout and James, 1990; James, Jenkins and Prout, 1998; Prout, 2000). The view of this study is that children need to be listened to and allowed to offer constructive criticism.

In examining children's emotional geographies, the study will also draw on the work of Boler (1999), who argues that a 'pedagogy of discomfort' is necessary in offering new windows on the world that teach educators and students how to unpack their cherished beliefs and 'comfort zones' in order to deconstruct ways in which they have learned to see, feel, and act. This research will be used as the background to this study, which will attempt to examine and understand the emotions, as well as the places and spaces within the lives of those children who are learning mathematics under the new curriculum. A study of emotions requires acute attention to

differences in culture, social class, race and gender. Each culture reflects its own norms and values, with respect to emotional rules and expression (Boler, 1999). The risky business of addressing emotions within our classrooms is a productive and necessary direction for the exploration of social justice and education. The latter aims in part to help us understand our values and priorities, how we have come to believe what we do, and how we can define ethical ways of living with others.

Emotions function in part as moral and ethical evaluations; they give us information about what we care about and why (Boler, 1999). Children's emotions of poor self-esteem, depression, or severe learning difficulties are often rooted in underlying issues of family violence, substance abuse, poverty or other personal problems. These issues are sometimes not detected at school and create emotional trauma, which impact negatively on teaching and learning. Emotions are 'cognitive' and 'conceptual', shaped by our beliefs and perceptions (Boler, 1999). The intersection of a multitude of social backgrounds, abilities and skills in schools, while challenging for educators, may also contribute to the production of place-based identities (Lynagh et al , 1997).

## **1.6. Overview of the study**

**Chapter one** provides a background to the study and its aims and focus are presented. The three research questions that guide the investigation are highlighted. This chapter also presents the conceptual framework that guides this study.

**Chapter Two** presents a review of the relevant literature framing this study. An interpretation of the issues of children's geographies and emotional geographies forms a part of this chapter.

**Chapter Three** concerns the methodology and design that was best suited to explore children's geographies.

**Chapter Four** offers the analysis and findings of data pertaining to the research.

**Chapter Five** brings the study to its conclusion. The implications of the study are presented, together with the study limitations, reflections and concluding thoughts.



# **Chapter two**

## **Literature review**

### **2.1. Introduction**

The key purpose of this study is to investigate the emotional geographies of children who are learning mathematics, the contextual factors that affect mathematics learning, and how children negotiate these challenges. In light of this, the literature reviewed in this chapter offers a theoretical overview of studies related to this research focus. The chapter is divided into two parts. In the first part, studies are considered that address the key research questions. In the second section, studies that provide the theoretical framework for this study are reviewed.

### **2.2. Literature review (Part 1)**

#### **2.2.1. School Curriculum Changes around the globe**

The need for transformation is felt keenly in the education milieu. Educators are aware of the need for change. They are not, however, informed, prepared or supported in these changes. Making the transition is an emotionally challenging feat (Beatty, 1999). A review of related studies reveals that countries around the world experience diversity in the school situation, just as South Africa does. On 19 February 2015, the *New York Times* reported that enrolment of Hispanic and Asian students at American schools has increased by more than five million since the 1990s, fuelled by the wave of immigration into America. Its impact is first seen in the classroom. The increasing diversity of the American nation's

education system is the most detailed measure of where Hispanic and Asian immigrants have settled in recent years.

Schools and teacher education institutions in Australia reflect a growing linguistic and religious diversity of the communities, and need to find ways to address both the challenges and opportunities they represent (Burridge, 2009). These remain complex issues to negotiate, despite recent positive departmental policy statements on cultural diversity and decades of support for various multicultural education programmes in Australian schools (Mansouri and Wood, 2007; New South Wales Department of Education and Training, 2005).

In 2013, British Prime Minister David Cameron launched a new national curriculum to be implemented at state schools in England. The rewritten curriculum set out the framework for what children in England's state schools should be taught between the ages of five and 14 (Sean Coughlan, BBC News education correspondent, 2013). Teachers' unions had warned that the time given for implementing the changes was completely unrealistic and England's National Union of Teachers' deputy leader, Kevin Courtney, warned that, 'this is a curriculum written by government advisors and officials, not teachers. It fails to serve children of different ability levels and the time for introducing the new curriculum is ridiculously short.'

In Northern Ireland, the Council for Curriculum, Examinations and Assessment is developing a school curriculum with more emphasis on thinking skills, problem solving and information handling, as well as requiring the inclusion of personal, social and health education. Students are facing many emerging issues, such as global warming, famine, poverty, health issues, a global population explosion and other environmental and social issues. These issues lead to a need

for students to be able to communicate, function and create change personally, socially, economically and politically on local, national and global levels (Kellner ,2008).

Schools that were constructed and enacted using a 19th-century model of education are unlikely to meet the needs of students whose lives may span the 21st-century. A major concern is consulting and involving young people. In a review of the Welsh Curriculum 2000, the Qualifications, Curriculum and Assessment Authority for Wales found an over-emphasis on knowledge and content, and an under-emphasis on skills. It recommended the consideration, as a long-term goal, of the vision of a radically revised curriculum that was more overtly learner-centred and skills-based (Chen; Moran and Gardner, 2009).

The Government of India found it necessary to appoint a National Advisory Committee (NAC) to look into frequent complaints about the excessive burden of the curriculum on children. The NAC submitted report findings in 1993. This report, which took note of the widespread perception regarding the heavy load of the school curriculum, also identified the roots of the problem: the inability to distinguish between information and knowledge; society's competitive ethos; the desire to catch up with developed countries; centralised curriculum development processes; excessive dependence on experts; incomprehensibility of textbooks and the absence of an academic ethos in schools. Most recommendations were accepted by the government and follow-up measures included a review of the curriculum and textbooks. To improve the quality of education, a project for re-orientation of all teachers was initiated (NCERT: National Council of Educational Research and Training, 1998).

Director of the State Council for Educational Research and Training (SCERT) in India, A.S. Reddy, explained the exercise of overhauling the school curriculum, 'Now social values, ethics, morals, co-curricular activities are part and parcel of the school syllabus, so as to ensure overall development of the children.' Subject experts stated that 'while the old curriculum only made children mug up the textbook, the new curriculum would encourage them to think and come up with their own conclusions'. According to India's Primary Education Minister, S. Sailajanath (2010), as values were diminishing and a money-centric attitude growing in society, the government was forced to review the present education system.

Commenting on the curriculum changes taking place in Zimbabwe, Dakmara Georgescu (2013) in the Zimbabwe Curriculum Review Concept Paper, stated that the decision to carry out a curriculum review usually stemmed from a feeling (shared by many), that it needed to be improved so as to better respond to the education or curriculum vision of the country. In the preparatory phase of the curriculum review process, it is also important that education authorities and relevant stakeholders agree on some of its important quality characteristics, against which the current curriculum will be assessed. Comprehensive curriculum reviews may also look into its structural aspects and their role in fostering quality learning.

In the above studies that outline curriculum changes in countries around the globe, there prevails a notable absence of literature pertaining to the impact that curriculum changes may have on children at school. There is little evidence to suggest that they were even considered during the planning and implementation of the changes. The needs and emotions of children have been ignored during the transformation process.

An overview of change in these countries suggests that curriculum and school culture cannot be incongruous with each other. We cannot reach for a positive culture where students feel represented and then ignore the students as we develop their learning experiences. Curriculum design is a perfect opportunity to include students. Consistently engaging every student will improve the morale of any classroom and also cut down on the later need for corrective classroom management (Hunter, 2014).

Decades of study have been devoted to 'educational change', 'learning organisations', 'transformational leadership', 'leadership behaviours', 'values in education' and other attempts to understand the inner workings of life in schools with a view to effecting educational improvement. Yet, despite various new theories, policies and attempted implementations, deep meaningful change remains elusive (Beatty, 1999). The Save the Children Fund, in its document to the United Nations World Summit on Social Development, highlighted the problems in current planning for children: a failure to collect child-specific information; lack of recognition of children's productive contribution; no participation of children in decision making; the pursuit of adult interests in ways that render children passive; and lack of attention to gender and generational relationships (Prout, and James, 1997).

Despite a growing body of research that emphasises children's voices and agency, little research addresses how children themselves participate in emotional socialisation practices (Ahn, 2010). In all the curriculum changes implemented in different countries, the notable absence was the consultation and involvement of children in the formulation and implementation of the curricula. The impact of changes to the curriculum affects both

the emotions and academic performance of children at school. It is therefore the focus of this research to attempt to unpack challenges being experienced by children who are faced with major changes taking place in the basic education curriculum at public schools in South Africa.

### **2.2.2. School Curriculum Changes in South Africa**

The introduction of major curriculum innovation is faced with resource challenges in the form of limited professional capacity and accumulated experience, inaccurate media coverage, and resistance from sections of the public (Mahomed, 2004). The present (2015) formal teaching and learning curriculum implemented in South African schools reflects the culmination of efforts over a period of 20 years to transform the curriculum bestowed on South African formal education by apartheid. From the start of democracy in 1994, South Africa has built the current education curriculum on values that inspired the Constitution (Act 108 of 1996). In South Africa, this is known as the Curriculum and Assessment Policy Statements (CAPS).

#### **2.2.2.1. Curriculum and Assessment Policy Statement (CAPS)**

Since the first democratic elections in South Africa in 1994, the South African government has initiated reforms to democratise education and eradicate the injustices of the post-apartheid education system. Outcomes Based Education (OBE), the first part of Curriculum 2005 (C2005), the most comprehensive of these reforms, was introduced in 1996 as the best educational solution for South Africa. In 1998, the education system in the country changed from content based education to OBE. This system was difficult for

teachers to comprehend, mainly due to abstract terminology and poor and inadequate training by the Department of Education. Many schools struggled to implement OBE, which had 67 Specific Outcomes across eight Learning Areas, all of which were meant to be incorporated into Learning Programmes.

Fielding (2004) argues that the transformation of schooling requires more than just 'student voice', but the democratic participation of all members of a school community, including students. Being taught by teaching personnel who found OBE difficult to comprehend, learners, whose interests were not taken into account, were bound to experience the negative effects. OBE is too complex and inaccessible for most teachers to give these policies meaning through their classroom practices (Jansen, 1998). Resource constraints at many schools were not taken into account during the designing of C2005, so presenting a challenge to OBE to succeed.

With C2005 failing to produce the desired envisioned results, the education system was simplified into the 2002 Revised National Curriculum Statement (RNCS). The RNCS was meant to provide more structure regarding what was being taught and gave teachers an idea as to what should be included in lessons. Once again, the interests of learners were not taken into consideration, as the OBE and RNCS were replaced with Schooling 2025.

CAPS, a part of Schooling 2025, is a single, comprehensive and concise policy document that has replaced the former Learning Area Statements, Learning Programme guidelines and Subject Assessment guidelines for all subjects listed in the National Curriculum Statement from Grades R to 12 (Department of Basic Education, 2010). The Curriculum and Assessment Policy Statements, an amendment to the National Curriculum Statement,

is currently being implemented at public schools from grades R to 12, so that the curriculum is more accessible to learners. With the introduction of CAPS, every subject in each grade has a comprehensive and concise policy document that provides details on what educators need to teach and assess on a grade-by-grade and subject-by-subject basis. This curriculum review aims to lessen the administrative load on educators and ensure they have clear guidance and consistency when they are teaching. CAPS builds on the previous (NCS) curriculum by providing clearer specifications on what is to be taught and learnt in each grade on a term-by-term basis in all schools. It describes the number of subjects to be offered to learners in each grade and the promotion requirements to be obtained.

However, public schools across South Africa currently face the challenges of undergoing curriculum changes and thus the implementation of CAPS. Professor Brahm Fleisch, from the school of education at the University of Witwatersrand, believes that the new CAPS curriculum is significantly more challenging: 'This is often overlooked and curriculum change will always have unintended consequences. The standards of teaching and learning are not meeting the benchmark set by the CAPS curriculum' (*The Daily News*, 25 November 2014). The prescriptive nature of the CAPS curriculum limits the teacher and the stringent curriculum does not give educators a chance to be creative in the classroom.

Tim Gordon, chief executive of the Governing Body Foundation, which is an association of the governing bodies of some of South Africa's top public schools, says he 'believes it unfair that one cohort of children should pay the price for a combination of factors, the new standards being one of them'.



To address the unintended consequences arising from this change in curriculum, South Africa's Minister of Basic Education appointed a task team to identify the challenges and tensions that negatively impacted on the quality of teaching and learning in South African schools. The mandate of this task team was to propose mechanisms that could address those challenges. Drawing from their findings, in October 2009, the Ministerial Task Team recommended that the Department of Basic Education develop a clear and simple five-year plan to support the implementation of the new curriculum in schools and to refine curriculum documents. Hence, further to CAPS, the National Protocol for Assessment (NPA) standardises the recording and reporting processes for grades R to 12 within the framework. According to the South African Minister of Basic Education (Annual Performance Plan – 2014/2015), 'The implementation of CAPS, combined with the national workbooks, provides better guidance to teachers than was previously available, especially because workbooks reduce the administrative burden on educators.' Once again, it becomes evident that the needs of the teacher have been considered in the implementation of CAPS, but the effects of these curricular changes on learners have not been taken into consideration.

Children's lives are greatly affected by decisions, events and activities that take place at some remove from their own perceptual fields in, for instance, national policy-making arenas. Policies are made and events take place beyond learners' perceptions that they cannot comment on, yet which profoundly shape their lives. The political spaces from which children are physically absent are as important as those in which they are present (Ansell, 2008). In an era of growing accountability pressures, it could be argued that current statutory frameworks, in the form of new policies, prohibit learners from bringing much of themselves to the curriculum table

(Biddulph, 2011). The need for this research takes off from this lack of information regarding the effect of curricular changes on learners at schools where CAPS has been implemented. In line with this, the literature reviewed in this section therefore considers the policies that have undergone change and the consequences of these changes, after implementation.

#### **2.2.2.2. Annual National Assessments**

The Annual National Assessments (ANA) is a key strategy that the South African Department of Basic Education has put into place to measure the progress of learner achievement. In his second State of the Nation Address held in 2010, South African President Jacob Zuma announced the birth of the ANA tool when he declared: 'From this year onwards, all grades three, six and nine students will write literacy and numeracy tests that are independently moderated.' Qetelo Moloi, Director of National Assessments in the Department of Basic Education (2010), said, 'Maths ANAs were introduced in response to South Africa's very poor performance in international comparative assessments.' The World Economic Forum had produced a Global Information Technology Report in 2014 and it ranked South Africa's quality of mathematics and science education at 146<sup>th</sup> out of 148 countries. This has annoyed the South African Education Department and is the cause of extreme concern for parents (*Sunday Tribune*, 8 June 2014). The improvement of the quality and levels of educational outcomes in the schooling system is a top priority of both the government and Department of Basic Education in South Africa. The extent to which these outcomes achieve their goals is monitored by the administration of the ANA.

The ANA are premised on the principle that effective testing will afford learners the opportunity to demonstrate relevant skills and understand and also assist in diagnosing learner shortcomings. Valuable feedback provided from ANA will assist schools in building on strengths and developing strategies for learner development. According to Angelina Matsie Motshegka (Minister of Basic Education in South Africa), since its inception in 2008, the ANA at South African public schools have brought to light the fact that results in mathematics are far below levels of expectation. The ANA may be described as common task assessments. They are a system-wide, uniform assessment tool administered by teachers in specific grades within a given time frame. The value of the ANA as a common task lies in that, if used effectively, it assists teachers and heads of departments to identify areas in which remediating strategies are needed. Furthermore, the ANA communicates the expected standard of learning at a specific time to both teachers and school management (Department of Basic Education, 2008).

It is anticipated that the results of the ANA will be able to provide information to assist in teacher development, the development of textbooks and design of workbooks, and provide support to schools and target areas in need of intervention. The grand idea of the ANA is to gauge the extent to which the basic education system is impacting on the critical areas of numeracy and literacy. These assessments are a diagnostic tool to help education to self-correct. In fact, the Annual National Assessment results have become a powerful tool of assessing the health of our basic education system (Minister Angie Motshekga, December 2014). The Minister of Basic Education, together with school managers and teachers, has been constantly attempting to develop strategies that might lead to an improvement in results.

At the official release of the 2014 ANA results in Gauteng province, the Minister of Basic Education in South Africa said, 'The results of the 2014 ANA indicate that the performance of learners in the senior phase requires immediate and radical intervention. Performance in mathematics is way below the minimum promotion level of 40%. A critical starting point is for teachers, school managers and curriculum support officials to intensify support to learners based on a diagnosis of learner scripts.' Based on this report, the 2014 Framework for Improvement was generated to guide the education sector on how to address challenging topics.

Many teachers agreed that the ANA was a source of significant stress and frustration for them, particularly its timing in September. Some teachers said that the preparation for the ANA was time consuming and interfered with the work programme (Pournara, 2015). The grade nine Mathematics ANA has become an issue of growing concern, with national average marks of 12,7%, 13,9% and 10,8% in 2012, 2013 and 2014 respectively. Evidence about the stress and emotions of children has thus far gone unreported and policies are silent about strategies for making the learners' work more bearable. Hence, this study attempts to probe the emotional geographies of children.

In recent years, the focal topic in education circles has been the improvement of mathematics results at schools in South Africa. An attempt at improvement has come from the Department of Basic Education in the form of a new curriculum. Evidently, this new strategy for assessment considers making the teachers' work more bearable. However, no mention is made about the learners in the school system. It is against this backdrop that this study seeks to establish a deeper understanding of the experiences and emotions of learners who are exposed to the mathematics curriculum policy,

the contextual factors that influence their learning and how the schoolchildren negotiate these factors. The studies that are reviewed below relate to this intention.

## **2.3. Literature Review (Part 2)**

### **2.3.1. Children's Emotional Geographies in a context of curriculum change**

At the centre of this study are the emotional geographies of schoolchildren during mathematics learning. Existing scholarships on emotional geographies suggest that this scholarship attempts to understand emotions experientially and conceptually – in terms of its socio-spatial mediation and articulation rather than as entirely interiorised subjective mental states (Davidson, Smith and Bondi, 2007). The subject of children's geographies is an increasingly important sub-discipline of human geography, drawing upon and contributing to the growing inter-disciplinary movement identified as the new social studies of childhood. One of the key aims of this movement is to develop mechanisms that promote child-centred research, creating an opportunity for children, in their own voices, to discuss their experiences (Barker and Weller, 2003).

The concept of emotional geographies helps us identify the supports for and threats to the basic emotional bonds and understandings of schooling that arise from forms of distance or closeness in peoples' interactions or relationships (Hargreaves, 2000). Educational policy and administration, and most of the educational research community, pay little or no attention to the emotions of learners. What is at stake for them are increasingly rationalised, cognitively driven and behavioural priorities of knowledge, skill, standards,

targets, performance, management, planning, problem-solving, accountability, decision-making and measurable results (Hargreaves, 1997). Within education, as in the wider culture, emotions are a site of control and a mode of political resistance. Given that teaching, learning and leading are emotional practices, it is important to engage with the emotional arena in education; it is also important to do so critically and not sentimentally or self-indulgently (Hargreaves, 2000). Shared decision-making is acknowledged as having a positive impact on student behaviour in all areas of school life (Fielding, 2004). In line with this, research by Wood (2003) indicates that schoolchildren's perspectives represent an important source of evidence for improving curriculum, pedagogy and achievement.

Emotion matters because leaders, teachers and learners understand and enact their roles of subordination and domination significantly through learned emotional expressions and silences. Furthermore, emotions are a basis of collective and individual resistances to injustices (Boler and Zorn, 2007). Emotion is the least investigated aspect of research on teaching, yet it is probably the aspect most often mentioned as being important and deserving more attention. The literature on teaching is full of remarks that emphasise the significance of what teachers feel and the impact of their emotions on teaching and student learning (Zembylas, 2008). Children's space has an important discursive dimension, with the emphasis on children having an audible voice. They effectively have more say in matters that affect them than those who surround the children (Wyness, 2001).

If research into children's geographies is to be relevant to the transformation of their lives, it is crucial to consider not only their encounters with their environment, but also the processes,

decisions and events that shape the world they perceive, interpret and act upon (Ansell, 2008). Children's relations with the world are both biophysical and social. Every encounter that a youngster has with his or her environment encompasses far more than the immediate surroundings. The familiar objects in a room derive meaning from distant places (Wood and Beck, 1994). A child's perception of space that may appear neutral to some is coloured by deep-seated emotions and encounters that he or she may have experienced. The world with which children interact is the product of events, policies, discourses and decisions, with diverse origins in time and space. Their immediate encounters contain intrusions from further afield (Ansell, 2008).

A group of children of the same age, sex, grade, racial denomination and economic background may thus embody diverse interpretations of the same learning content. Biddulph (2011) argues that schoolchildren should draw on their own geographies and shift curriculum thinking from knowledge transmission to knowledge creation, where young people are the drivers that shape and inform the curriculum.

This is clearly not the process that encapsulates curriculum change and development in South Africa. Children's geographies within the school curriculum should incorporate ways of assisting them to understand their position in their environment and in relation to other people. Children are understood to be competent and therefore are entitled to have the right to participate in society and have a say in issues that affect their lives. This means that the ways in which they respond to adult research agendas that are seen as significant and, to a lesser extent, how they articulate issues that they themselves raise as significant, are viewed as valid

constructions, performances and interpretations of knowledge and experience (Skelton, 2008).

Despite being places in which children spend a great deal of time, schools are spaces over which children have little or no control. They are controlled and organised according to specific institutional processes, principally by age (Fendler, 2001). Change is needed now for children, in spaces and in policy areas that currently do not, and perhaps cannot, directly admit their voices. Securing such change requires that children be understood, not as individualised subjects, but in relational terms, recognising that their lives are produced through interaction with others (Hopkins and Pain, 2007). Indeed, one of the pivotal contributions of the new geographies and social studies of childhood has been the re-conceptualisation of children as social agents with valuable perspectives that should be sought through research that concerns young people's contemporaneous social and cultural geographies (Holt and Holloway, 2006). What is missing from the knowledge base for the emotional geographies of children is the voices of the children themselves.



### **2.3.1.1. Children's emotional geographies and diversity**

Schools are related to other schools, to households, playgrounds, after-school clubs, firms, local authorities, trade unions, ministries, courts and so on. People (in this case children) cross these boundaries, bringing with them different and conflicting ideas, experiences, ideals, values and visions and different material resources (Ansell, 2008).

A class of children thus created comprises a multitude of differing views, opinions and learning abilities. Due to a variety of different home languages enrolled in schools, it becomes a challenge to accommodate all learner languages. The inclusion of local and indigenous knowledge systems in a meaningful and representative form is a clear challenge (Mahomed, 2004). The very notion of schoolchildren having one voice is flawed. They would never speak with the same voice as the reality is that young people come from a range of social and emotional backgrounds and their multiple voices are significantly influenced by their emotional capacity, ethnicity, sexuality, social class and geographies (Bragg, 2007). Furthermore, while children as a social group may have similar experiences, their characters are unique and differentiated by other factors such as gender, ethnicity and class (Holloway and Valentine, 2000). The commitment to providing equal opportunities for all pupils is one major cross-curricular dimension of the curriculum. The other is preparation for life in a multi-cultural society. Both of these should permeate every aspect of the curriculum, enabling pupils to fulfil their potential, irrespective of disability, sex, social, cultural or linguistic background (Verma, 1994).

The terms 'children' and 'young people' cover a range of people in a diversity of situations (Valentine, 1999). The multiplicity of

children's interests, behaviour, attitudes and backgrounds complicates standardised approaches to delivery of the curriculum (Horton and Kraftl, 2005). The ways in which they have been viewed, valued, used, loved, exploited and exalted have also changed over time and space. Age, gender, class, ethnicity and sexuality cut across the ways in which people experience youth in the same society (Skelton and Valentine, 1998). There might be differences in the material that support learning at home, such as access to a computer, the Internet, or the presence of a clock, books, magazines, games and activities associated with these objects. Work in children's geographies is diverse, but at its heart is an appreciation that they see, imagine and use space in a different way to adults. For example, they are restricted and controlled in their use of space by adults, institutions (such as schools), legislation, peers and their own developing cognitive and physical skills (Yarwood and Tyrrell, 2012).

Given the diversity seen in any group of young children, attention to individual appropriateness is crucial, yet too often neglected. There is a wide range of individual variation that everyone recognises, but it is rarely paid the attention it deserves. This neglect occurs because the curriculum imposes a norm and because teachers find it easier to plan to some predicted criterion. Teachers whose instruction is developmentally appropriate do not expect all children to have learnt the same things in the same way on the same day (Bredekamp, 1993). A curriculum that espouses a child-centred theory and pedagogy would seem to be well-positioned to support the children's learning and development in the increasingly complex world in which they live. It seems that the aims of primary education in the present century have quite rightly been inspired by recognition of the child as a complex human being with physical, intellectual, emotional and spiritual needs (O'Connor, 1998).

In recent times, immigration and multiculturalism have considerably increased all over Europe. The education system in many European countries struggles to face a number of new challenges resulting from the demographic, social and cultural changes of immigration and multiculturalism. These threats include cultural conflict between 'host' cultures and 'immigrant' cultures and language differences and communication challenges experienced by immigrant children. Therefore, an understanding of teacher and school development in the context of growing ethnic and cultural diversity in Europe is inextricably linked to analysing the pivotal role of emotions and affects when it comes to coping with the impact of growing immigration and multiculturalism (Zembylas, 2008).

It is indeed a challenge for teachers to ensure that what is being done in the classroom is relevant to the children and their contexts, and that it respects their world and responds to their particular needs. Home conditions, long distances to school and lack of safety pose further barriers to an effective learning experience. Childhood is often burdened by responsibilities of cleaning, washing, cooking, caring for siblings, earning additional income for families and so on. Taking these challenges into account, effective curriculum delivery requires thorough planning and sensitivity to student diversity (UNESCO, 2004). Society has come to expect schools, teachers and, ultimately, children to play a significant role in responding to local, national and even global changes and challenges (National Council for curriculum and Assessment –NCCA, 2010). Grown-ups argue about the ingredients, the raw materials and components of the curriculum. The challenge is to blend the curriculum ingredients into something nourishing and appetising but how can it be made so? By providing a curriculum that is based on real purpose and real audiences, we have a chance to engage children in compelling

experiences that offer a chance for them to understand processes (Johnson, 2007). All children and young people should be entitled to a curriculum that is broad, balanced and relevant to their learning needs, and not just one based on training for the world of work. Debate on the curriculum should involve not only the widest possible variety of people with an interest in the subject but pupils as well (Johnson, 2007). Although there is a shift in thinking about the role of students in terms of their involvement in critical areas within the school, inclusion is managed in the interests of the teachers rather than the students (Wyness, 2003).

This formed a key component of the investigation in this study.

### **2.3.1.2. Children's emotional geographies and inclusivity**

The framework for an inclusive education system is laid out in Education White Paper 6: Special Needs Education — Building an Inclusive Education and Training System. The aim and scope of this policy is to address the needs of all learners who experience a barrier to learning. Despite the policy of inclusive education gaining considerable attention, there is much to be done before this student body feels truly included (Goodfellow, 2012). One of the major contextual factors that influence current emotional geographies of learning is the diverse nature of the learner population and learning ability at schools in South Africa. Despite the development of an inclusive education policy in South Africa, one of the key issues that hampers progress is the lack of teacher skills in adapting the curriculum to meet a range of learning needs (Chataika, Mckenzie, Swart and Lyner-Cleophas, 2012). Teachers must attend not only to the cognitive domain but to children's social, emotional and physical needs as well. We should not ignore the complexity of children (Burchfield, 1993). The developmentally appropriate philosophy

says 'keep things in mind' when considering your students, the classroom environment, what you teach and how. It takes into account each child's own development, interests and cultural background. Teachers need to consider this dimension (Willis, 1993).

Curricular change can be challenging for learners, who need to be encouraged to develop an adaptable disposition towards change, seeing it as a normal situation that presents an opportunity rather than a problem (Etelapelto and Vahasantanen, 2008). For example, the introduction of inclusive education into all public schools in South Africa has resulted in learners of mixed ability and disability being placed together in the same classrooms. Building an inclusive education system requires changes to the way in which people understand, conceptualise, explain and thus respond to diversity in the learner population (Ngcobo and Muthukrishna, 2011). Learners who are self-confident and have a flexible identity are more willing to adapt rather than resist the changes. The key premise is that schools are about providing quality education for all students, regardless of differences in respect of race, class, culture, language, gender, ethnicity, ability or disability (Engelbrecht, 2006; Miles and Singal, 2010).

Because we live in an unequal world, unequal in terms of power, opportunities, access to resources and so on, a curriculum based on transmitting received knowledge is epistemologically oppressive: it gives no opportunity for challenging the (unequal) status quo (Povey, 2002). The truths of mathematics are certain and unchallengeable, are objective, given and unchangeable. Mathematics is free of moral and human values (Ernest, 1991). Julie Fleming, a primary school teacher in Cape Town, admits that she is grateful for the reduced number of subjects, but is of the

belief that, 'Whatever programme you implement, teachers still have to deal with learners who are in their class. And one size doesn't always fit all.'

## **2.4. Conclusion**

This chapter highlighted the findings of various scholars on the subject of emotional geographies, as well as details of the education system in South Africa and definitions of concepts that are pertinent to this study. At the school where the study was conducted, it has been difficult to create a unified school culture, with the presence of learners whose home language is not English (the language of learning and teaching). Hence, rather than describing teaching from an adult perspective, this study examined the dynamic and complex nature of learning mathematics and how schoolchildren negotiated, interpreted and transformed the information to link it to their own social contexts. Upon review of the relevant literature, it became apparent that children, in their endeavours to acquire knowledge at school, experienced a range of challenges, many of which were tied up with their emotions.

In chapter three, the study presents the conceptual framework that was utilised, together with the research design and methodology.

# Chapter three

## Research methodology and design

### 3.1. Introduction:

The focus of this chapter is on the research methodology and design used to obtain data for the study. It discusses the research process employed to provide answers to the three research questions driving this study:

- What are schoolchildren's emotional experiences of learning mathematics?
- What contextual factors influence schoolchildren's emotional experiences of mathematics learning?
- How do schoolchildren negotiate these contextual factors?

### 3.2. Research Approach

It would seem that experts on children are precisely that — advocates of research *on* children, rather than defenders of children's interests in taking part in research which is *for* them. The best way to defend the development of children's studies for children is to enrol them fully in the research process (Oakley, 1994). Methodologically, it is important to find ways of acknowledging and engaging with the social and spatial contexts of children and the ways that their geographies are lived, experienced and constructed. It is crucial to understand and engage with the multiple power relations that characterise children's everyday geographies (Schafer, 2008). The qualitative research interview attempts to understand the world from the subjects' points of view,

to unfold the meaning of people's experiences and to uncover their lived world prior to scientific explanations (Hemming, 2007).

There is a growing awareness that, while quantitative survey and experimental studies are vital, they cannot by themselves provide all of the information and insight required to appreciate children's experiences or to help plan and provide appropriately responsive child health services (Darbyshire, MacDoughall, and Schiller, 2004). This research takes off from this need to elicit information-rich data to provide a clear understanding about the emotional geographies of children. Therefore, a qualitative approach was used.

Qualitative research encompasses a wide range of philosophical positions, methodological strategies and analytical procedures. Morse (1994) believes that qualitative analysis, regardless of the specific approach, involves: comprehending the phenomenon under study; synthesising a portrait of the phenomenon that accounts for relations and linkages within its aspects; theorising about how and why these relations appear as they do; and recontextualising or putting the new knowledge about phenomena and relations back into the context of how others have articulated the evolving knowledge. These steps help to depict a series of intellectual processes by which data in their raw form are considered, examined and reformulated to become a research product.

Our starting point in qualitative research is to assume that children have their own views and priorities, and their own strategies for dealing with difficulties based on their knowledge and experience (Waksler, 1991). Qualitative studies are specific to a small number of particular environments and individuals: researchers cannot generalise findings and conclusions to other populations and situations. Although many critics are reluctant to accept the



trustworthiness of qualitative research, frameworks for ensuring the vigour in this of work have been in existence for many years (Shenton, 2004). Qualitative data consists of words and observations, not numbers. As with all data, analysis and interpretation are required to bring order and understanding. This requires creativity, discipline and a systematic approach (Taylor-Powell and Renner, 2003). The small sample of participants in my study allowed me to focus on a specific environment and thereby embrace the characteristics of qualitative research. The stories the learners told me in our interviews not only described their experiences but also revealed how these impacted on their mathematics studies. Their opinions brought us closer to confronting the complexities of learning. Through narrative inquiry, I explored their particular experiences — thoughts, feelings, ideas, examples and situations — as narrated by them (Humphreys and Kramp, 1995).

When social research involves direct contact with children, it may be necessary to face ethical questions that are avoided when the research is indirect or involves adults. The reliability and validity, and ethical acceptability of research with children can be augmented by using an approach that gives them control over the research process and methods that are in tune with children's ways of seeing and relating to their world (Thomas and O'Kane, 1998). Researchers undertaking qualitative research with youngsters immediately confront cultural, social, psychological and political perspectives that militate against taking them seriously (Darbyshire, MacDoughall, and Schiller, 2004). Children may also be seen as unsophisticated or 'silly' and thus incapable of being taken seriously in discussions about their needs (Oakley, 1994). In addressing this limitation, this study found that the use of narrative inquiry best suited this research, which focuses on what children

have to say amidst these perspectives that negate their thinking. The study of narrative therefore is the study of the way humans experience the world (Connelly and Clandinin, 1990) and in the current study, specifically children's experiences of their world.

Qualitative researchers understand that behaviour, events and actions are meaningful, as embedded in context, and context enables the researcher to make meaning, where previously there was no meaning. They typically study subjects in their native surroundings. Qualitative researchers engaged in narrative inquiry share this respect for context, especially time and place. The researcher using narrative inquiry anticipates the use of context to connect and situate particular experiences so they cohere and structure life as experienced (Humphreys and Kramp, 1995).

Narrative research aims to describe the nature and function of stories. The goal of narrative explanation is to provide an intelligible, comprehensive and verisimilar rendering of why something happens that is well grounded and constitutes a supportable emplotment of events (Docherty and Sandelowski, 1999). Generally, narratives are understood as stories that include a temporal ordering of events and an effort to make something out of those events. Narration is a threshold activity, in that it captures a narrator's interpretation of a link among elements of the past, present and future at a lineal place and fleeting moment in time (Churchill and Churchill, 1982).

What is essential when it comes to utilising narrative inquiry as a method of research is the understanding that it is a way of knowing. As such, it is natural to us and part of our cognitive repertoire (Humphreys and Kramp, 1995). Narrative is the fundamental scheme and a meaning structure that organises events and human

actions into a whole, thereby attributing significance to individual actions and events according to their effect on the whole (Polkinghorne, 1988). Narratives and life go together and so the principal attraction of narratives as a method is its capacity to render life experiences, both personal and social, in relevant and meaningful ways (Connelly and Clandinin, 1990).

A narrative connects events, actions and experiences, and moves them through time. It is through the personal narrative, a life as told, rather than through our observations as researchers, that we come to know life as experienced. The researcher gives authority to the storyteller who is acknowledged as one who knows and tells. Narrative inquiry provides the research participants with a natural and unselfconscious way to order their lived experiences (Humphreys and Kramp, 1995).

Furthermore, narrative inquiry is increasingly used in studies of educational experience. Narrative knowing is expressed in a narrative form that we call stories. Other meanings derived from alternative, often even contradictory accounts, are accepted by the qualitative researcher using narrative inquiry. He or she understands that each story has a point of view that will differ, depending on who is telling the anecdote, as well as where and when the story is told (Humphreys and Kramp, 1995). The main claim for the use of narrative in educational research is that humans are storytelling organisms who lead storied lives. Since the purpose of my study was to understand the emotional geographies of learning mathematics, the narrative inquiry provided the opportunity for learners to tell their stories.

### **3.3. Research paradigm**

The emergence of children's geographies as a sub-discipline has resulted in innovative ways of approaching, re-conceptualising and renegotiating the ways in which we research young people's everyday geographies. It acknowledges children and young people as agents in their own right and puts their views, experiences and perceptions at the core of geographical research. These debates have contributed to the development of an increasingly critical approach to working with children and young people in an ethical way that captures their voices (Schafer, 2008).

This study applied the critical theory approach, which originated from the criticism that educational research was too technical and concerned with only efficiency and rationality of design, thus neglecting social inequalities and issues of power (Gage, 1989). Children's and young people's participation in research is often linked with the aim of helping them develop critical understanding of their own life situations and strategies to challenge inequalities (Bang, 1996; Bowes, 1996; Pini, 2002, 2004; MacIntyre, 2003). The participants in my study hail from a variety of socio-economic and linguistic backgrounds, therefore the critical theories discussed above formed an integral part of this research.

Critical research is taken to mean research that aims at understanding, uncovering, illuminating and/or transforming how educational aims, dilemmas, tensions and hopes are related to social divisions and power differentials. Research in this area entails paying attention to fundamental issues of epistemology, truth, validity, perspective and justice (Griffiths, 1995). Critical theory aims to move beyond the obvious in order to uncover the effects of power relations. The issue of bias and the associated issues of

perspective, position, prejudice and reflexivity are relevant to understanding and carrying out critical research (Griffiths, 1995). By using the critical research paradigm, this study was able to uncover the challenges and emotions experienced by children who are learning mathematics under the new curriculum.

Critical theory and critical educational research have their own substantive agenda, for example, examining and interrogating: the relationships between school and society — how schools perpetuate or reduce inequality; the social construction of knowledge and curricula; who defines worthwhile knowledge; what ideological interests this serves and how this reproduces inequality in society; how power is produced and reproduced through education; and whose interests are served by education and how legitimate these are (Cohen, 2000). This is in keeping with the focus of this study, which emphasises that the emotions, interests and opinions of schoolchildren are not taken into consideration when the school curriculum is being changed or modified.

Critical theoretical approaches tend to rely on dialogic methods, which are methods combining observation and interviewing with approaches that foster conversation and reflection. Critical theorists usually begin with an assumption about what is good and asking people in a social group, culture or organisation to reflect on and question their current experience with regard to the values identified (Giroux, 1988). Critical inquiry can be done individually or, better still, in collaboration with other less empowered individuals participating in critical action research led by the researcher as facilitator (Afonso and Taylor, 2009). In line with the above theories, the participants in my study were engaged in guided critical conversations within groups, which allowed them the

opportunity to reflect on their personal experiences and backgrounds.

One of the most important aspects of critical theory-informed qualitative research involves the often-neglected domain of the interpretation of information. The act of interpretation involved in its most elemental articulation is making sense of what has been observed in a way that communicates understanding (Kincheloe and McLaren, 2002). Critical theorists advocate an epistemology that is alternate to what one will find in traditional social science. Critical epistemology gives us principles for conducting valid inquiries into any area of human experience. Critical theory has enormous implications for all the basic concepts employed in social research: concepts such as 'validity', 'reliability' and 'objectivity', among others (Carspecken, 1996). The interpretation and discussion of the findings at the conclusion of my research study encapsulate these observations.

### **3.4. Data Gathering Process**

In this section, I discuss how research data was gathered for the current study, the data gathering tools, as well as the ethical considerations and limitations in this process.

#### **3.4.1. Sampling**

In all forms of research, it would be ideal to test the entire population, but in most cases the population is just so large that it is impossible to include every individual. This is the reason why most researchers rely on sampling techniques, such as convenience sampling, which is the most common of all such techniques (Battaglia, 1998). Researchers collect data from a sample, and use those observations to make inferences about the entire population.

Ideally, the sample corresponds to the larger population on the characteristics of interest. Because some members of the population have no chance of being sampled, the extent to which a convenience sample —regardless of its size — actually represents the entire population cannot be known (Kalton, 1983).

A Convenience Sampling approach was used to select the research site and the participants in this study. The rationale for employing a purposive strategy was that coherence is maximized by systematically fitting the sampling processes with the research aims, research questions and data collection and analysis, so that all are mutually supported and theoretically consistent (Cohen, 2000). The aim of the study was to work with a group of children who reflected the population being researched and who actively wanted to participate in the study. Inclusion in the sample depended on an active agreement on the part of parents. Participation of the children could be withdrawn by them at any point. They could conclude a conversation whenever they wished to and they did not have to answer all of the questions (Thomas and O’Kane, 1998).

A sample is a selection of the participants from a population and indicates that certain eligibility criteria are met. The researcher also applies certain exclusion and inclusion criteria to ensure accuracy in order to determine who will participate in the study (Strydom and Delport, 2011). Participants should be seen as indispensable and worthy partners in research. Researchers should recognise and ensure that respect, protection and promotion of the rights of participants are made intrinsic at every stage and level of research undertaken by them (Jesani and Barai, 2005).

Convenience Sampling is a kind of non-probability or non- random sampling, in which members of the target population are selected for the purpose of the study if they meet certain practical criteria, such as geographical proximity, availability at a certain time, easy accessibility, or the willingness to volunteer (Farroukhi, 2012).

It is a specific type of sampling method that relies on data collection from population members who are conveniently available to participate in the study, therefore the participants in this study were learners at the school where the author of this study teaches. The chosen participants included learners studying mathematics, who were (at the time of data gathering) embracing the new mathematics curriculum in their daily lessons. In this study, 12 learners from the intermediate phase formed the research sample. Four learners each were selected from grades four, five and six. The sample of learners was representative of gender, diverse learning ability and racial denomination. Selected learners had to be proficient in understanding the English language, as interviews were conducted in English. In terms of qualitative research, the danger of convenience sampling is that if the sample is broad, unwarranted generalisations may be attempted (Cohen,2000). Hence, the small number of participants in this study was able to sustain an in-depth focus on their beliefs and emotional experiences.

### **3.4.2. Data Gathering Techniques**

The absence of children's voices was related to the conceptualisation of children as human 'becomings' who had not yet reached the status of fully adult human beings (James et al., 1998). In response to the new ways of thinking about children and youth, geographers realised that there was a need not only to do research



on, but also to work with and for, children and young people. Children's geographers have thus developed new methodological approaches that put children at the centre of research (Schafer, 2008).

Child participants in research often occupy positions of vulnerability and powerlessness, and regularly depend upon researchers to exercise sound moral judgments when designing their research (Hopkins and Bell, 2008). Participatory research approaches enable children and young people to develop and practice new skills that support and improve their self-esteem, communication and critical-thinking skills (Kellet, et al., 2004; Cahill, 2007). This approach enables children and young people to identify relevant topics and discuss them more openly and freely than they would in more traditional adult-led research projects (Alderson, 1995; Lansdowne, 2001; Kellet, et al., 2004).

Participatory methods of data collection were employed in the current study. Children were approached as social actors with their own distinctive abilities to understand and explain their world. Participatory research techniques were used as a strategy to give children control over the research process and to value what they had to say. The use of these participatory techniques greatly assisted in breaking down imbalances of power, not only by giving children greater control over the agenda and more time and space to talk about the issues that concerned them, but also by creating an atmosphere in which there were no right or wrong answers (Thomas and O'Kane, 1998).

Participatory methods are a diverse set of techniques bound together by a common concern for actively involving research subjects in the construction of data (Gallagher, 2008). Participatory

research is effectively a hybrid of different research methods that have been developed for diverse purposes (Pretty, Guijt, Thompson, and Scoones, 1995). Participatory approaches lend themselves to research where people's relations with, and accounts of, space, place and environment are of central interest (Pain, 2004). Using methods which are non-invasive, non-confrontational and participatory, and which encourage children to interpret their own data, might be one step forward in diminishing the ethical problems of imbalanced power relationships between the researcher and researched at the point of data collection and interpretation (Morrow, and Richards, 1996).

Children have participatory involvement in all matters affecting their lives, including research. Among its many objectives, child research informs policy and practice in ways that are intended to improve the lives of children, such as those who want a 'world fit for children' and, increasingly, child research has endorsed participatory ways of ensuring children's views inform research outcomes (Bell, 2008). As a participatory researcher it was the responsibility of the author of this study to encourage participants to produce personal information.

Furthermore, the participatory methods that were employed included focus group interviews and guided critical conversations.

While focus groups and individual interviews suffer common methodological shortcomings, since both are interviews of a kind, their distinct characteristics also result in individual strengths (Shenton, 2004). Semi-structured interviews can be defined as 'conversations with a purpose' (Burgess, 1984 in Mason, 2002) and generally start from a number of predetermined questions or topics, but then adopt a flexible approach for discussion with the

interviewee (Hemming, 2007). Children are generally comfortable and familiar with the process of discussing matters in groups. Focus groups in schools are therefore a congruent and appropriate research approach to gauge children's views (Horowitz, 2003). The use of focus groups allows the researcher to generate interactive conversation among the children relating to their experiences, perceptions and understandings about learning mathematics.

Critical conversations are those conversations that inspire a better outcome. If they did not happen, things would remain status quo. When they do happen, things change for the better. People are more connected, processes improve, there is a clear understanding of goals and expectations, and accountability is established and agreed to. Critical conversations allow us to arrive at a better outcome (the Centre for Organisation Effectiveness, 2012). The critical conversation methodology is based on the direct participation of people whose reality is being studied throughout the whole research process (Gomez et al., 2006; Flecha, and Gomez, 2004).

The nature of conversation as a process of talking, listening, reflection and responding, through questioning, anecdote-telling and other discourse genres, suggests that it is a critical process. Conversation is a moving back and forth in the conversational situation, with immediate understanding and a larger understanding of what is being said, listened to, reflected upon and responded to (Feldman, 1992). According to Herda (1999), inquirers should transition rather quickly into creating a context for conversation where questions open the quest for meaning. Researchers may initiate research conversations by seeking explicit knowledge about the research phenomenon, but should move beyond the explicit and seek tacit understandings or meanings that participants attach to

their experiences (Pavlish, and Pharris, 2011). Guided critical conversation was used as a method of collecting data, so as to minimise the power hierarchy between the researcher and the participants. Although the research method used was that of critical conversations, I did rely on a schedule of interview questions so as not to lose cognisance of the objectives and key research questions of the study. All conversations were recorded using a digital recorder and transcribed verbatim.

Focus group interviews are participatory methods that allow an exploration of affective factors, are action orientated and non-threatening to participants (Young, and Barret, 2001). The advantage of a focus group is that participants respond not only to the researcher, but also to other participants and their responses. The interaction between participants usually reveals more about the subjects' points of view than would be the case with a researcher-dominated interview. The focus group's interaction enables the researcher to see how subjects incorporate the viewpoints of others in structuring their own understandings (Ary, Jacobs, Razavieh, and Sorenson, 2010). Focus group conversations provide learners with the opportunity to speak with confidence and fewer inhibitions, since children are generally more comfortable with group discussions. As anticipated, the learners spoke about their experiences in the ways they chose individually and collectively. The conversations that took place during the data collection in this study were able to reveal the attitudes, beliefs and experiences of children who were learning mathematics. Questions during the individual and focus group conversations were structured around Siedman's Phenomenological Interviewing Model (1998). Such themes included the life history of the participants, the details of their experiences and the meaning that such experiences held for them. By linking the process of data collection and analysis, it was possible to adjust

the conversation schedule and construct new questions to reflect emerging issues and patterns of data (O'Connor, 2006). By using multiple methods of research, I was able to extract a deeper understanding and clearer insight of the children's experiences.

Since learners were in groups, they seemed less intimidated and after an initial hesitation, they seemed to be 'spurred' on by their peers' participation to contribute their conversations. In this way there was a steady flow of enthusiastic responses from participants. They spoke freely and without restraint about the learning challenges they faced in the classroom, and shared their diverse experiences of learning at home. The conversations provided direct evidence about individual feelings, attitudes, opinions and social interactions.

The aim of the study was to elicit rich, detailed data about the experiences of learners. Therefore, I had to adopt a sensitive, tactful and patient approach during my interaction with participants. The children were also interviewed separately within their respective grades so that the younger grade four learners would not feel insecure around, or intimidated by, the older grade six learners. I was able to use key points in the conversation to probe further in order to unravel issues surrounding the emotional geographies of learning mathematics.

### **3.4.3. Data Gathering Tools**

Tools are the ways and means of conducting research. A researcher needs many data-gathering tools and devices, which may vary in their complexity, design, administration and interpretation. Each tool is appropriate for collection of certain kinds of evidence and

information, and it is possible that a researcher may examine the available instruments and choose one or more to suit the specific requirements of the research (Khan, 2008). In order to uncover the unjust and unfair, and bring about a change, critical action research is another tool that can be used to achieve the target. Action research is about research that impacts on, and focuses on practice in education (Cohen, Manion, Marrison, 2000). Critical theory, being more flexible and more independent in its pursuit of reality, puts a heavier responsibility on researchers to use extra vigilance in observing, perceiving, analysing and interpreting data (Asghar, 2013).

When a researcher engages in narrative inquiry, the process becomes more complex, for researchers become part of the process. The two narratives of the researcher and participant become, in part, a shared narrative construction and reconstruction through the inquiry (Connelly, and Clandinin, 1990). The informality of the discourse lends itself to telling stories. Each story is typically detailed and constructed, as it is being told. Following research protocols on confidentiality and permission for doing human subjects research, these interviews were taped and transcribed at a later date. The stories provided the study with data and the analysis of the narratives began with each story. Given the personal nature of the stories being analysed, I began to demonstrate respect and consideration for the participants (Kramp, 1995).

The data gathering tool employed during this research was that of semi-structured and unstructured interviews, and guided critical conversations. The interviews were conducted in the school library, where there is minimal noise and disruption, over a period of two weeks. Interviews were conducted between researcher and participants, who were engaged in discussions. Transcripts were

made and these became a part of the narrative record. One duty of mine was to ensure that questions were relevant and specific to the problem, concise and to the point, phrased in easy language for easy understanding, contained no ambiguity and that personal and embarrassing questions were omitted. A further duty was to espouse qualities of sincerity, adaptability and flexibility. A digital voice recorder was used to capture data and information was transcribed verbatim. To ensure credibility, I was able to record, analyse, and interpret the phenomena under study as accurately as possible.

### **3.5. Data Analysis**

Qualitative data analysis involves the identification, examination and interpretation of patterns and themes in textual data. It also determines how these patterns and themes help answer the research questions at hand. It is important to note that qualitative data analysis is an ongoing, fluid, and cyclical process that happens throughout the data collection stage of the evaluation project and carries over to the data entry and analysis stages. When trying to discern what comprises meaningful data, the researcher should always refer back to the research questions and use them as the framework. Unquestionably, data analysis is the most complex and mysterious of all of the phases of a qualitative project. In order to generate findings that transform raw data into knowledge, a qualitative researcher must engage in active and demanding analytic processes throughout all phases of research. (Thorne, 2000). The qualitative data in this study consisted of interview transcripts from open-ended, focused interviews and critical conversations.

Working with qualitative data is a rich and enlightening experience. As both a science and an art, it involves critical, analytical thinking and creative, innovative perspectives (Patton, 1990). In qualitative research, the focus on text — on qualitative data rather than numbers — is the most important feature of data analysis. Therefore, qualitative data analysis is an iterative and reflexive process that begins as the data is being collected, rather than after data collection has ceased (Stake, 1995). The analysis of qualitative research notes begins in the field, at the time of observation, interviewing, or both, as the researcher identifies problems and concepts that appear likely to help in understanding the situation.

In this study, qualitative content analysis, based on individual and focus group conversations, was done. The study's consultative and participatory approach gleaned valuable information from children (Macdoughall, et al., 2004). The use of conversations increased their opportunity to express their opinions freely and contribute valuable information. They were more interactive and productive in the informal situation created by me. Information gained from conversations was comprehended, synthesised, categorised and interpreted in order to provide insights about the emotional geographies of learning mathematics. Accurate transcription of recorded conversations provided me with a key to unlock the emotional geographies of learning, as seen through the lens of a child.

### **3.6. Validity and Reliability**

The three approaches to validity in qualitative research are validation as investigation, as communication, and as action (Kvale, 1989). Developing validity standards in qualitative research is



challenging because of the necessity to incorporate rigour and subjectivity, as well as creativity into the scientific process (Whittemore, Chase, and Mandle, 2001). Validity in qualitative research means the extent to which the data is plausible, credible and trustworthy, and thus can be defended when challenged (Afzal, Azeem, and Bashir, 2008). Lincoln and Guba (1985) substituted validity and reliability with the parallel concepts of 'trustworthiness', containing four aspects: credibility, transferability, dependability and confirmability. Validity and reliability are conceptualised as trustworthiness, rigour and quality in the qualitative paradigm. Engaging multiple methods, such as observation, interviews and recordings will lead to more valid, reliable and diverse construction of realities (Lincoln, and Guba, 1985).

Patton (1990) states that qualitative researchers should be concerned about the factors of validity and reliability while designing a study, analysing its results and judging its quality. Validity is normally established through consideration of three main aspects: content, criterion-related and construct validity. The first of these depends largely on sampling and careful construction of the instrument and refers to the degree to which the entirety of the phenomenon under investigation is addressed. Criterion-related validity is concerned with the comparison of the instrument and findings with an established standard to determine the correlation between measured performance and actual performance. Construct validity is associated with consideration of the proximity of the instrument to the construct in question (Long, and Johnson, 2000).

Policy and practice decisions, including those concerning education, are increasingly informed by findings from qualitative, as well as quantitative research. Qualitative data relate to the social world and the concepts and behaviours of people in it. Qualitative research

can sometimes provide a better understanding of the nature of educational problems and thus add to insights into teaching and learning in a number of contexts (Anderson, 2010). Education is by no means merely 'instruction' and 'transmission' of information. It shapes our values, beliefs and who or what we become (Boler, 1999). In schools where children are used to having their responses defined as correct or incorrect, efforts need to be made to explain that there are no right and wrong answers (Solberg, 1996).

Prior to embarking on this research process, I ensured that learners made a conscious decision to participate, get know the design and purpose of the research, as well become familiar with the actual method of data collection and analysis. One way in which I endeavoured to create a more child-centred research process was through attempting to ensure confidentiality for the respondents. Children's geographers have attempted to treat children with the same level of confidentiality as adults, although there are many specific and additional challenges in maintaining confidentiality relating to children's position in society and the spaces in which children spend their time (Matthews et al., 1998).

The presence of a carer or parent may affect the atmosphere and outcome of an interview (Brannen, and others, 1994). Children seen alone may disclose matters that they do not reveal to their family (Mauthner, 1997). The learners were approached for this study with the choice of talking to me alone about their experiences of learning mathematics and being assured of their confidentiality. The children seemed to appreciate the fact that they were being given the space to speak privately. Privacy and confidentiality are important ethical issues in any research, especially in relation to the power imbalance between children and adults. Children's choice to participate in the research is of paramount importance. It was made clear at all times

that they were free to decide whether or not to continue with the process.

Verification is the process of checking, confirming, making sure and being certain. In qualitative research, verification refers to the mechanisms used during the process of research to incrementally contribute to ensuring reliability and validity, and thus rigour of a study (Cresswell, 1996; Kvale, 1989). Verification strategies help the investigator identify the time to continue with, stop or modify the research process, in order to achieve validity and reliability, and ensure rigour.

Without rigour, research is worthless; it becomes fiction and loses its utility. Hence, a great deal of attention is applied to validity and reliability in all research methods. It is the researcher's creativity, sensitivity, flexibility and skill in using the verification strategies that determine the validity and reliability of the evolving strategy. The investigator moves back and forth among question formulation, literature, recruitment, data collection strategies and analysis. Data are systematically checked, focus is maintained and the fit of the data and the conceptual work of analysis and interpretation are monitored and confirmed constantly. Verification strategies help the researcher identify when to continue, stop or modify the research process in order to achieve validity and reliability and ensure rigour (Morse, Barret, Mayan, Olson, and Spiers, 2002). In trying to establish validity and reliability of this study, I spent sufficient time in the field and employed multiple data collection strategies to corroborate the findings.

### **3.7. Limitations of the Study**

Limitations are matters and occurrences that arise in study which are out of the researcher's control. They limit the extensity to which a study can go, and sometimes affect the end result and conclusions that can be drawn. In addition, a limitation is a restriction on a study that cannot be reasonably discussed and can affect the design and results. Every study, no matter how well it is conducted and constructed, has limitations. One limitation associated with qualitative study is related to validity and reliability (Simon, and Goes, 2013).

The main disadvantage of qualitative approaches to corpus analysis is that their findings cannot be extended to wider populations with the same degree of certainty of quantitative analysis. This is because the findings of the research are not tested to discover whether they are statistically significant or due to chance (Atieno, 2009).

Presenting the problems or limitations encountered while collecting or analysing the data helps others better understand how the conclusions were drawn (Taylor-Powell, and Renner, 2003). Rather than simply being a physical location, the place of research influences and permeates our attempts to develop child-centred research. Each individual space and place, with its own set of social processes and power relations, impacts upon and limits attempts, as well as offers possibilities, to create child-centred research. Despite attempts to place children at the centre of research, the process is influenced by, and embedded within, both our personal situations and processes as investigators, as well as the specific spaces in which we conduct research, and all the wider familial and

institutional power relations within those spaces (Barker, and Weller, 2003). Limitations or boundaries were anticipated to arise in this research design, since the sample was small and involved a range of learning backgrounds. The initial concern about the language of communication was overcome by placing learner focus groups and selecting participants who were proficient in speaking and understanding English. Nevertheless, all participants were learners who were focused on understanding the new mathematics curriculum.

### **3.8. Ethical Considerations**

Ethics are extremely important in research practice and specifically sensitive ethical approaches need to be taken when working with children (Alderson, 1995; Matthews et al., 1998; Valentine, 2000; Aitken, 2001; Holt, 2004). All research conducted with children must be ethical, sensitive and respectful. Additionally, these young people must be protected and have exactly the same rights of withdrawal from the project, and rights over the research material they provide, than adult participants (Skelton, 2008). Ethics is concerned with a face-to-face encounter and interaction between people, and its considerations highlight the moral responsibility of one person towards and for the other. This focus establishes social justice concerns as a moral obligation, rather than charity, goodwill or convenient politics (Cohen, 2001).

Ethical codes are constructed under the assumption that norms and regulations need to be set down and agreed upon (Atweh, and Brady, 2009). These and earlier contributions to the debate about research ethics continue with growing awareness that ethical issues within child research bring their own special considerations, making

the determination of what constitutes an ethical approach to child research more challenging than ever (Hopkins, and Bell, 2008). Therefore, the methods employed during this research study were conducive to ensuring that participants were comfortable at all times, and under no duress.

When social research involves direct contact with children, it may be necessary to face ethical questions that are avoided when the research is indirect or involves adults (O’Kane and Thomas, 1998). It is critical that investigators engaged in research with children and young people ponder carefully, from an ethical perspective, their personal convictions, world view and commitment to improving the circumstances of the children and young people they work with (Hopkins, and Bell, 2008). Research involving children is to their benefit and should be supported, encouraged and conducted in an ethical manner (McIntosh, 2000). As children’s rights exist in the moment when research interests and children’s everyday lives intersect, continuing throughout the research process and beyond, it is critical for research ethics guidelines to reflect human rights principles that also incorporate special considerations reflected within children’s rights instruments (Bell, 2008).

Young people’s protection, both of themselves and also of their rights of withdrawal and over the research material they provide should be central, not peripheral. In such a way, effective investigation that can bring about positive change for children and young people will be possible without being hamstrung by specific requirements that could reduce rather than enhance their participation in the research process (Skelton, 2008). Since this research was conducted directly with children, I was bound by an ethical duty to act in the best interests of the children at all times.

Children and adolescents may suffer harm because they have less power and access to resources than adults. Thus, strategies used to gather information among adults cannot typically be used among children without additional safeguards (Schenk, and Williamson, 2005). When working with young people, researchers have a duty to ensure the research method is appropriate and will not cause participants any physical or psychological harm (Alderson, and Morrow, 2011). Each participant should be given opportunities to refuse to take part in the project to ensure that data collection sessions involve only those who are genuinely willing to engage and offer data freely (Shenton, 2004).

Active consent refers to the use of a consent form, whereby parents or guardians are required to sign and return a form indicating their consent for their child or ward to participate in the study (Noret, 2007). An initial meeting with the principal of the school was held, whereby I clearly explained the aims and objectives of the research. The principal was also informed of this study's intention to collect data by engaging with learners from the school. Thereafter, I obtained written permission from the principal (Appendix 1) and informed consent from all participants and their parents (Appendix 2). By using pseudonyms instead of their actual names all participants were reassured of complete privacy and anonymity. Participants were further assured of confidentiality of information and it was made clear that neither the name of the school, nor the identity of the participants, would be revealed at any stage of the research process. Permission was sought from participants before any recordings of data were carried out. They were all informed that taking part in the research study was voluntary and they were free to opt out at any time. Discussions and questions were clearly formulated in a language that was appropriate for all those involved

in the study. This was done to ensure there were no misunderstandings or confusion that might have caused feelings of anxiety or embarrassment.

### **3.9. Conclusion**

A description of the participants, the context of the study and the methodology utilised in data collection and analysis were presented in this chapter. I have further outlined the ethical considerations adhered to in the study. The next chapter will highlight the findings of the research study.



## Chapter four

### Presentation and discussion of findings

#### 4.1. Introduction

This chapter presents and discusses data that were gathered in the current study. Qualitative research and the method of choice engaged in during this study involved the collection, analysis and interpretation of data that were not easily reduced to numbers (Anderson, 2010). The idea is to examine the meaningful and symbolic content of qualitative data (Taylor, and Gibbs, 2010). The data revealed emerging themes that provided responses to the three research questions: 1. What are schoolchildren's emotional experiences of learning mathematics? 2. What contextual factors influence schoolchildren's emotional experiences of mathematics learning?

3. How do schoolchildren negotiate these contextual factors?

These themes comprise the resources that enabled me to unravel the emotional geographies of the children who participated in the research.

The analysis of qualitative data involves the identification, examination and interpretation of patterns and themes in the textual data, and determines how they help answer the research questions at hand. The theoretical lens through which the researcher approaches the phenomenon, the strategies that the researcher uses to collect or construct data, and the understanding that the investigator has about what might count as relevant or

important data in answering the research questions are all analytical processes that influence the data (Thorne, 2000). Employing the critical theory as my theoretical lens, I analysed the data generated from this study in response to the research questions outlined above.

Interview scripts, field notes and observations provided a descriptive account of the study for the purpose of data analysis. The process of content analysis in this study involved identifying themes and categories that emerged from these data (Silverman, 2006). What follows is a discussion of the main ideas arising out of the data analysis.

#### **4.2. The resilience of schoolchildren in a context of confusion and frustration**

In this section, I present and discuss data that addresses the first key research question: What are schoolchildren's emotional experiences of learning mathematics?

Questions were used as a guide to steer the researcher in the direction of gathering information-rich data during critical conversations with the children. In response to the question: 'How do you feel about learning mathematics now that a new curriculum has been introduced?' it was found that the majority of participants could not discern any major differences from the previous curriculum. However, all of them agreed that the workload was heavier with the new curriculum. While most of the syllabus content was familiar, some mathematical concepts, processes and methods posed a challenge. The following narrative captures the response of one participant:

**'It is not simpler to understand. We are using different methods to add and subtract ... we are not familiar with all these new methods ... especially the breaking down methods.'** (Sara, aged 12, grade six.)

A further analysis of findings in light of the above extract revealed a consensus among participants about the workload required of them by the new curriculum.

**'Maths is much more difficult.'** (Tasha, aged 12, grade six.)

**'No, it is harder.'** (Thando, aged 12, grade six.)

Another participant revealed that while most of the syllabus content was familiar to them, some mathematical concepts, processes and methods posed a challenge:

**'Sometimes, no matter how hard I try, I don't understand certain concepts, but I will keep trying.'**

(Andiswa, aged 11, grade five.)

The above narratives are indicative of challenges faced by schoolchildren in the light of curriculum changes and their resilience and ability to persevere in the face of adversity. Difficulty in understanding new methods and content is a challenge to them. The social systems (family, school and community), play a major role in enhancing the inherent resilience potential of individuals (Thomsen, 2002). Resilience is shown by one child who emphasises that in spite of the difficulty, she will keep on trying to overcome these challenges. It also becomes apparent that children are adept at assessing the situation that is presented to them with regards to education and the curriculum. This resonates with the contributions

of the new geographies and social studies wherein Holt and Holloway (2006) have found that children, as social agents, have valuable perspectives concerning their learning experiences. Ironically, where younger pupils may be perceived as having limited horizons and a poor grasp of what is important, they seem to be committed to creating their own structures where their own interests are at the forefront (Wyness, 2003).

In line with my research agenda to explore the emotional geographies of children, in the next section this study presents the factors revealed in the data analysis that impact on the child participants' learning and the ways in which they navigate these factors to improve their results. This study will further outline the learning spaces of children at home, followed by their experiences of learning on their own.

Based on recommendations from all stakeholders, the Department of Basic Education proposed the Curriculum and Assessment Policy Statement (CAPS). The department emphasised that the CAPS was not a new curriculum, but an improvement on the previous one. The implementation of the new curriculum brings with it a concise national guide for teachers so as to level out the content being covered by children who are learning mathematics at all schools in the country. The provision of workbooks and CAPS-aligned textbooks has been designed to ease the workload of teachers, resulting in an enhanced quality of teaching and learning in the classroom. Children who change from one school to another during the course of their schooling careers are no longer disadvantaged in any way, since the learning content is uniform at all schools. The CAPS was introduced by the Department of Basic Education primarily to address teachers' concerns that the existing national curriculum was too broad and cumbersome to implement. One of

the benefits is that teachers will spend more time in the classroom instead of attending to administration and other office-based duties, as the existing curriculum dictates (Mohlala, 2011). Teachers welcomed the attempt to streamline and package the curriculum so that struggling teachers had a clear plan of delivery. Its simplicity and precision makes it easy for new and inexperienced teachers to follow. However, there are challenges that have yet to be addressed and overcome while the new curriculum is being implemented.

Children are understood to be competent and so entitled to have the right to participate in society and have a say in issues that affect their lives (Skelton, 2008). The participants in this study were able to identify factors that impacted on their learning and were critical of their learning spaces. The emerging themes from the data collected were indicative of Ansell's theory (2008) that a child's perception of space, which may appear neutral to some observers, is coloured by deep-seated emotions and encounters that he or she may have experienced. The issues of language barriers, overcrowded classrooms and disruptive co-learners were highlighted by participants as factors that impacted negatively on the learning process at school.

#### **4.2.1. The resilience of schoolchildren in a context of confusion and frustration: at school**

Given the undemocratic nature of schooling and the relentless pressure on pupils to achieve, where students are given fairly limited access to the dominant communication channels in school, they are very likely to concentrate on areas where they have some knowledge and where they believe they are likely to have some

success (Wyness, 2003). There is a powerful linguistic dimension to our emotional awareness, attributions of meanings and interpretations (Boler, 1999). Language is central to socialisation both as a 'symbolic system that encodes local and social structure' and as a 'tool for establishing social and psychological realities' (Ochs, 1998). The language of teaching and learning at the school where the research was conducted is English, which is not the home language of most of the learners. Struggling with confusion and frustration can lower self-esteem and confidence, and in turn affect other areas of learning. Upon closer scrutiny of the narratives in this study, it became apparent that the issue of the language of teaching and learning not being an indigenous language did create a sense of isolation and uncertainty. One participant, whose home language was Isizulu, expressed the following:

**'Maybe if we are taught in Zulu, I will understand better and my results will be better.'** (Thando, age 12, grade six.)

Resilience is the ability to cope and bounce back in the face of significant adversity. Again, the issue of understanding is highlighted. In addition to understanding concepts and methods, language understanding becomes a barrier. However, like the previous child (Thando), Andiswa's response suggests a determination and resilience among this group of participants to be undefeated by these challenges.

**'I understand English, so I don't want the language to change.'** (Andiswa, aged 11, grade five).

From the above two excerpts, it is evident that age, gender, class, ethnicity and sexuality cut across the ways in which people experience youth in the same society (Skelton, and Valentine,

1998). These findings also echo the existing findings of Horton and Kraftl (2005), which emphasise that 'the diversity of children's interests, behaviour, attitudes and backgrounds, complicates standardised approaches to delivery of the curriculum'.

Adding to the above, one negative factor cited by all participants was the presence of large numbers of children in the classroom, which led to frustration during mathematics learning. During summer, participants also experienced extreme heat and poor ventilation in the overcrowded classes. One of the participants highlighted the effects of overcrowding on her ability to retain her focus in class:

**'I feel crowded ... it becomes claustrophobic. Maybe it will be better if there are lesser children.'** (Sara, aged 12, grade six.)

Other learners echoed similar views on the presence of large numbers of children in their classes:

**'We can't focus...there is a lot of disturbance.'** (Andiswa, aged 11, grade five.)

**'It is too hot in this class ... there are too many children.'** (Rose, aged 10, grade four.)

The data gathered from the child participants on the issue of overcrowding in classrooms is conducive to the findings of Meador (2005), who advocates that learning in an overcrowded classroom can be frustrating, overwhelming and stressful. An overcrowded classroom presents challenges that are nearly impossible to overcome. It has a tremendous negative impact on the quality of education. More students provide more opportunity for personality

conflicts, tension and general disruptive behaviour. Struggling students fall further behind and discipline problems arise during learning. The excerpts below reveal how discipline in overcrowded classrooms influences children's experiences of mathematics learning.

As a result of overcrowded classrooms, poor discipline can become an issue which impacts negatively on teaching and learning. One child participant had this to say:

**'They talk in class...I can't concentrate ... they play fools.'** (Candice, aged 11, grade five.)

Another learner agreed with the above view:

**'The children make too much noise ... we can't hear clearly ... Sometime I feel like hitting them.'** (Tim, aged 10, grade four.)

**'The children don't fright for some teachers ... they fight in class.'** (Oscar, aged 10, grade four.)

The above views of schoolchildren resonate with the existing literature by Burchfield (1993), which accentuates the duties of the teacher to attend not only to the cognitive domain but to children's social, emotional and physical needs as well. We should not ignore the complexity of children.

As children develop physical abilities, cognitive skills and social relationships, they also build geographies that synthesise images of the self with knowledge of the world beyond (Aitken, 2001). During conversations with participants, learners emphasised the



importance of ignoring the noise and disruption around them and focusing on the issue of learning:

**'Just concentrate on the work.'** (Candice, aged 11, grade five.)

**'Try to focus and ignore them.'** (Oscar, aged 10 , grade four.)

**'We try to focus and ignore the noise.'** (Allen, aged 12, grade six.)

These findings can be linked to the work in children's geographies that has at its heart the appreciation that children see, imagine and use space in a different way to adults (Yarwood, and Tyrrell, 2012). The recognition by O'Connor (1998) of the child as a complex human being with physical, intellectual, emotional and spiritual needs, lends itself to data concerning the ability of child participants to work around contextual factors in order to improve their learning. As outlined by the participants of this research: overcrowding leads to noise, noise results in fighting and there is an apparent lack of teacher respect. These factors compound the confusion children already face, such as language, new concept learning and new method learning in the subject of mathematics. However, the data indicated — like with methods, language and concept learning, that these children are resilient in their learning. This resilience is shown in how they learn at school, but more so in how they learn at home — a space that throws up similar challenges as those at school.

#### **4.2.2. The resilience of schoolchildren in a context of confusion and frustration: at home**

Qualitative analysis deals in words and is guided by fewer universal rules and standardised procedures than statistical analysis. Qualitative modes of data analysis provide ways of discerning, examining, comparing and contrasting, and interpreting meaningful patterns or themes (Berkowitz, 1996). This part of the analysis of findings involved an elaboration of learners' individual backgrounds and of social affordances that might be related to learners' different perceptions and orientations (Vahasantanen, and Elelapelto, 2009).

Child participants were asked whether they liked working on their own at home. Some of the participants highlighted that they were very happy to work at home instead of school, since there was no disturbance from unruly children and less noise than in the classroom. The following responses were expressed:

**'Yes ... we have more time to try on our own. There is no noise.'** (Rose, aged 10, grade four.)

**'Yes ... there is no disturbance like in class.'** (Candice, aged 11, grade five.)

**'Yes ... it is better at home.'** (Thomas, aged 11, grade five)

It is evident from the above extracts that these learners valued the opportunity to try on their own, at their own pace at home, having more time and fewer restrictions.

The data also revealed a feeling among other participants that children sometimes find it difficult to focus on homework at home because they have interference from younger siblings who are noisy and disruptive.

**'My smaller brother is very noisy ... he interferes with me when I am doing my homework.'** (Tasha, aged 12, grade six.)

**'I work in the dining room ... my small sister makes noise and disturbs me.'** (Sara, aged 12, grade six.)

**'I do homework in the kitchen ... my brother runs around and troubles me.'** (Tasha, aged 12, grade six.)

Previous researchers have found that children are able to discuss topics that have significance in their day-to-day lives, such as friendships, family relationships, moving home, schools and death (Mauthner, Mayall, and Turner, 1993). The use of participatory techniques quickly allowed children to take over the direction of the interview, once they had grasped the essentials of the activity, and in many cases it prompted a great deal of verbal comment and discussion, which followed the children's concerns but was clearly relevant to the research agenda (Thomas, and O'Kane, 1998). Having each member of the group contribute to the discussion prompted the children to speak freely about issues that concerned them, especially their home situations. They seemed to value the opportunity to talk without inhibition and listen with interest to the stories their peers had to tell. It was through this breakthrough that we were able to engage in continuous conversation about pertinent issues, such as learning space at home and assistance with homework.

The theme of the effect of diversity in socio-economic backgrounds of children on learning mathematics is generated from the theory that the diversity of children's interests, behaviours, attitudes and backgrounds complicates standardised approaches to delivery of curriculum (Horton, and Kraftl, 1998). Interpretation and understanding of learning content is influenced by the way in which a learner is able to consolidate what is being taught at school, within the confines of his or her home. Most participants expressed concern that their homework was done in small, cramped spaces such as the kitchen, bedroom, or dining area. One participant indicated that the only space available to do homework was in the garage.

**'The house we have is very small. I do homework in the garage ... that's where we have a table.'** (Thomas, aged 11, grade five.)

Another three participants expressed a desire to have a quiet, comfortable and private place to study. Sara, a 12-year-old girl in grade six had the following to say:

**'If I had a study with peace and quiet, where I could give all my attention to my studies —results in all subjects will improve.'**

**'If I had a desk in my room, I will be able to work better at home.'** (Candice, aged 11, grade five.)

**'Yes, if there wasn't too much noise ... I will do better.'** (Tim, aged 10, grade four.)

From the above extracts, it becomes evident that the learning space at home is a major contributing factor influencing the way in which children learn. This is in line with what Ansell (2008) and Wood and Beck (1989) found in their studies. Like the children in their studies, the child participants in this one make a very strong statement that a peaceful and quiet working space is needed in order for them to be successful in carrying out the expectations of the CAPS documents regarding mathematics learning. It is further evident why some children do not successfully comprehend or complete homework tasks or perform badly in fulfilling those tasks. Among my participants, distraction by siblings was a major contributing factor that impeded performance in completing homework tasks.

Bragg (2007) stated that the multiple voices of students are significantly influenced by their emotional capacity, ethnicity, sexuality, social class and geographies. The emerging theme, that learning is shaped by the personal circumstances of learners, is drawn directly from this concept. It is not possible to dissociate the one from the other. Emotions experienced by the learner in his or her home environment lend themselves directly to the manner in which information is received by the learner in the teaching and learning process.

Sara, a 12-year-old grade six learner, cited the following as factors that hampered the successful completion of homework:

**'There's no one to help me. I go to vernacular classes and I start late — after supper. My sister is in a high school, so she can't help because she has too much of her own homework. My parents come late from the shop ... so I have to help my smaller sister with her homework, and then do my work.'**

**'My mother and father come late ... my sister helps me.'**  
(Allan, aged 12, grade six.)

**'There's no one to help me...I live with my grandmother and she is too old to help me.'** (Akhona, aged 10, grade four.)

A few of the participants had an older sibling or other family member to assist with their homework.

Neville, an 11-year-old grade five boy, had this to say:

**'My mother helps me ... but sometimes she doesn't understand some of the new work ... I also ask my sister for help sometimes.'**

Oscar, aged 10, grade four: **'My mother and father help me.'**

Thando, aged 12, grade six: **'My brother and sister help me.'**

Thomas, aged 11, grade five: **'My mother helps me with homework.'**

From the above excerpts, it becomes apparent that very few of the participants had anybody to assist with their homework. Some of the reasons cited for the lack of support at home were: children live with grandparents who are illiterate, because parents are either deceased or working away from home; children live with parents who work long hours, come home late and are too tired to render

any assistance; parents are not familiar with the learning content of subjects since the change in the curriculum. The absence of reinforcement at home of the learning content being taught at school is a shortfall that hampers the ability of the child to reach his or her maximum potential.

### **4.3. Conclusion**

Although the findings of this study emerge from a relatively small dataset and from schoolchildren's subjective narratives, they do highlight some important issues. Acceptance into the world of children is especially difficult because of obvious differences between adults and children in terms of cognitive and communicative maturity, power (both real and perceived) and physical size (Corsaro, 1992). As a researcher, I did not have much insight into or prior knowledge about the home situation of participants. The manner in which they volunteered information, with no inhibitions, provided me with a clear understanding and valuable data about their social backgrounds. By creating a situation where children were given the space and opportunity to express themselves about issues that concerned their lives, this research was able to discover much from the participants. Progress was made from data collected into a form of explanation, understanding and interpretation of learners and situations investigated. The idea was to examine the meaningful and symbolic content of the data.

The children were able to articulate their views concerning their emotions about learning mathematics, interpret the social structures and/or factors that impacted on their learning, and put forth their strategies on how to negotiate these factors. It emerged from the data that there was confusion and frustration, but also resilience among schoolchildren who were learning mathematics.

The main theme was that of resilience, with data showing not only how confusion and frustration make mathematics learning difficult, but also how the children rise above these challenges.



# **Chapter five**

## **Conclusion**

### **5.1. Introduction**

This final chapter encapsulates salient points that are fundamental to the study. A brief expression of the main ideas and relevant details that unfolded from the research will be presented, as will be its implications and limitations, followed by a synthesis of pivotal issues, interspersed with the researcher's personal thoughts and reflections.

### **5.2. Synopsis of the study and research questions**

The key purpose of this research was to investigate the emotional geographies of schoolchildren who were learning mathematics. Much research has been conducted within the education system involving adults, but there has not been much investigation into the everyday geographies of schoolchildren from their perspective. Much of this research has been criticised for conceptualising children as incompetent, unreliable and incomplete, as mere objects to be studied (Hill et al., 1996; Oakley, 1994). Children have rarely had the opportunity to speak for themselves in research. Rather, their lives have been explored through the voices of adult proxies (Christensen, and James, 2000; Jones, 2000). Hence, this study provided a platform for schoolchildren to narrate their stories concerning their emotional experiences of learning, the challenges they encounter while learning and how they negotiate these.

A review of research questions forms an inextricable part of the conclusion to this study. The findings are based on the framework of the three research questions:

- a) What are schoolchildren's emotional experiences of learning mathematics?
- b) What contextual factors influence schoolchildren's emotional experiences of mathematics learning?
- c) How do schoolchildren negotiate these contextual factors?

This research was primarily an attempt to analyse the ways in which the emotions in schoolchildren's lives were mobilised in response to curriculum changes. The focus was on the fact that children developed and maintained social practices, networks of relationships and systems of meaning that were unique to their own social and physical spaces (Corsaro, and Miller, 1992; James, and Prout, 1997). The investigation of emotions, according to Boler (1999), required acute attention to differences in culture, social class, race and gender. New Childhood Studies (James; Jenkins; and Prout, 1998) formed a significant feature of this study, which drew upon the work of Holloway and Valentine (2000) in acknowledging the diversity in children's lives in terms of their societal backgrounds. The intention to propound emphasis on children's own experiences in research is supported by other work (Ansell, 2008; Zembylas, 2008; Bragg, 2007; Boler, 1999; Corsaro, and Miller, 1992; O'Connor, 1998). These theories have been invaluable in providing detailed insights into the manner in which children negotiate the challenges of learning mathematics under the new curriculum.

In order to authenticate the reliability and validity of this study, children were actively involved in the research process and the methodology was synonymous with participants' interpretation of

their educational experiences. In order to diminish the problem of an imbalanced power relationship between the researcher and participants, they were encouraged in a manner that was collaborative and not confrontational.

Qualitative data for this study was captured by means of guided critical conversations within focus groups comprising 12 schoolchildren between the ages of nine and 12, in grades four, five and six. Narrative inquiry was the method used to allow children to tell their stories regarding mathematics learning. This research instrument was most appropriate in obtaining data to achieve the aims of the study, and it was both suitable and effective in providing answers to the research questions. The study was conducted at a primary school on the north coast of KwaZulu-Natal, where the new mathematics curriculum was being implemented.

### **5.3. Main Findings of the study**

Childhood is a valid social category of research. Many research projects have adopted the premise that children, as social actors, are competent witnesses to speak for themselves about their experiences of, and perspectives on, the social worlds in which they live (Hood, Kelley, and Mayall, 1996; James et al., 1998). This focus has led to new ways of engaging with children as the subjects, rather than the objects, of research (Hill et al., 1996; Morrow, and Richards, 1996). Participating children seemed to value the chance to engage in sustained conversations with each other and the researcher. The findings suggested that learners at Kwa Dukuza Primary School encountered diverse learning experiences of mathematics. While themes of confusion and frustration were evident during the research, a sense of optimism seemed to

emanate from the resilience exhibited by the participants. These learners appeared to be adept at working around the challenges they faced, and were able to find innovative ways to focus on their studies.

Data generated from this study was analysed using a critical theoretical lens. The findings suggested that most children had embraced the new mathematics curriculum in a positive manner, while there were some who encountered a few challenges. The structured, precise way in which the learning content is presented in the CAPS curriculum, is designed to improve the teaching and learning process in the classroom. The content of the new curriculum is not entirely new. However, the existing curriculum was extended, and in some cases more depth has been added. The specific nature of the CAPS, which indicates exactly what content is to be taught, ensures that all learners are exposed to identical learning content. Some of the participants in this study were astute enough to recognise that the new learning content was similar to the content of the old curriculum, but the workload was heavier. The children were prepared to devise their own coping strategies to overcome the challenges and proceed with their studies.

The issues of confusion and frustration around language barriers, overcrowded classrooms and discipline of learners were highlighted as contextual factors that impeded mathematics learning. The data also revealed a feeling among participants that children found it difficult to work at home because of interference from younger siblings. The children made a very strong statement that a quiet working space was needed in order to be successful in the completion of tasks designed within the CAPS curriculum for mathematics learning.

However, the study found that children were motivated enough to negotiate the factors which presented as challenges to their mathematics learning, and forged ahead with their studies. The emerging theme of the resilience of these children was brought out in their expressions of determination to succeed in their learning.

#### **5.4. Implications of the study**

Introduction of the CAPS is an attempt by the Department of Basic Education to improve on results (especially in mathematics and science) of learners at South African schools. It is intended that the new curriculum will be more accessible and suitable to all children.

It is important to provide adequate training for teachers and a learning environment that is conducive to teaching and learning, in order to reap the benefits of the new curriculum. Researchers of children's geographical issues explore complex spatial issues with children and young people, including: neighbourhood engagement; transnational migration experiences; experiences of poverty; and doing research with children in their own living space (Hopkins and Bell, 2008). Bearing in mind that children are the central focus of teaching and learning, an extensive investigation into the experiences and challenges encountered by children during their learning will provide useful guidelines when the school curriculum is being changed or upgraded. I have highlighted some of the different facets that form an integral part of the children's lives, namely, the challenges they face at home and at school. A further in-depth investigation into children's experiences needs to be conducted by the designers of school curricula. This information could be used to formulate a curriculum that meets the needs of schoolchildren in a way that will improve their learning. This could be one of the strategies that can be used to improve results at school level.

## **5.5. Limitations of the study**

This study was limited in that the participants were comprised of learners from one school only. There would have been a greater variety of participants, competency levels, environments and teaching styles, had this researcher included children from other schools in the study. The inclusion of interviews with teachers and parents could have further enhanced its quality.

The children who formed the sample in my study were limited to learners from one phase only. This study could have been extended to the senior phase and the further education and training phase at secondary school level, in order to garner more in-depth information about the learning experiences of children. Since children at each phase of learning deal with challenges in a different manner, a more varied sample would have provided a greater scope for generalisation of the findings of the study.

## **5.6. Researcher reflections and concluding thoughts**

As a researcher, I did not have much insight into the home situation of the children in the study. The manner in which they volunteered information, with no inhibition, empowered me with clear understanding and valuable data about their social backgrounds. By creating an atmosphere that allowed them the space and opportunity to express themselves about issues that concerned their lives, I gleaned information-rich data that enabled me to progress to the next stage of my research.

The journey through this study was a learning experience for me as a researcher. While teaching has become a mundane activity and

contact sessions with children are taken for granted, my research has awakened within me a renewed sense of insight into the lives of the children I encounter and interact with daily. This experience deeply enriched my knowledge and provided a platform for me to view education from a critical perspective.

The study has brought to light the dimension there is no clear-cut, obvious solution to addressing the issues of achieving success in teaching and learning. It indicates that children's emotions cannot be detached from the process of teaching and learning. When contemplating to improve the quality of results at school, it is imperative to consider what children's perspectives are and how their experiences and emotions impact on their learning. As exemplified through this study, the domain of the school curriculum is complex and cannot be disconnected from the personal lives of the learners. Changes in the curriculum must be linked to the underlying challenges faced by learners in order for successful results to be attained. This study has implored that schoolchildren are constantly able to identify challenges to their learning and in their own ways, try to find solutions to overcome these challenges.

What may appear on the surface to be a negative attitude towards schoolwork, might be a consequence of a range of contextual factors that are impeding successful interpretation and understanding of the learning content. We often view children as being lazy or disinterested, especially when their marks are low, but here we see youngsters who identify and try to overcome contextual challenges, for example, the learner who works in a garage. Hence, the success of teaching can be improved, not simply by changing a school curriculum, but by asking children about challenges they face and what strategies they use to overcome them.

## References

- Afonso, E., and Taylor, P.C. (2009). *Critical auto-ethnographic inquiry for culture-sensitive professional development. Reflective practice*. Australia.
- Ahn, J. (2010). I'm not scared of anything: emotion as social power in children's worlds. *Childhood*. Korea: University of Seoul.
- Aitken, S. (1994). Geographies of young people: *The morally contested spaces of identity*. San Diego University Psychology Press.
- Aitken, S. (2001). Fielding diversity and moral integrity. *Ethics, place and environment*. London: Routledge.
- Alderson, P. (1995). Listening to children: *Children, Ethics and Social Research*. London. Barnardos.
- Alderson, P., and Morrow, V. (2011). *The ethics of research with children and young people: A practical handbook*. London: Sage.
- Anderson, C. (2010). *Presenting and evaluating qualitative research*. USA: National Institute of Health.
- Anderson, K., and Smith, S. (2001). 'Editorial: *Emotional Geographies*.' Transactions of the Institute of British Geographers. Britain: Institute of British Geographers.



Ansell, N. (2008). *Young people, place and identity*. New York: Routledge.

Ansell, N. (2009). *Descaling children's geographies*. United Kingdom: Sage.

Ary, D., Jacobs, L.C., Razavieh, A., Sorenson, C. (2010). *Introduction to research in education*. USA: Wadsworth.

Asghar, J. (2013). *Critical paradigm: A preamble for novice researchers*. Jeddah, Saudi Arabia.

Atieno, O. P. (2009). *An Analysis of the Strengths and Limitations of Qualitative and Quantitative Research Paradigms*. Kenya.

Atweh, B., and Brady, K. (2009). *Socially response-able mathematics education*. Australia: Eurasia Journal of Mathematics, Science and Technology Education.

Ball, S. J. (1994). *Education Reform: A critical and post-structural approach*. Philadelphia: Sage.

Barker, J. And Weller, S. (2003). *"Is it fun?" developing child-centred research methods'*, International Journal of Sociology and Social Policy. Vol. 23. Brunel University. Uxbridge.

Beatty, B. R. (2000). The emotions of educational leadership: Breaking the silence. *International Journal of Leadership in Education*. Montreal, Canada: Taylor and Francis Ltd.

Beck, R. and Wood, D. (1989). *Individual dimensions of cognitive imagery*. London.

Bell, N. (2008). Ethics in child research: Rights, reason and responsibilities. *Children's Geographies*. Glasgow, Scotland: University of Glasgow.

Berkowitz, S. (1996). *Using qualitative and mixed method approaches*. Washington

Biddulph, M. (2011). *Young people's geographies and the school curriculum Geography*. London: Routledge.

Boler, M. (1999 ). *Feeling power: emotions and education*. New York: Routledge.

Boyden, J., and Ennew, J. (1997). *Children in focus: A manual for participatory research with children*. Stockholm: Sage.

Bragg, S. (2007). *Consulting young people: A review of the literature*. London:

Brannen, J. et al. (1994). *Young people, health and family life*. Buckingham: Open University.

Bredekamp, S. (1993). The relationship between early childhood education and early childhood special education: Healthy marriage or family feud? *Early Childhood Special Education in the Developmentally Appropriate Classroom*.13 (3): 258-73. University of Pittsburgh, Pennsylvania.

Bruner, J. (1996). *The culture of education*. Cambridge: Harvard University Press.

Bryman, A., and Burgess, R. D. (Eds.). (1994). *Analysing qualitative data*. London and New York: Routledge.

Burchfield, D. (1993). Teacher at Brownsville Elementary School in Albermarle County.

Burgess, R. G. (1984). *In the field: an introduction to field research*. London: Routledge.

Burridge, N. (2009). *Unfinished business: teaching for reconciliation in Australian schools*. Germany: Saarbrücken.

Cahill, C. (2007). *Participatory Action Research*. London: Routledge.

Carspecken, P. F. (1996). *Critical ethnography in educational research*. London: Routledge.

Chen, J., Moran, S., and Gardner, H. (2009). *Multiple intelligences around the world*. San Francisco: Jossey-Bass.

Chataika, T., McKenzie, J.A., Swart, E. (2012). *Access to education in Africa: Responding to the United Nations Convention on the rights of persons with disabilities*. Stellenbosch University, South Africa: Taylor and Francis.

Christensen, P., and James, A. (2002) *Research with children: Perspectives and practices*. London: Falmer Press.

Churchill, L.R. (1982). *The teaching of ethics and moral values in teaching some contemporary confusions*. University of North Carolina.

Clark, A. And Moss, P. (2001). *Listening to young children: The mosaic approach*. London: National Children's Bureau.

Cohen, R. (2000). *Ethics, exegesis and philosophy: Interpretations after Levinas*. Cambridge University Press.

Cole, A. G. (2010). *Adolescent geographies in the classroom; Interactions with place and community-based education*. Albuquerque, New Mexico: University of New Mexico. Retrieved from: [https://repository.unm.edu/bitstream/handle/1928/10859/gahl\\_cole\\_dissertation.pdf?sequence=1](https://repository.unm.edu/bitstream/handle/1928/10859/gahl_cole_dissertation.pdf?sequence=1)

Collins, D., and Coleman, T. (2008). *Social geographies of education: Looking within and beyond school boundaries*. New Zealand: University of Auckland.

Connelly, M., and Clandinin, D. J. (1990). Stories of experience and narrative inquiry: *Educational Researcher*. 19(2), 2–14. America.

Corsaro, W. A. (1992). Interpretive reproduction in children's peer cultures. *Social Psychology Quarterly*. 55(2), 160–177. Indiana University, Bloomington. USA.

Corsaro, W. A. (2003). *We're friends right? Inside kid's culture*. Indiana University, Bloomington. USA.

Corsaro, W. and Miller, P. (1992). *Interpretative Approach to Children's Socialization*. San Fransisco: Jossey Bass Publishers.

Cresswell, T. (1996). In Place/ Out of Place: *Geography, Ideology and Transgression*. Minneapolis: University of Minnesota Press.

Darbyshire, P., Macdougall, C. and Schiller, W. (2004). Multiple Methods in Qualitative Research with Children: more insight or just more? *Qualitative Research*. 5(4), 417–436. University of South Australia.

Davidson, J., Smith, M., and Bondi, L. (Eds.) (2007). *Emotional geographies*. Hampshire, England: Ashgate.

Deem, R., Brehony, K. J., and Heath, S. (1995). *Active citizenship and the governing of schools*. Suffolk, Britain: Open University Press.

Docherty, S. and Sandelowski, M. (1999). *Focus on Qualitative methods: Interviewing children*. University of North Carolina.

Engelbrecht, P., Oswald, M., and Farlin, C. (2006). Promoting the implementation of inclusive education in primary schools in South Africa. *British Journal of Special Education*, 33(3): 121–129. Pretoria, South Africa.

Ernest, P. (1991). *Mathematics, education, and philosophy: an international perspective*. London: The Falmer Press.

Farroukhi, F., Best, J. W., and Kahn, J. V. (2012). *Rethinking convenience sampling: Defining quality criteria*. Iran: University of Tabriz.

Feldman, A. (1992, April). *Practical theories, practical paradigms and teacher education*. San Francisco. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

Fendler, L. (2001). Educating Flexible Souls: The construction of subjectivity through developmentality and interaction. In K. Hultqvist and G. Daglberg (Eds.), *Governing the child in the new millennium* (pp. 119–142). New York: Routledge Falmer.

Fielding, M. (2004). Transformative approaches to student voice: Theoretical underpinnings, recalcitrant realities, *British Journal of Educational Research*, 30(2), 295–311. University of Sussex, UK.

Flecha, R., and Gomez, J. (2004). *Participatory paradigms. Researching 'with rather than on'*. In Crossan, B., Gallacher, J. and Osborne, M. (Eds.). *Researching widening access to lifelong learning*. London: Routledge Falmer.

Freid, R. (1996). *The passionate teacher*. Boston: Harvard Education Publishing.

Gallagher, M. (2008). 'Power is not an evil'. Rethinking power in participatory methods, *Children's geographies*. 6(20), 137–150. University of Edinburgh, UK.

Georgescu, D. (2013). *Zimbabwe Curriculum Review*. Concept paper. Harare.

Giroux, H. (1988). *Critical theory and the politics of culture and voice: Rethinking the discourse of educational research*. In Sherman, R. R., and Web, R. B. (Eds.) *Qualitative research in education: Focus and methods*. New York: Psychology Press.

Gómez, J., Latorre, A., Sánchez, M., and Flecha, R. (2006). *Metodología Comunicativa Crítica [Critical Communicative Research]*. Barcelona, Spain: Hipatia.

Goodfellow, A. (2012). Looking through the learning disability lens: Inclusive education and the learning disability embodiment. *Children's geographies*, 10(1), 67–81. McMaster University, Ontario, Canada.

Greig, A., and Taylor, J. (1999). *Doing research with children*. London: Sage.

Griffiths, M. (1995). Making a difference: feminism, post-modernism and the methodology of educational research. *British Educational Research Journal*, 21(2), 219–235. University of Nottingham.

Hargreaves, A. (2000). *Mixed emotions: Teachers' perceptions of their interactions with students*. Canada: University of Toronto.

Hargreaves, A. (2008). *Emotional geographies of teaching*. New York: Columbia University.

Hemming, P. J. (2007). *Mixing qualitative research methods in children's geographies*. Leeds: University of Leeds.

Henning, E. (2005). *Finding your way in qualitative research*. Pretoria: Van Schaik.

Herda, E.A. (1999). *Research Conversations and Narrative: A Critical Hermeneutic Orientation in Participatory Inquiry*. University of San Francisco.

Hill, M., Laybourn, A., and Borland, M. (1996). Engaging with primary-aged children about their emotions and well-being: methodological considerations. *Children and society*, 10(2), 129–144. Glasgow Centre for Child and Society.

Holloway, S.L. and Valentine, G. (2000). *Children's geographies: Playing, Living, Learning*. London. Routledge.

Holt, L. (2004). The 'Voices' of children: De-centring and empowering Research Relations: *Children's Geographies*. London.

Holt, L. and Holloway, S. L. (2006). Editorial: Theorising other childhoods in a globalised world. *Children's geographies*, 4(2), 135–142. Loughborough University, UK.

Hood, S., Kelley, P. and Mayall, B. (1996). Children as Research Subjects: A risky experience. *Children and Society*, 10(2), 117–128. United Kingdom.

Hopkins, P.E. and Bell, N (2008). Interdisciplinary perspectives: *Ethical issues in child research*. New York.

Hopkins, P.E. and Pain, R. (2007). *Geographies of Age: Thinking Rationally*. New York.

Horton, J., and Kraftl, P. (2005). For more-than-usefulness: Six overlapping points about children's geographies. *Children's Geographies*, 3(2), 131–143. London.

Hunter, D. (2014). *Engaging curriculum: A foundation for positive school culture*. [blog]. Retrieved from: <http://www.bellevue.school.nz/Home/>



Humphreys, W.L. and Kramp, M.K. (1995). *Narrative, Self-assessment and the habit of Reflection*. University of Tennessee. Knoxville.

James, A. and Prout, A. (1997). *A New Paradigm for the sociology of Childhood: provenance, promise and problems*. London: Routledge.

James, A., Jenk, C. And Prout, A. (1998). *Theorising Childhood*. Cambridge: Polity.

Jansen, J. D. (1998). *Curriculum reform in South Africa: A critical analysis of Outcomes Based Education*. South Africa: Carfax Publishing Co. (Taylor and Francis).

Jeffrey, C., and Dyson, J. (2008). *Telling young lives: Portraits in global youth*. Philadelphia: Temple University Press.

Jesani, A., and Barai, T. (2005). *Ethical guidelines for social science research in health*. India: Centre for Enquiry into Health and Allied Themes.

Johnson, M. (2007). *Subject to change: New thinking on the curriculum*. London: Association of Teachers and Lecturers.

Jones, O. (2000). *Melting geography: Purity, disorder, childhood and space*. In Holloway, S. and Valentine, G., (Eds.) *Children's Geographies: Playing, living, learning*. London: Routledge

Kalton, G. (1983). *Introduction to Survey Sampling*. Beverley Hills: Sage Publications.

Katz, C. (2004). *Growing Up Global: Economic restructuring and children's everyday lives*. University of Minnesota Press.

Kellet, M. (2005). Children as active researchers: *A new research paradigm for the 21<sup>st</sup> century?* ESRC National Centre for Research Methods.

Kellner, D. (2008). *New Media and New Literacies: Reconstructing education for the new millennium*. In Lievniour, L. A. and Livingstone, S. (Eds.) *Handbook of new media: Social shaping and consequences of ICTs*. London: Sage Publications.

Khan, J. A. (2008). *Research Methodology*. New Delhi: APH Publishing Corporation.

Kincheloe, J. L. and McLaren, P. (2002). *Rethinking critical theory and qualitative research*. In Zou, Y., and Tur E. T. *Qualitative approaches to the study of education*. Lanham, MD: Rowman and Littlefield.

Kvale, S. (1996). *An introduction to qualitative research interviewing*. California: Sage.

Kvale, S. (1996). *Issues of Validity in Qualitative Research Interviews*. Institute of Psychology, Aarhus University. Denmark.

KZN Department of Basic Education (DoE). (2001). Education White Paper 6: *Special Needs Education: Building an Inclusive Education and Training System*.

Lemon, N. (2006). *Using visual narrative for reflection*. University of Melbourne.

Lincoln, Y.S. and Guba, E.G. (1985). *Naturalistic Inquiry*. Newbury Park. California: Sage Publications.

Long, T. and Johnson, M. (2000). *Rigor, reliability and validity in quality research*. California: Harcourt Publishers Ltd.

Lupton, D. (1998). *The emotional self: a sociocultural exploration*. London: Sage.

MED Social Justice Education Cohort Programme. *Ethical issues in research*. University of Kwazulu Natal, Durban, South Africa.

MacIntyre, A. (2003). *A short history of ethics: A History of Moral Philosophy from the Homeric age to the 20<sup>th</sup> century*. Britain.

Mahomed, H. (2004). *Challenges in curriculum transformation in South Africa*. Fifth Annual Educationally Speaking Conference, 15–18 May 2004, Birchwood Hotel, Boksburg, Gauteng, South Africa.

Mansouri, F. (2007). *Cultural diversity, social justice, intercultural relations, Middle Eastern studies*. Australia: Deakin University.

Marshall, D. J. (2013). *A children's geography of occupation: Imaginary, emotional, and everyday spaces of Palestinian childhood*. University of Kentucky.

Mason, J. (2002). *Qualitative Researching*. (3rd Ed.). London: Sage.

Matthews, H. (1995). Culture, environmental experience and environmental awareness: *Making sense of young Kenyan children's view of place*. The Geographical Journal. New York.

Matthews, H., Limb, M. and Taylor, M. (2000). *The street as thirdspace*. In Holloway, S. and Valentine, G. (Eds.) *Children's Geographies: Playing, living, learning*. London: Routledge.

Mauthner, M., Mayall, B. and Turner, S (1993). *Children and food at primary school*. London: SSRU/Science Education, Institute of Education.

Mauthner, M. (1997). Methodological aspects of collecting data from children: Lessons from three research projects. *Children and society*, 11, 16–28. London.

Mayall, B. (2002). *Governance of children's everyday spaces*. London: Falmer.

Meador, E. (2005). The making of marginality: *Schooling for Mexican immigrant girls in rural the south west*. California State University.

Miles, S. and Singal, N. (2010). The education for all and inclusive education debate: Conflict, contradiction or opportunity? *International Journal of Inclusive Education*, 14(1), 1–15. University of Cambridge.

Mohlala, T. (2011). Revamped assessment methods in 2012. *Mail and Guardian*. South Africa.

Morrow, V. And Richards, M. (1996). *The Ethics of Social Research with Children: An overview*. Children and Society. London.

Morse, J. M. (1994). Emerging from the Data: Cognitive processes of analysis in qualitative inquiry. In *Critical Issues in Qualitative Research*, 23-43. Thousand Oaks, California: Sage Publications.

Morse, J. M., Barrett, M., Mayan, M., Olson, K., and Spiers, J. (2002). Verification strategies for establishing Reliability and Validity in Qualitative Research. *International Journal of Qualitative Methods*, 1(2). Canada.

National Council for Curriculum and Assessment (NCCA). (2010). *Curriculum Overload in Primary Schools: An overview of national and international experiences*. Ireland.

National Council of Educational Research and Training (NCERT). (1998). Paris: UNESCO Statistical Yearbook.

Ngcobo, J. And Muthukrishna, N. (2011). *The geographies of inclusion of students with disabilities in an ordinary school*. Durban: University of KwaZulu-Natal.

Noret, N. (2007). *Adolescent Attitudes toward Islam*. London. Sage

Oakley, A. (1994). *Children's Childhoods: observed and experienced*. London: Routledge.

O'Connor, K. (2006). *Behavioural, Cognitive, and Emotional Processes and Symptom Change during Inference-based Therapy for Obsessional Compulsive Disorder*. Montreal. McGill-Queen's University Press.

Ochs, E. (1998). *The theory of language socialization*. Los Angeles: University of California.

Pain, R.. (2004). " Social Geography: Participatory Research." *Progress in Human Geography*. London.

Patton, M. Q. (1990). *Qualitative research and evaluation methods*. (4th Ed.) California: Sage Publications.

Pavlish, P. C. and Pharris, M. D., (2011). *Community-based collaborative action research. a nursing approach*. Sudbury, MA: Jones and Bartlett Learning.

Polkinghorne, D. E. (1988). *Narrative knowing and the human sciences*. Albany: State University of New York Press.

Pournara, C. Senior lecturer in Mathematics Education. University of Witwatersrand.

Povey, H. (2002). *Promoting social justice in and through the mathematics curriculum*. England: Sheffield Hallam University.

Pretty, J. N. Guijt, I., Thompson, J. and Scoones, I. (1995). *Participatory learning and action: a trainer's guide*. London: International Institute for Environment and Development..

Prout, A. (2000). " Children's Participation: Control and self-realisation in British late modernity." *Children and Society*. London.

Rubin, H. and Rubin, I. (1995). *Qualitative interviewing: The art of hearing data*. London: Routledge.

Ruddick, S. (1996). *Young and homeless in Hollywood: Mapping social identities*. London and New York: Routledge.

Schafer, N. (2008). *Young people's geographies in rural post-socialist Germany*. University of Plymouth.

Schenk, K. and Williamson, J. (2005). *Ethical approaches to gathering information from children and adolescents in international settings: Guidelines and resources*. Washington, DC: Population Council.

Scott, J. (2000). *Children as respondents: The challenge for qualitative researchers*. In Christensen, P., and James, A. (Eds.) *Research with children: Perspectives and practices* (98–119). London: Falmer.

Sewell, W. H. (2005). *Logics of history: Social theory and social transformation*. Chicago University Press.

Shenton, A. K. (2004). *Strategies for ensuring trustworthiness in qualitative research*. Newcastle-upon-Tyne: Northumbria University.

Sibley, D. (1995). *Geographies of Exclusion*. New York: Routledge.

Simon, M. K., and Goes, J. (2013). *Dissertation and scholarly research: Recipes for success*. Seattle: WA.

Skelton, T., and Valentine, G. (1998). *Cool Places: Geographies of youth cultures*. London: Routledge.

Skelton, T. (2008). Research with children and young people: Exploring the Tensions between ethics, competence and participation. *Children's Geographies*. 6(1), 21–36. [Taylor and Francis online].

Solberg, A. (1996). The challenge in child research: From 'being to doing'. In Brannen, J., and O'Brien, M. (Eds.) *Children in Families: Research and Policy*. London: Falmer.

Stake, R. (1995). *The Art of Case Study Research*. California: Sage.

Strydom, H. and Delport, C. S. L. (2011). *Research at Grassroots Level*. Pretoria: Van Schaik Publishers.

Taylor, C. and Gibbs, G. R. (2010). *What is qualitative data analysis*. University of Surrey.

Taylor-Powell, E. and Renner, M. (2003). *Analyzing qualitative data*. University of Wisconsin.

The Society for Research in Child Development. (SRCD) (2007). *SRCD Ethical Standards for Research with Children*. Washington.

Thomas, N. and O'Kane, C. (1998). *The ethics of participatory research with children*. University of Wales, Swansea.



Thomsen, K. (2002). *Building resilient students: Integrating resiliency into what you already know and do*. California: Corwin Press.

Thorne, S. (2000). Data analysis in qualitative research. *Evidence Based Nursing*, 3(3), 68-70. California: Sage.

Tsang, K. K. (2013). *A review of current sociological research on teachers' emotions: The way forward*. University of Hong Kong.

UNESCO. (2004). *changing teaching practice: Using curriculum differentiation to respond to students' Diversity*. France.

Vahasantanen, K., and Etelapelto, A. (2008). Vocational teachers in the face of educational reform: individual ways of negotiating professional identities. *Journal of Education and Work*, 22(1), 15–33. Rotterdam.

Valentine, G. (1999). Being seen and heard? *The ethical complexities of working with children and young people at home and at school*. U.K. Routledge.

Valentine, G. (2000). *Social geographies: Space and society*. London: Routledge.

Valentine, G. (2004). *Public Space and the culture of Childhood*. Burlington, VC: Ashgate.

Valentine, G., and Holloway, S. L. (2000). *Children's geographies: Playing, living, learning*. London and New York: Routledge.

Van Ingen, C. V. and Halas, F. (2003). Claiming space: Aboriginal students within school landscapes. *Children's Geographies*, 4, 379–398. Brock University, Ontario, Canada.

Verma, G. K., and Pumfrey, P. D. (1994). *Cross-curricular contexts: Themes and dimensions in primary schools*. London: David Fulton Publishers.

Waksler, F. C. (1991). The hard times of childhood and children's strategies for dealing with them. In Waksler (Ed.) *Studying the social worlds of children: sociological readings*. London: Routledge.

Wang, C.C., and Redwood-Jones, Y. A. (2001). Photovoice ethics. health education and behaviour. *Health Education Behaviour*, 28(5), 560–72. University of Michigan.

Waters, J.L. (2007) 'Roundabout routes and sanctuary schools': the role of situated educational practices and habitus in the creation of transnational professionals. *Global Networks*, 7(4): 477-497. Kellogg College, Oxford.

Whittemore, R.(2001). *Validity in Qualitative Research*. U.S. National Library of Medicine.

Willis, S. (1993). Teaching Young Children. Educators seek developmental appropriateness. *Curriculum Update*. 1-7. Alexandria, USA.

Wood, E. (2003). The power of pupil perspectives in evidence-based practice: the case of gender and under-achievement, *Research Papers in Education*, 18, 365-83. London.

Wyness, M. (2003). Children's space and interests: Constructing an agenda for student voice. *Children's Geographies*, 1(2), 223–239. University College Northampton.

Yarwood, G. A. (2012). *Positionality and reflexivity in qualitative research*. Work and Family Researchers' Inaugural Conference. New York.

Young, L., and Barrett, H. (2001). Adapting visual methods: Action research with Kampala Street children. *Area*, 1(2), 223-239. Institute of British Geographers.

Zembylas, M. (2005). Beyond teacher cognition and teacher beliefs: The value of ethnography of emotions in teaching. *International Journal of Qualitative Studies in Education*, 18(4), 465–487. Michigan State University.

Zembylas, M. (2008). *The politics of trauma in education*. New York.

Zembylas, M. (2010). Teachers' emotional experiences of growing diversity and multiculturalism in schools and the prospects of an ethic of discomfort. *Teaching and Teachers, Theory and Practice*, 16(6), 703–716. New York: Routledge.

Zorn, D., and Boler, M. (2007). Rethinking emotions and educational leadership. *International Journal of Leadership in Education*, 10(2), 137–151. Canada.

**FIONA CROOKS**

**Editor, Writer and Designer**

**facrooks@gmail.com | 082 406 3333 | 15 Theed Street,**

**Howick, 3290**

**Certificate: 615/B-BBEE:EME/12/03/2015/NEG**

7/12/2015

PAPER OF SHAMILLA HAJAREE (STUDENT NUMBER 214584645)

EDITED

Dear .....

I edited Shamilla Hajaree's paper concerning her investigations of the emotional experiences of children while learning mathematics under the implementation of the new Curriculum Assessment Policy Statements.

Shamilla's grasp of the English language is excellent. In certain instances, longer paragraphs needed to be broken down and synonyms found for frequently used terminology.

On occasion, American spelling was used, but, on the whole, her paper was sound, very well-written, and exhibited very little sign of repetition.

Kind regards,

Fiona Crooks (Editor)

## **Appendix 1: Principal's consent letter for the study to be conducted at the school**

The Principal  
Kwa Dukuza Primary School  
Dear Mr T. Sahadev

### **Re: Permission to conduct a research study in the school**

I am writing to request your permission to conduct a study of the ways in which learners experience mathematics learning. This current study 'The Emotional Geographies of Learning Mathematics' seeks to investigate how learners experience mathematics learning. The main questions that this study ask are: What are learners' emotional experiences of learning mathematics? What contextual factors influence mathematics learning? How do learners negotiate these contextual factors? Such research is particularly relevant in South Africa given the importance placed on the improvement of mathematics results by the Department of Education. Recent reports of unsatisfactory mathematics results at South African schools is a cause for concern.

The project aims to investigate the emotional experiences of mathematics learning. The project will involve interviews with learners. All participants in the school and the names of school will be anonymized. In the various publications that will result from this study I will not use participants' real names or the name of their school. They are also free to withdraw from the project at any time during or after data collection, without penalty.

Whilst every precaution will be taken to maintain the confidentiality of the participants in every group, there will be limits of confidentiality. Participants will be informed that should there be a disclosure/s which indicates that their well-being is being compromised or at risk, the researcher will seek their consent in addressing the matter.

Thank you for your cooperation.

Sincerely

Mrs S. Hajaree

---

**Permission to conduct study**

I..... (Full names of PRINCIPAL/)  
hereby confirm that I understand the contents of this document and the nature of the research project, and I grant permission to the learners and teachers participating in the research project and give permission for the school to be used as a research site.

The times and dates of the research will be at the sole discretion of the principal.

I understand that both the learners and the school is at liberty to withdraw from the project at any time.

.....  
SIGNATURE OF PRINCIPAL

.....  
DATE

## **Appendix 2: Informed Consent Letter to Parents/Guardians**

Date:

Dear Parent/Guardian of

---

I am writing to request your permission to allow your child/ward to participate in a study that examines the ways in which learners experience mathematics learning at Kwa Dukuza Primary School. This current study 'The Emotional Geographies of Mathematics Learning' seeks to explore the emotional experiences of learning mathematics whilst the new Curriculum Assessment Policy Statements is being implemented. The main questions that this study ask are: What are the emotional experiences of learning mathematics? What contextual factors influence learning mathematics? How do learners negotiate these factors? Such research is particularly relevant in South Africa given the importance placed on improvement of mathematics results by the Department of Education. Recent reports of unsatisfactory mathematics results achieved by learners is a cause for concern.

The project aims to investigate the emotional geographies of learning mathematics .The project will involve conversation/discussion with learners. All participants in the school and the name of school will be anonymized. In the various publications that will result from this study I will not use participants' real names or the name of their school. They are also free to withdraw from the project at any time during or after data collection, without penalty.

Whilst every precaution will be taken to maintain the confidentiality of the participants in every group, there will be limits of confidentiality. Participants will be informed that should there be a disclosure/s which indicates that their well-being is being compromised or at risk, the researcher will seek their consent in addressing the matter.

Your daughters'/son's/wards' identity will remain anonymous throughout the study and in the various publications we will produce from it (we will

not use their real name or the name of their school). In addition, her/his participation in the study is voluntary and he/she may decide not to participate without any penalty. She/he is also free to withdraw from the project at any time during or after data collection, without penalty.

Kindly discuss your daughters'/son's/wards' participation with them, and if you both agree and you give their permission, fill the form below and return to me.

Thank you for your co-operation.

S.Hajaree

\_\_\_\_\_

#### DECLARATION

I.....(full names of parent/guardian) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to my daughter/son/ward participating in the research project.

I understand that he/she is at liberty to withdraw from the project at any time, should he/she so desire.

SIGNATURE OF PARENT \_\_\_\_\_

DATE: \_\_\_\_\_



### **Appendix 3: Interviews Schedule**

**Interviews Schedule**: guided critical conversations will be used so that I will be able to add on questions to probe the issue further.

How do you feel about learning mathematics now that a new curriculum has been introduced?

Would you say that this curriculum is simpler to understand than the previous one?

What are some of the factors that affect your learning?

How do you work around these factors to improve your learning?

Do you think that all learners have the same experience of learning mathematics?

What are your thoughts on the Annual National Assessments?

Do you think that the language of teaching affects your learning?

Do you enjoy working on your own at home?

Is your learning space at home conducive to learning?

Is there anybody to assist with your mathematics homework?

Had you been in another environment, would your mathematics results improve in any way?

## **TRANSCRIPTIONS : focus group one**

DATE: 11 FEBRUARY 2015

TIME: 10H25

DURATION: 25 MINUTES

PURPOSE: The purpose of this interview is to explore the emotional geographies of learning Mathematics. Four children from grade five were interviewed. The interview is captured below.

-----  
Researcher: How do you feel about learning mathematics now that a new curriculum has been introduced ?

Thomas: the work is just like grade 4....no change.

Neville: there are no changes.

Researcher: Would you say that this curriculum is simpler to understand than the previous one ? Do you think the work is easier ?

Neville: it is a bit harder... we are learning new things.

Researcher: What are some of the factors that affect your learning? Not only mathematics, but generally. It could be whatever happens in class.

Andiswa: we can't focus...there is a lot of disturbance.

Candice: they (the learners) talk in class....can't concentrate...they play fools.

Researcher: How do you work around these factors to improve your learning?

Candice: Just concentrate on the work.

Researcher: Why do you think these learners behave in this disruptive way ?

Andiswa: Maybe they are confused about what they are doing...or they don't like to focus. Sometimes they want to talk to you about something.

Thomas: They don't understand ... they don't want to work.

Researcher: What are your thoughts on the Annual National Assessments ...you know ANA - the exams that you write in September, every year.

Neville: seems easier than normal work...can be hard. The results are not very good.

Andiswa: ANA...some sections are easy ...some are hard.

Researcher: Do you think the language of teaching (which is English) affects your learning ?

Andiswa: I understand English, so I don't want the language to change.

Researcher: Do you enjoy working on your own at home ?

Candice: yes...there is no disturbance like in class.

Thomas: yes...it is better at home.

Researcher: Is your learning space at home conducive to learning...do you have a space where you enjoy doing your homework ?

Neville: it is fine...I do homework in the dining room.

Thomas: the house we have is very small. I do homework in the garage...that's where we have a table.

Researcher: Is there anybody to assist/help you with your homework ?

Thomas: my mother helps me with homework.

Neville: my mother helps me...but sometimes she doesn't understand some of the new work... I also ask my sister for help sometimes.

Candice: my aunty helps me sometimes.

Researcher: Had you been in another environment, would your mathematics results improve in any way ?

Andiswa: maybe if there are less children and better discipline, my results will be better.

Candice: if I had a desk in my room, I will be able to work better at home.

Thomas: if it is not so crowded...the children don't shake the table when I am writing, it will be better.

## TRANSCRIPTIONS : focus group two

DATE: 12 FEBRUARY 2015

TIME: 10H25

DURATION: 25 MINUTES

PURPOSE: The purpose of this interview is to explore the emotional geographies of learning Mathematics. Four children from grade four were interviewed. The interview is captured below.

-----

Researcher: How do you feel about learning mathematics now that a new curriculum has been introduced ?

Tim: it's nice ...easier than grade 3.

Akhona : we are still doing revision from grade 3

Researcher: Would you say that this curriculum is simpler to understand than the previous one ? Do you think it is easier?

Tim: Maths is hard.

Akhona: I love English... we write more... we get to speak more.

Researcher: What are some of the factors that affect your learning? Not only mathematics, but generally. It could be whatever happens in class.

Tim: The children make too much noise...we can't hear clearly...sometimes I feel like hitting them.

Oscar: the children don't fright for some teachers...they fight in class.

Rose: it is too hot in this class...there's too many children.

Researcher: How do you work around these factors to improve your learning?

Oscar: try to focus and ignore them.

Researcher: Why do you think these learners behave in this disruptive way ?

Tim: Some of them are so naughty.... They don't pay attention, then they say the work is too hard...they don't try...they just sit. Some of them leave the class to go to the toilet, and don't come back.

Oscar: Some pretend to be sick. When one person does it, all the others want to do the same thing.

Researcher: What are your thoughts on the Annual National Assessments ...you know ANA - the exams that you write in September, every year.

Tim: ANA results are very important.

Rose: Those who know how to read....they find it easy.  
Things that you don't know also come out in ANA.

Akhona: Sometimes things that you don't know come out.

Oscar: I like it because everyone is quiet when we write...there is no noise.

Researcher: Do you think the language of teaching (which is English) affects your learning ?

Akhona: maybe I will do better if we are taught in Isizulu.

Researcher: Do you enjoy working on your own at home ?

Rose: yes ...we have more time to try on our own. There is no noise.

Researcher: Is your learning space at home conducive to learning...do you have a space where you enjoy doing your homework ?

Akhona: I have a table in my room...I do my homework there.

Researcher: Is there anybody to assist/help you with your homework ?

Oscar: my mother and father help me.

Akhona: there's no one to help me...I live with my grandmother and she is too old to help me.



Researcher: Had you been in another environment, would your mathematics results improve in any way ?

Tim: yes, if there wasn't too much noise...I will do better.

Rose: yes my results will be better.

## TRANSCRIPTIONS : focus group three

DATE: 16 FEBRUARY 2015

TIME: 10H25

DURATION: 25 MINUTES

PURPOSE: The purpose of this interview is to explore the emotional geographies of learning Mathematics. Four children from grade six were interviewed. The interview is captured below.

---

Researcher: How do you feel about learning mathematics now that a new curriculum has been introduced ?

Sara : it is much more difficult.

Researcher: Would you say that this curriculum is simpler to understand than the previous one ? Do you think it is easier/

Tasha: maths is much more difficult.

Sara: it is not simpler to understand. We are using different methods to add and subtract...we are not familiar with all these methods....especially the breaking down methods.

Thando: no, it is harder.

Researcher: What are some of the factors that affect your learning? Not only mathematics, but generally. It could be whatever happens in class

Sara: I feel crowded...it becomes claustrophobic. Maybe it will be better if there are lesser children.

Researcher: How do you work around these factors to improve your learning?

Allan: we try to focus and ignore the noise.

Researcher: Why do you think these learners behave in this disruptive way ?

Thando: Maybe they don't understand English...maybe if they are taught in Zulu they will understand better.

Researcher: What are your thoughts on the Annual National Assessments ...you know ANA - the exams that you write in September, every year.

Tasha: One and half hours is too long for ANA...too much repetition. We write too many tests and exams , why do we have to write ANA?

Researcher: Do you think the language of teaching (which is English) affects your learning ?

Thando: Maybe if we are taught in Zulu I will understand better and my results will be better.

Researcher: Do you enjoy working on your own at home ?

Tasha: My smaller brother is very noisy...he interferes with me when I am doing my homework.

Researcher: Is your learning space at home conducive to learning...do you have a space where you enjoy doing your homework ?

Sara: I work in the dining room...my small sister makes noise and disturbs me.

Tasha: I do homework in the kitchen...my brother runs around and troubles me.

Allan: sometimes there's no lights...it is difficult to focus.

Researcher: Is there anybody to assist / help you with your homework ?

Thando: my brother and sister help me.

Sara: there's no one to help me. I go to vernacular classes and I start late - after supper. My sister is in a high school, so she can't help because she has too much of her own homework. My parents come late from the shop...so I have to help my smaller sister with her homework, and then do my work.

Allan: my mother and father come late... my sister helps me.

Researcher: Had you been in another environment, would your mathematics results improve in any way?

Sara: if I had a study with peace and quiet, where I could give all my attention to my studies – results in all subjects will improve.