

**NARRATIVES THAT SHAPE THE PROFESSIONAL IDENTITIES OF MATHEMATICS
TEACHERS**

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by

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Abstract

The central position in this study is that the professional identities, and consequently the classroom practices, of mathematics teachers are continuously being shaped by their narratives of past and present experiences. The primary research question explores the narratives that shape the professional identities of seven mathematics teachers; and the secondary research question, how their narratives shape their professional identities. Furthermore, the potential implications of this study for the design and implementation of pre-service teacher education programmes and in-service teacher development initiatives are considered.

This study is framed by Socioculturalism; a theoretical perspective of human thinking as social in origin and of learning as participation in social practices. Furthermore, in line with Situated Learning Theory, the key theoretical notions are: identity (or learning as becoming); community (or learning as belonging); practice (or learning as doing); and meaning (or learning as experience). Identity is construed here as a conceptual bridge between learning and its cultural settings; and also between the individual and the social.

In this study, the identity-shaping narratives of seven mathematics teachers, all purposively sampled from schools in the Port Elizabeth and Grahamstown education districts of the Eastern Cape Province of South Africa, were accessed via a narrative inquiry; followed by a horizontal analysis to identify common patterns or recurring themes in the narratives of all seven participants; and, a vertical analysis of the narratives of four of the participants to determine how their narratives shape their professional identities.

Recurring themes that emerged during the horizontal analysis include the influence of: family support; role models; changing work environments; continuous professional develop-

ment; professional recognition; religion; and, micro-politics. The vertical analysis demonstrated how, through a process of interpreting the narratives and restorying them into a meaningful *core narrative*; it is possible to gain insights into *how* personal narratives shape a professional identity.

This study highlights the importance of listening to the narratives of mathematics teachers; because their professional identities, and consequently their teaching practices, are continuously being shaped by their narratives. It is anticipated that this research will be of interest and benefit to researchers, policy-makers, and teachers; especially in the area of Mathematics Education, where both narrative inquiry as a research method and research into teachers' professional identities are relatively new.

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Dedication

Dedicated to the most important people in my life:
my wife; my parents; my brother and sister;
for their unwavering love and support over the years...

Declaration of originality

I, **Clyde Benedict Aurelius Felix** (student number 11F6797), declare that this doctoral thesis, *NARRATIVES THAT SHAPE THE PROFESSIONAL IDENTITIES OF MATHEMATICS TEACHERS*, is my own original work, written in my own words. Where I have drawn on the words or ideas of others, these have been acknowledged in the manner required by the Rhodes University Department of Education Guide to referencing.

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Clyde Benedict Aurelius Felix



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(Signature)

December 2013

(Date)

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List of abbreviations

AMESA	The Association for Mathematics Education of South Africa
CAPS	Curriculum Assessment Policy Statement
EFL	English as a Foreign Language
FET	Further Education and Training
FRF	First Rand Foundation
HOD	Head of Department
LPP	Legitimate Peripheral Participation
MTEP	Mathematics Teacher Enrichment Programme
NCS	National Curriculum Statement
NOI	Narrative Oriented Inquiry
NIG	Narrative Interview Guide
OBE	Outcomes Based Education
SAARMSTE	Southern African Association for Research in Mathematics, Science and Technology Education
SMS	Short Message Service
SUP	School University Partnerships

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List of transcription conventions (used in interview excerpts)

I:	Interviewer
P1:	Participant 1
...	Pause in speech
[...]	Where part of the speech (transcript) have been left out
{!}	Emphasis placed on preceding word in midsentence
(clarification)	Actions/comments/notes of clarification
[I: Uhm...]	Midsentence interruption by the other party, for example, to make a comment, affirm something, or to encourage further elaboration, and so forth.
[name of...]	Where a name has been left out for the sake of anonymity.

If you want to know me,
then you must know my story,
for my story defines who I am.
And if I want to know myself,
to gain insight into the meaning of my own life,
then, I too,
must come to know my own story.

(McAdams, 1993, p. 11)

Chapter 1: Introduction and Orientation

1.1 Introduction

The aim of this chapter is to introduce and orient the reader to the background, rationale, aims, objectives, research design, and delimitations of this study. The background is the post-1994 transformation of the South African schooling system; the rationale is to understand how teachers cope with the subsequent demands of these transformations on their professional identities; the aim is to gain insights into the narratives that shape the professional identities of seven mathematics teachers spread across two education districts of the Eastern Cape Province of South Africa; the research design is based on a narrative inquiry; and, the discussion of the delimitations of the study include touches on how narrative inquiry differs from more established modes of inquiry, for example, the small sample size and the issue of the truth or verifiability of the collected narratives. The chapter is then concluded with an outline of all the chapters to give the reader an overview of the study as a whole.

1.2 Background and rationale for the study

Over the past decade there has been growing interest in the social sciences, and especially in education, in the notion of identity (e.g., Spillane, 2000; Miller Marsh, 2002a; 2002b; Sfard & Prusak, 2005a; Søreide, 2006; Watson, 2006; Smit & Fritz, 2008) resulting in a range of research foci and methodological approaches (Beijaard, Meijer, & Verloop, 2004; Beauchamp & Thomas, 2009). According to Sfard and Prusak (2005a) there are three reasons for the current interest in identity. Firstly, identity is most suited to answer questions about human beings in action, and specifically, the mechanisms underlying such actions. In education, for example, researchers are beginning to appreciate the potential of identity as an analytic tool for understanding teachers, learners, schools, and society (Beijaard, Verloop, & Vermunt, 2000; Boaler, William, & Zevenbergen, 2000; Gee, 2000-2001; Sfard & Prusak, 2005a; 2005b; Jia, 2009). Moreover, there seems to be broad agreement that there is a relationship between teacher professional identity and teaching practices (Beijaard, Verloop, & Vermunt, 2000; Aimar, 2006; Søreide, 2007; Hwang, 2008; Cohen, 2008; 2010). According to Beijaard, Verloop, and Vermunt (2000), for example,

teachers' professional identities "affect their efficacy and professional development as well as their ability and willingness to cope with educational change and to implement innovations in their own teaching practice" (p. 750). In other words, teacher professional identity is central to the beliefs, values, and practices that guide a teacher's engagement, commitment and actions, both inside and outside of the classroom (Cohen, 2008; 2010). Secondly, identity is useful in explaining how collective discourses shape individual worlds; and vice versa, how individual voices combine into the voice of a community. This suggests that identity is shaped by the reciprocal discursive relationship between the individual and the collective. Therefore, teacher professional identity can be construed as an on-going and dynamic process through which individuals negotiate both internal and external expectations as they attempt to make sense of their work as teachers (Beijaard, Meijer, & Verloop, 2004). And thirdly, identity serves a useful purpose as "the missing link" (Sfard & Prusak, 2005a, p. 15) between learning and its sociocultural context. For example, Day (2002) described teacher professional identity as "an amalgam of personal biography, culture, social influence and institutional values which may change according to role and circumstance" (p. 689). The dynamic and temporal dimension of the professional environment, and its influence on teachers, is eloquently captured in Kelchtermans' (1993) words: "Teachers' actual thinking and acting constitutes one moment, a fragment in a continuous process of assigning meaning to the perceived and experienced reality" (p. 444). Dorrington (2011-2012), for example, refers to the malleability of professional identity in the workplace as "identity in transition" (p. 170). The special significance of teacher professional identity in education stems from the way in which it partners the individual and the social; highlights the person within the practice of teaching; and, emphasizes the importance of knowing who one is and what one believes as a teacher (Smith, 2006).

Government interventions in the form of national curricula, national tests, criteria for measuring quality in schools, and the like, is a world-wide phenomenon, "the persisting effect [of which] is to erode teachers' autonomy and challenge teachers' individual and collective professional and personal identities" (Day, 2002, p. 678). This is also the case in post-apartheid South Africa where the schooling system has been undergoing fundamental re-conceptualization of its role in the new democracy (Samuel & Stephens, 2000; Asmal & James, 2001; Viljoen & van der Walt, 2003; Naidoo, 2005; Parker & Adler, 2005; Rembe,

2005; Vithal & Volmink, 2005; Jita & Vandeyar, 2006; Parker, 2006; Robinson & McMillan, 2006) reflected in the on-going and concerted efforts to radically transform the old apartheid school system through the introduction of new policies and practices. Further evidence of this transformation effort can be found in the socio-constructivist, learner-centred, discussion-based discourses propagated in the new policy documents. Since the mid-1990's, for example, the discourses of constructivism have come to infuse and reside side-by-side with the discourses of fundamental pedagogics in South African colleges of education (Naidoo, 2005). This signals the introduction of an alternative paradigm of learning, a shift in the focus from teaching to learning and the development of learners; which, in turn, requires a shift in the professional identities of the teachers (Geijsel & Meijers, 2005). New role descriptors demand significant changes of teachers in relation to their orientation to knowledge and learning; and to conceptions of what it means to teach (Parker, 2006). The re-conceptualization of the post-apartheid South African schooling system can therefore be seen as a “major *political* project... to radically transform the pedagogic identities of teachers working within the system and to produce new teachers who meet these transformation ideals” (Parker, 2006, p. 2). The problem is that, and this is common of all school reforms irrespective of country or continent, “they do not always pay attention to teachers’ identities – arguably central to motivation efficacy, commitment, job satisfaction and effectiveness” (Day, 2002, p. 679). During such transformations, the effects of the reform instruments (e.g., curricular frameworks, instructional materials, new types of assessments, professional development initiatives) are contingent in part on the teachers’ capacity to learn from them; which, in turn, is contingent on their professional identities (Spillane, 2000). Therefore, in order to be successful, educational changes and innovations require changes in teachers’ professional identities (Day, 2002; Geijsel & Meijers, 2005).

As Goodson (2007) pointed out: “In very few instances have school reforms or change theories been promulgated which place personal development and change as central ‘building blocks’ in the process. Instead, changes have been pursued in ways that seem to insist this will happen, *in spite* of the teacher’s personal beliefs and missions. All too often, the ‘personality of change’ has been seen as the ‘stumbling bock’ of real reform, rather than as a crucial ‘building bock’” (p. 138, italics in original). He added, “the technical aspects of teacher professionalism are stressed, rather than the professional biography – the personal

missions and commitments that underpin the teacher's sense of vocationalism and caring professionalism" (p. 137). The danger, Reio (2005) cautioned, is that "reform, no matter how well intentioned and theoretically sound, will not have the desired effects if the implementation does not acknowledge those who must implement the reform – the teachers" (p. 992). Phillips (2008) added: "Teachers must be a fundamental part of any systematic change in schools... For reform to take place in schools much professional development and professional dialogue must take place" (p. 4). However, although interest in the role of teacher professional identity on educational reform seems to be growing, far too little is happening.

There is still a significant gap in the research literature, especially in developing countries, with regard to our understanding of how teacher professional identities are shaped within specific subject matter contexts (Jita & Vandeyar, 2006); and, within contexts of educational change (Carson, 2005). The discourse of change needs to shift from the notion of change as "something" (an idea, policy, or theory) that needs to be implemented in practice to the notion of change as "a conversation between the self (identity) and new sets of circumstances that are external to the self" (Carson, 2005, p. 3).

[T]he meaning of educational change for teachers remains fundamentally opaque, because this work lacks an adequate sense of the teacher as the subject who is changing. Therefore the strategies of teacher development are still basically limited to trying to convince teachers of the wisdom of reform and providing the essential knowledge and skills that are thought necessary to enact the change. These strategies are clearly inadequate to the challenges of the deeply socially transformative change facing democratic societies in the 21st Century... transformation necessarily involves negotiating new identities for both the collective and for the individuals in society (Carson, 2005, p. 7).

However, in spite of this nation-wide politically initiated transformation project and its demands on teachers' professional identities and the growing interest internationally in teacher professional identity (Miller Marsh, 2002a; 2002b; Sfard & Prusak, 2005a; Spillane, 2000; Søreide, 2006), national interest in South Africa has been sparse and as a result sorely neglected in both further professional development initiatives and initial teacher education programmes. The transformation efforts demand that teachers make radical shifts in their professional identities, but not much support is being offered for the negotiation of new teacher professional identities (Parker, 2006). As Côté and Schwartz (2002) observed, "faced with global economic and political changes, late-modern institutional supports for making

certain developmental transitions have become increasingly deficient, leaving many individuals largely on their own in terms of negotiating their life courses, particularly with regard to setting and achieving goals” (p. 574) Thus, as Smit and Fritz (2008) suggested:

Education will not improve with financial efforts or the provision of workshops addressing policies, teaching practice, and managements unless teacher identity receives prominence....The reality is that the power of the working environment, coupled with the personal and social identity, is a much stronger force in the development of teacher identity than national education policies. (p. 100)

Smit and Fritz explained that social identity is the result of the teacher’s position within the school environment and is shaped by that environment; while personal identity is unique to the individual and shaped by the narratives of self (Smit & Fritz, 2008, p. 93). In instances of educational reform, “teachers shift their identities to adapt to different situations based on the meanings that they derive from a variety of narrative resources” (Liu & Xu, 2011, p. 594). Narrative resources may include “any and all experiences that can accountably be incorporated into personal stories, as well as the discursive formations that are locally available and understandable” (Gubrium & Holstein, 1998, p. 164). For example, they include “[teachers’] professional knowledge, personal experience, the ‘micro-politics’ of the setting and wider sociocultural contexts” (Søreide, 2006, p. 543). The result of this “interplay between the self [professional identity] and the situation thus creates a process of making and remaking of identity, with the aim of closing the gap between the designated and the actual identities” (Liu & Xu, 2011, p. 595).

Another reason why conventional discourse on teacher development has failed to address the question of identity, Carson (2005) explained, is that “it lacks an explicit theory of the subject” (p. 7). My own experience with Mathematics and Mathematics Education bears testimony of the lack of explicit attention to teacher professional identity. Throughout the 25 years which spans my professional career¹ as a mathematics teacher and mathematics teacher educator, I have been involved in several professional development initiatives; and yet I cannot recall any single instance of explicit attention being paid to teacher professional identity – not in the professional development initiatives; nor in pre- and in-service teacher education. My recollections of these experiences are of a focus on content knowledge and pedagogical content knowledge. Even a search of the proceedings

¹ I am referring here to the South African context, because this is where I have been teaching.

of conferences of the Association of Mathematics Education of South Africa (AMESA) and the South African Association for Research in Mathematics, Science, and Technology Education (SAARMSTE) has produced little evidence of any significant or sustained research outputs that deal explicitly with teacher professional identity. This clearly signals a dire gap in the research into the professional identities of South African mathematics teachers. I am hoping that this research project will make a contribution towards addressing this gap.

1.3 Aims and objectives of the study

This PhD project is linked to the First Rand Foundation (FRF) Mathematics Education Chair initiative at Rhodes University in Grahamstown and the associated Mathematics Teacher Enrichment Programme (MTEP). One of the research interests of the MTEP is the notion of teacher professional identity, specifically the question: “How can a positive professional identity be grown?” (Schäfer, 2011, p. 5). This study is directly linked to this MTEP research question, but with a slightly different nuance. The intention here is to interrogate the MTEP research question from the position that there are different narratives that shape² the professional identities of teachers; and that knowing what these narratives are, and how they shape professional identities, is an essential part of understanding how a positive teacher professional identity might be shaped.

Drawing on Sfard and Prusak’s (2005a) operational definition of identity as “stories about persons” (p. 14), the primary aim of this study is to uncover the narratives that shape the professional identities of seven South African mathematics teachers³ in the Eastern Cape Province; covering the period of radical reforms of the educational system since the onset of the new democracy in 1994 (Graven, 2002; Rembe, 2005). Currently our reform efforts are based on assumptions of what these narratives might be; but to my knowledge, except perhaps Graven’s (2003; 2005) stories of Ivan and Sam respectively, and Jita and Vandeyar’s (2006) exploration of the relationship between the mathematics identities of two primary (elementary) school teachers and curriculum reforms through their life-history

² This is a deliberate shift in the terminology, away from the MTEP notion of an identity being “grown”, which implies an almost independent, organic process; to the sociocultural notion of an identity being “shaped”, which implies an interactive, participatory process.

³ All from two education districts in the Eastern Cape Province.

accounts, few other systematic inquiries have been made into the narrative shaping of professional identities in the area of Mathematics Education in South Africa.

This study is of particular interest since, according to Rembe (2005), the Eastern Cape Province is not only the poorest province in South Africa, it also has one of the largest and most unequal education systems in the country.

Substantial inequalities also existed between regions within the province. The western part of the province is better resourced compared to the former Bantustan homelands of Ciskei and Transkei. Former homeland schools lacked administrators or managers. Educators performed the functions of teachers as well as administrators whilst in the former white schools, teachers taught and administrators managed. This division of labour existed in the more privileged schools between educators and administrators and this ensured that there was no confusion between the different functional areas of education management and teaching (Rembe, 2005, p. 55).

Not only is the education system unequal, the Eastern Cape Province also has one of the poorest performing education systems in the country. Rembe (2005) explained the situation as follows:

Wars of Dispossession during colonial times and the apartheid policy marginalized the Africans by confining them into reserves and later segregated homelands. The condition of the people was exacerbated by poverty and unemployment and also by a corrupt, inhuman and inefficient system managed by self interest seeking elites. These factors have been carried over to the new Eastern Cape Province which has been beset by unending and unsolvable problems. The province remains one of the poorest and most populated provinces with a very unsatisfactory record of policy implementation and service delivery in almost all sectors (Rembe, 2005, p. 61).

This short background to the unique educational challenges of the Eastern Cape Province is useful in contextualizing the participants' narratives. What is important to note, is that the educational system is still marred by inequalities⁴. Therefore, it can be anticipated that the seven participating teachers who are all from very different sociocultural backgrounds, and teach in very different schools in the Eastern Cape Province, would have faced very different educational challenges and would have very different stories to tell about their experiences.

The secondary aims of this study are: firstly, to gain an understanding of *how* these narratives shape the professional identities of the participating mathematics teachers; and

⁴ A school outside a rural village in the former homelands, for example, is unlikely to have the same human and capital resources as an ex-model C school in one of the larger towns or cities.

secondly, how this new knowledge might be utilized in reconceptualizing teacher professional development initiatives, and also pre- and in-service mathematics teacher education programmes. Perhaps these initiatives and programmes could be re-configured to assist teachers in dealing with the growing demands of a changing educational landscape on their professional identities. Knowing what some of these narratives are is already a definite step forward from our current assumptions about what they might be. As Vithal and Volmink (2005) noted, “many of the present curriculum reforms in South Africa are driven largely by conjecture, stereotype, intuition, assertion and a host of untested assumptions rather than by research” (p. 4).

Reforms have an impact upon teachers’ identities and because these are both cognitive and emotional, create reactions which are both rational and non rational (*sic*). Thus, the ways and extent to which reforms are received, adopted and sustained will be influenced by the extent to which they challenge existing identities (Day, 2002, p. 683).

It is my view, as well, that the studies of curriculum reform in South African schools give far too little, if any, attention to the impact of the reform efforts on the professional identities of mathematics teachers. Moreover, as Thomas and Beauchamp (2011) reminded us, “the more we as teacher educators can learn about the process of developing a teaching identity, the better we can help future teachers prepare to meet these demands in a positive and professionally satisfying way” (p. 768). Therefore, I agree with Graven (2002) that the implementation of a new curriculum is more than simply following a set of instructions for replacing “old” practices with “new” ones, “implementation is a process of fashioning the curriculum in such a way that it becomes part of the teacher’s ‘way of being.’ In fashioning the curriculum in this way, the teachers will change themselves and modify the curriculum” (p. 23). In other words, in order to successfully change the curriculum, the teacher’s professional identity needs to change with it.

Finally, I also agree with Jita and Vandeyar (2006, p. 50) that the current wave of curricular reforms in South Africa depends on three “critical ingredients”: firstly, the policy makers and reformers need to “uncover teachers’ prior experiences with mathematics which act as filters through which the reform ideas are interpreted”; secondly, opportunities need to be provided for teachers to “learn and unlearn in the context of the new reform ideas which may be fundamentally different from their (the teachers’) own”; and thirdly,

time must be made for learning and experimenting without the pressure to reform and perform overnight – because the backgrounds and experiences of the teachers vary widely. I believe that, by uncovering the *what* and *how* of the narratives that shape the professional identities of seven mathematics teachers, this study can make a significant contribution in terms of all three of the above mentioned critical ingredients of curricular reform.

1.4 Research questions

This project is driven by the following primary research question and only one secondary research question:

1.4.1 Primary research question

What are the narratives that shape the professional identities of mathematics teachers?

1.4.2 Secondary research question

How do narratives shape the professional identities of mathematics teachers?⁵

1.5 Research design and methodology

The stories of the seven secondary mathematics teachers from diverse sociocultural backgrounds, all from the Eastern Cape Province, were accessed using a narrative inquiry methodology (Sarbin, 1986; Polkinghorne, 1988; Connelly & Clandinin, 1990; Kerby, 1991; Riessman, 1997; Mishler, 1999; Clandinin & Connelly, 2000; Kramp, 2004; McAdams, 2008); which offers a productive way of studying peoples understanding of the meanings of their experiences through the stories that they tell.

The analysis of the narrative data involved a two-stage interpretive process: firstly, a horizontal or “cross-case” (Miles & Huberman, 1994) analysis using aspects⁶ of “constant

⁵ The explanatory “why” question (Why do these narratives shape the professional identities of mathematics teachers in the way that they do?) is deliberately not asked here; because, as argued in Chapter 3, section 3.2, it would be inappropriate to ask a question suggestive of a ‘cause-and-effect’ approach of a narrative study located in a postmodern, constructivist paradigm.

⁶ The aspects of constant comparative analysis that were used in this study relate to the reading and re-reading of interview transcripts and continually comparing sections of the narrative data with each other (across participants) to allow for categories to emerge and for relationships between the emerging categories to become apparent. Then, modifying and arranging the emerging categories into a more logical scheme which is continuously modified with further data collection. And finally, continuing with data

comparative analysis” (Glaser & Strauss, 1967) to look for common patterns or themes recurring across the narratives of the seven participants; and secondly, vertical or “within-case” (Miles & Huberman, 1994) analysis in which the narratives of each participant are analysed individually.

1.6 Delimitations of the study

As Marshall and Rossman (1999) reminded us, “there is no such thing as a perfectly designed study” (p. 42); every research project has its delimitations, some of which are imposed by framing the research project within specific theoretical and research traditions. This project is no exception; it also has its delimitations, some of which can be linked to the theoretical and research traditions of narrative inquiry⁷. In Elbaz-Luwisch’s (1997) seminal article, *Narrative Research: Political Issues and Implications*, she describes narrative inquiry as research “against the grain”(p.75); a direct reference to the political challenges it poses to the dominance of more established modes of inquiry. In this article, some of the more pertinent inquiry issues that might be considered delimitations of this study are captured:

Narrative researchers often work on a small scale, do not aspire to generalisation in the usual sense, nor do they promise immediate practical benefits; yet they make strong claims for authenticity and power of narrative research. They aspire to true collaboration and to giving voice to participants, yet still work from within traditional academic structures which value individuality, originality and ownership of intellectual products. These paradoxical circumstances give rise to confrontation with traditional modes of research (Elbaz-Luwisch, 1997, p. 76).

This study is confined to the narratives of only seven participating mathematics teachers, “purposively sampled” (Smit & Fritz, 2008, p. 94) from schools in the Port Elizabeth and Grahamstown education districts of the Eastern Cape Province of South Africa. This imposed two purported limitations⁸ on the study. Firstly, the small sample size means that the findings cannot be generalized. On the other hand, it could also be argued that such small

collection in relation to each category until it becomes ‘saturated’ so that the incoming data are no longer contributing anything new to the analysis.

⁷ In Chapter 3, section 3.8, the reader’s attention is drawn to some of the cautions related to narrative inquiry.

⁸ I am arguing that these are “purported limitations” because whether they are seen as limitations or not depends on the reader’s orientation with regards to narrative as a mode of inquiry. The purpose of highlighting these “purported limitations” is to demonstrate the differences between narrative inquiry and more traditional modes of inquiry.

sample sizes allow for in-depth investigations which highlight questions and provide insights which might be useful in other contexts (Spillane, 2000); something that would not be possible when working with large samples. Furthermore, other researchers working in similar contexts can draw lessons and extend findings from such in-depth, context-rich case studies (Jita, 2004). Secondly, a quandary which is inherently part of all narrative research is the issue of the truth or verifiability of the collected narratives. However, according to Doyle (1997), the problem of truth has been exaggerated in the literature and is not peculiar to narrative research: "Truth is an elusive goal that underlies all scientific inquiry" (p. 99). He explained that various research communities develop conventions whereby truth claims can be negotiated. Narrative inquiry, for example, is predicated on the *narrative way of knowing*; which distinguishes it from more traditional research methods which are predicated on a *paradigmatic or logico-scientific/mathematical way of knowing* (Bruner, 1986; 1990; Polkinghorne, 1988; 1995; Kramp, 2004). The main difference between the two ways of knowing revolves around the issue of truth and validity or verifiability of outcomes. Bruner (1986) explained as follows:

A good story and a well-formed argument are different natural kinds. Both can be used as means for convincing another. Yet what they convince *of* is fundamentally different: arguments convince one of their truth, stories of their lifelikeness. The one verifies by eventual appeal to procedures for establishing formal and empirical proof. The other establishes not truth but verisimilitude (p.11).

According to Polkinghorne (1995; 1988) the main difference between the two modes of knowing is that the paradigmatic (scientific, positivistic) mode searches for universal truths, whereas the narrative mode searches for connections between events.

Notwithstanding the debates about its factual grounding, informative value, or linkage to personal identity, the life story constructs and transmits individual and cultural meanings. People are meaning-generating organisms; they construct their identities and self-narratives from building blocks available in their common culture, above and beyond their individual experience (Lieblich, Tuval-Mashiach, & Zilber, 1998, pp. 8-9).

The difference, according to Elbaz-Luwisch (1997), is this "search for a different kind of knowledge, knowledge which empowers rather than making possible prediction and control... [this] significant reconceptualization of the purpose of educational research... [which] places the narrative researcher at odds with many of his or her colleagues"(p.78). She explained that: "Like any new methodology competing for attention and acceptance,

narrative research encounters difficulties; the nature of the difficulties will be heavily influenced by social and cultural context” (p.77). With narrative methodologies being relatively new in the field of Mathematics Education, especially in the South African context; and with the number of narrative researchers working in the field still far from reaching a ‘critical mass’ sufficient to alleviate the constant need to defend the legitimacy of narrative methods; it is therefore incumbent on this study to explain, in as much detail as possible, the narrative inquiry method that was used to collect the data⁹.

Finally, this study has also not escaped the so-called ‘postmodern turn’ which has had noticeable effects, especially in the humanities and social sciences, on how theses and dissertations are theorised, researched, and written up (Rhedding-Jones, 1997; Richardson, 2000; 2001; Paltridge, 2002). Richardson (2001) explained that: “The core of postmodernism is the *doubt* that any method or theory, discourse or genre, tradition or novelty, has universal and general claim as the ‘right’ or privileged form of authoritative knowledge. Postmodernism *suspects* all truth claims of masking and serving particular interests in local, cultural and political struggles” (p. 35, italics in original). According to Cook (2001): “The postmodernist tone is one of ironical doubt, of trusting nothing at face value, of always looking behind the surface, of upsetting conventional wisdom” (pp. 7-8). However, postmodernism does not automatically reject conventional methods of knowing and telling as false or archaic; instead, it opens them to inquiry; it introduces new methods, which are then also subjected to critique (Richardson, 2000). In this study, for example, the postmodern roots of narrative inquiry prohibits the reaching of firm conclusions, which seemingly goes “against the grain” (Elbaz-Luwisch, 1997, p. 75) of more established modes of inquiry. However, this is inline with the fluid nature of the professional identities of the seven participating mathematics teachers which are continuously being shaped by their narratives; therefore, any conclusions about it would, at best, be temporal and contextual in nature. Richardson (2001) explained that: “What postmodernism does is to recognize the situational limitations of the knower. It recognizes that you have partial, local, temporal knowledge – and that is enough” (p. 35). Therefore, the seeming inconclusivity of a

⁹ In the rather lengthy Chapters 3 and 4 narrative inquiry is explained in so much detail that I may be accused of “*aggressively extolling* the virtues of narrative research, at the risk of becoming an apologist for its legitimacy as an alternative research genre, and in the process reaffirming the dominance of the empirical tradition” (Dhunpath, 2000, p. 543) although this is not the intention.

narrative inquiry into teacher professional identity in this study, is inline with postmodernism which, according to Cook (2001), is about: “[p]rocess rather than product, becoming rather than being, dynamic rather than static, context rather than text, reflecting time and place rather than universal absolutes” (p. 24).

1.7 Outline of the chapters

This thesis consists of eight chapters which are succinctly outlined here:

Chapter 1 orients the reader towards this study’s background, rationale, aims, objectives, research design, delimitations, and, provides an overview of the other chapters.

Chapter 2 introduces the literature review which orients the reader towards this study’s philosophical and theoretical grounding. It positions the study within Socioculturalism and defines key theoretical notions, like identity, community of practice, social capital, and legitimate peripheral participation.

Chapter 3 introduces narrative inquiry as the research methodology. Some of the theoretical underpinnings of narrative inquiry are discussed and concepts are clarified. For instance, narrative inquiry is located within the constructivist paradigm; two different modes of knowing are discussed; narratives are distinguished from stories; differences between secret, sacred, and cover stories are discussed; and so forth.

Chapter 4 offers a detailed account of how the research was conducted; starting with the researcher’s own research story; and moving from there to how the data was collected, analysed, and presented; and ending with a summary of the ethical protocols observed.

Chapter 5 reports on the results of the horizontal analysis of the data aimed at finding the narratives that shape the professional identities of the participants. Several common themes were identified and these were clustered into seven thematic categories, namely: family support; role models; changing work environment; continuous professional development; professional recognition; religion; and, micro-politics.

Chapter 6 reveals the results of the vertical analysis of the data aimed at finding out how narratives shape professional identities. The narratives of four of the participants were intensively interrogated, starting with the most important identity-shaping stories selected by the participants themselves and cross-referencing with other parts of their narratives, in pursuit of a core narrative representative of their professional identities.

Chapter 7 highlights the significance of this study in terms of the design and development of pre-service teacher education programmes and in-service teacher professional development initiatives. Ideas in the literature are used as background to further explore the significance of this study and for making suggestions for future research. In addition, the research limitations of the study are discussed. The chapter concludes with a word on the personal significance of the study for the researcher.

1.8 Chapter summary

This chapter introduced the reader to the background, rationale, aims, objectives, research design, and delimitations of this study. It further provided an outline of all the other chapters. The next chapter will introduce the theoretical framework and the key notions used in this study.

Chapter 2: Literature Review

2.1 Introduction

The aim of this chapter is to introduce the theoretical framework of this study and to clarify the key notions of identity; community of practice; social capital; and, legitimate peripheral participation. The theoretical framework of this study is Socioculturalism, a version of Social Constructivism, which is based on the view of human thinking as social in its origins and of learning as participation in social practices. In line with Situated Learning Theory, the main discussion points in this chapter centre around the following notions: identity (or learning as becoming), community (or learning as belonging), practice (or learning as doing), and meaning (or learning as experience). Identity is construed as a conceptual bridge between learning and its cultural setting; and also, between the individual and the social. A narrative definition of identity, as well as an interpretive framework for studying teacher professional identity is proposed. In conclusion, it is suggested that a comprehensive understanding of teacher professional identity must include emphases on both practice and discourse; which paves the way for the subsequent narrative inquiry into the narrative shaping of teacher professional identities.

2.2 Paradigm shifts in Mathematics Education

Although still a relatively young academic discipline, Mathematics Education has already been subjected to a number of major paradigm shifts; mostly because of “the visible gulf between research and practice, expressing itself in the lack of significant, lasting improvement in teaching and learning that the research is supposed to bring” (Sfard, 2001b, p. 14). In its relatively short history Mathematics Education has shifted from Behaviourism to Cognitivism, and currently, to Socioculturalism. As Boaler (2002) explained, on the one hand, behaviourists believe that the best way to learn mathematics is through drill-and-practice; that is, by reinforcing certain mathematical behaviours based on the assumption that learners learn what is taught and that knowledge is clearly communicated and received; while on the other hand, constructivists believe that learners first need to make sense of new ideas and actively organize them into their own cognitive schemas through selection, adaptation, and the reorganization of knowledge (p. 42). Moreover, she argued

that both Behaviourism and Constructivism represents *knowledge* as an *individual attribute of people* that may be developed and transferred to be used in different situations (as opposed to situated learning perspectives).

Ernest (2010) cautioned against broad generalizations; especially of Constructivism, of which there are “several versions and varieties, some diametrically opposed to others” (p. 39). However, based on Ernest’s (2010) reflection on different theories of learning, I am contending that while the notion of *knowledge* as an *individual attribute of people* might be applicable in Radical Constructivism, where individualism is celebrated in true Piagetian tradition, this same generalization is not applicable in Social Constructivism, where the *social* is celebrated in true Vygotskian tradition. Ernest (2010) explained that: “Social constructivism regards individual learners and the realm of the social as indissolubly interconnected. Human beings are formed through their interactions with each other as well as by their individual processes. Thus there is no underlying model for the socially isolated individual mind” (p. 43). In line with the tenets of Social Constructivism, however, Socioculturalism represents *knowledge* “not as an individual attribute, but as *something that is distributed among people, activities and systems of their environment*” (Boaler, 2002, p. 42, my emphasis). This shift emphasizes the *sociocultural, dynamic nature of learning*, rather than the abstract conception of learning emphasized by cognitivist learning theory (Handley, Sturdy, Fincham, & Clark, 2006). The problem with theories that reduce learning to individual attributes such as mental capacity/activity, according to Lave (1996), is that they blame the marginalized for being marginal and hence do little more than to underwrite divisions of social inequality. The solution she envisions lies in a “reconsideration of learning as a social, collective, rather than individual, psychological phenomenon” (p. 149).

The argument so far has been that these shifts are the inevitable results of comparing advantages and shortcomings of different “paradigms” in the quest for viable solutions to the problems faced by mathematics teachers and learners. To ascertain whether these shifts in Mathematics Education can justly be called “paradigm shifts”, I turned to Thomas Kuhn’s (1962) seminal publication, *The Structure of Scientific Revolutions*, in which he claimed that all paradigms must share the following two characteristics:

- They must be sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity

- They must be sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve.

Kuhn (1962) explained that: “[Paradigms are] universally recognized scientific achievements that, for a time, model problems and solutions to a community of practitioners” (p. vii); furthermore, “[t]o be accepted as a paradigm, a theory must seem better than its competitors, but it need not, and in fact never does, explain all the facts with which it can be confronted” (p. 18). Behaviourism, Cognitivism, and Socioculturalism, all comply with Kuhn’s (1962) stated characteristics of paradigms above, including that none of them has all the answers to all of the questions that might be posed; so it seems reasonable to suggest that they represent paradigms, and that any shifts between them are indeed paradigm shifts with regard to our understanding of the *learning* of mathematics.

2.3 Socioculturalism

This study is situated within a sociocultural framework (Lerman, 2000; 2001; 2006; Kieran, Forman, & Sfard, 2001/2002; Goos, Galbraith, & Renshaw, 2004; Cobb, 2006; Goos, 2008) which, in turn, is based on the premise that “learning is social, and mediated by cultural objects” (Fernandez, Ritchie, & Barker, 2008, p. 188). Goos, Galbraith and Renshaw (2004) refer to the latter as “cultural tools” (p. 93) which, in addition to amplifying the cognitive processes, also “fundamentally change the nature of the task and the requirements to complete the task” (p. 93). They explained that mediation via tools “not only changes the relationship of people to the world by extending their capacity to transform it for their own purposes, but tool use also transforms the individual, incorporating the individual into new functional systems of action and interaction that are culturally and historically situated” (p. 93).

What distinguishes the sociocultural framework, and its many derivatives, from other frameworks is their association with the Vygotskian school of thought (Lerman, 2001; Fernandez, Ritchie, & Barker, 2008; Goos, 2008); that is, “they all promote the vision of human thinking as essentially social in its origins and as inextricably dependent on historical, cultural, and situational factors” (Kieran, Forman, & Sfard, 2001/2002, p. 5). In fact, Lerman (2001) proposed the use of the term *sociocultural* instead of *social constructivism* when referring to the work of Vygotsky; arguing that: “The metaphor of construction is a useful

one in the context of human learning, but today constructivism is firmly associated with a school of psychology that searches for *universal* features of development” (p. 96, italics in original). He added that a number of Mathematics Education researchers who have modified and complemented their constructivist orientation by complementing it with social strands of thought use the label “social constructivism” (p. 96). Cobb (2006) explained that the sociocultural framework “characterizes the individual as a participant in established, historically evolving cultural practices” (p. 151). Therefore, as a theoretical framework, Socioculturalism accounts for learning by focusing on the processes by which people increase their participation in various cultural practices, hence the importance of the notions *communities of practice* (Wenger, 1998); *social capital* (Bourdieu, 1986); *legitimate peripheral participation* (Lave & Wenger, 1991); and, *identity* (Sfard & Prusak, 2005a); all of which are pivotal in bridging the conceptual gap between the individual and the social or collective. Together, these four notions underpin a theoretical framework suitable for understanding the current interest in the notion of identity; which, according to Sfard and Prusak (2005a), revolves around questions about human beings in action. Specifically, it deals with the mechanisms underlying such actions; explaining how collective discourses shape individual worlds, and vice versa, how individual voices combine into the voice of a community; and about the “the missing link” (p. 15) between learning and its sociocultural context. Therefore, according to Fox (2006), this “new social learning theory” (p. 426) presents itself as post-Cartesian; that is, “beyond the mind-body dualisms, which see the social world as ‘out there’ and the psychological world as ‘in here’ in the mind or head... [and its view of] the process of human learning as one in which the mind acquires practical facts, social norms, and decontextualised (*sic*) theory-laden facts served up through formal education by a process loosely described as ‘internalisation’” (pp. 426-427).

According to Lerman (2006), the origins of Socioculturalism in Mathematics Education can be traced back to three theoretical fields: Psychology, Anthropology, and Sociology; “[all] arguing for the situatedness of knowledge, of schooling as social production and reproduction, and of the development of identity (or identities) as always implicated in learning” (p. 172). As a theoretical framework, the sociocultural approach to Mathematics Education signals “a move towards regarding mathematics as a discipline of humanistic enquiry, rather than of certainty and objective truth... [one] that emphasise reasoning and

communication skills, and the social origins of mathematical knowledge and values” (Goos, Galbraith, & Renshaw, 2004, p. 112).

2.4 Two metaphors of learning

Sfard (2009) distinguished between two metaphors of learning: “the metaphor of learning as *acquiring* something (knowledge, concepts, schemas, etc.) and a metaphor of learning as perfecting one’s *participation* in some kind of activity” (p. 56, italics in original); which she traced back to the work of French psychologist Jean Piaget and Russian thinker Lev Vygotsky respectively. Cognitivism can be attributed to the work of Piaget who, according to Sfard (2009), suggested that “learning is the activity of constructing mental entities known as schemes” (p. 56); while Socioculturalism can be attributed to the work of Vygotsky, who suggested that learning is “the child’s capacity to gradually become a competent participant, and eventually a modifier of historically established patterned forms of activity that sets human kind apart from any other” (p. 56). As Moen (2006) pointed out, however, Socioculturalism is a version of Social Constructivism – an alternative to traditional epistemologies and theories of human development – of which there are many versions; all with one common denominator – “the belief that individuals learn and develop through participation in social activities in the world” (p. 2). However, Sfard (1998; 2006a; 2006b), noting the omnipresence of the word “social” in current literature on learning, and the concomitant potential for undesirable connotations, especially with regards to the word “sociocultural”, opted to use the less confusing word “participationist” when referring to the “sociocultural” approach; and the word “acquisitionist” when referring to the more traditional cognitivist approach. In the following two subsections I will distinguish between these two metaphors of learning.

2.4.1 Acquisition metaphor

The acquisition metaphor stems from the historical notion of learning as the “acquisition of something” (Sfard, 1998, p. 5). In general, the “something” to be acquired is conceived to be entities such as: concepts, knowledge, skills and mental schemas (Sfard, 2006a); which, once acquired, may be applied, transferred, and shared; much like independent commodities. As Sfard (2006b) explained: “According to acquisitionist accounts, human growth is a process of

personal change and enrichment (acquisition of new knowledge, concepts, schemes, etc.); the individual mind is the principal producer of the acquired goods; and the role of the researcher is to discover the blueprint for the acquisition process” (p. 22). From this explanation, it is clear that the focus is on the “personal” and “individual” acquisition and production. Learning is seen as an individual activity; and, knowledge and cognitive skills as transferable commodities (Fernandez, Ritchie, & Barker, 2008).

Sfard (1998; 2006a; 2006b) cautioned, however, that the acquisitionist metaphor has a number of notable weaknesses; most of them related to a commitment to “the invariability of learning processes across different contexts” and that “individual minds are the principal source of their own development” (2006a, p. 156). This fixation with cross-situational commonalities rather than differences, and the concomitant search for a “universal blueprint” (Sfard, 2006a, p. 156) that makes humans all the same in their thinking, results in the metaphor’s failure to explain certain phenomena: Firstly, there are some interpersonal and cross-situational differences which the acquisition metaphor fails explain, for example, Plato’s ancient “learning paradox” (Sfard, 1998, p. 7) and the quandaries of: number; abstraction (and transfer); misconceptions; learning disability; and, understanding (Sfard, 2008, pp. 4-32). Secondly, the acquisition metaphor cannot explain how changes in human ways of acting can transcend a single lifespan; that is, human evolution and the accumulation of the outcomes of the on-going transformations from generation to generation (Sfard, 1998; 2006a; 2006b). A third potential weakness, which I think is more a warning than a weakness, lies in the potential impact of the commodification of knowledge on collective activities. Sfard (1998) cautioned that in a commodity driven and highly competitive society where “people are valued and segregated according to what they have, the metaphor of intellectual property is likely to lead to rivalry than collaboration” (p. 8); implying that rivalry and competitiveness are unlikely to be beneficial in a learning environment that depends upon collaboration and participation in communal activities.

2.4.2 Participation metaphor

According to Sfard (2006a, p. 153), the participation metaphor¹⁰ is best described by contrasting it with the acquisition metaphor. She explained that, rather than focussing on “acquisitions”, the participations “conceptualize developmental transformations as changes in what and how people are doing and claim that patterned collective activities are developmentally prior to those of the individual” (Sfard, 2006b, p. 22). Furthermore, she argued that the ongoing transformations in human activities, specifically learning, are the result of two complementary processes, namely: “individualization of the collective” and “communalization of the individual” (p. 23). Individualization is the process through which collective activities are personalized. From this perspective, for example, learning to perform a specific task can be conceived of as the gradual transition from participating in collective task performance to successful task performance on one’s own (Sfard, 2006a, p. 157); or, as Sfard (2009) explained, “individualization of these activities, that is, a gradual transition from being an only marginally involved follower of other people’s implementation to acting as a competent participant, with full agency over the activity” (p. 56). Learning is seen as a sociocultural activity; the construction of knowledge through collective participation (Fernandez, Ritchie, & Barker, 2008).

However, individualization and communalization are linked reflexively via the notion of identity so that “the collective activities are primary models for individual forms of acting, whereas individual variations and innovations feed back into the collective forms of doing, acquire permanence, and are carried in space and time from one community of actors to another” (Sfard, 2006b, p. 23).

This [participation] metaphor does justice to the fact that learning is inextricably bound up with identity formation. It assumes that learners themselves must be able to make sense of and give meaning to the content of learning. Becoming a more central participant in society is not just a matter of acquiring knowledge and skills; it also implies becoming a member of a community of practice. This requires people to see themselves as members, taking responsibility for their own actions (including the use of knowledge and skills) in that position. The

¹⁰ Because of its omnipresence in current literature, the term “social” could be misunderstood when referring to the “social nature of learning”; therefore, Anna Sfard chose to replace the term “social” with “participationist” (Sfard & Prusak, 2005a, p. 153). She effectively renamed “sociocultural” theory; calling it “participationist” theory instead.

learning process thus implies a change in personal identity, in the way one presents oneself to others and to oneself (ten Dam & Blom, 2006, p. 651).

Furthermore, the participation metaphor is able to explain some of the long-standing quandaries about human thinking that the acquisitionist metaphor fails to explain. It does this by changing the way in which questions about human development are approached. According to Sfard (2006b): “The participationist account offers not only a different answer to the question of *how* humans develop, but also alters the conception of *what* it is that develops” (p. 22, emphasis in original). Hence human development is conceived of as transformations in the “what and how people are doing – in patterned human processes” (p. 22) rather than transformations in the individual. The participation metaphor’s special strength lies in the fact that it provides for both individual and collective development. Ernest (2010), arguing from a social constructivist perspective, made a similar point:

[M]ind is viewed as social and conversational, because first of all, individual thinking of any complexity originates with and is formed by internalised conversation. Second, all subsequent individual thinking is structured and natured by its origin; and third, some mental functioning is collective (e.g., group problem solving, sign-based learning.) These assumptions stem from the Vygotskian developmental account of the origins of language in the individual as something that is internalised and appropriated from social functioning (p. 44).

A similar point was made by Gergen (1985), also a social constructivist, who argued that “knowledge is not something that people possess somewhere in their heads, but rather something people do together” (p. 270). His argument is that what counts as knowledge is usually represented in linguistic proportions and stored in books, journals, or electronically, and that, as a language, knowledge resides within the shared activities of a community.

Some researchers (Lerman, 2006; ten Dam & Blom, 2006) seem to agree that the acquisitionist and participationist metaphors can co-exist side-by-side; while others (Kieran, Forman, & Sfard, 2001/2002; Sfard, 1998; 2008; 2009) argue that the apparent dichotomy between the two metaphors is in fact illusionary. Arguing for co-existence, ten Dam and Blom (2006) explained via an analogy with learning to play football: “All in all, there should be a peaceful coexistence (*sic*) between the acquisition metaphor of learning and the participation metaphor: playing football demands practice both individually and in a team” (p. 651). Others, for example Kieran, Forman and Sfard (2001/2002), argue for a deconstruction of the apparent dichotomy between the individual and the social:

By defining thinking as communicating we are sidestepping the split rather than bridging the gap. The problematic dichotomy between the individual and social research perspectives is no longer an issue when one realizes that the cognitivist ('individualistic') and interactionist ('social') approaches are but two ways of looking at what is basically one and the same phenomenon: the phenomenon of communication, one that originates between people and does not exist without the collective even if it may temporarily involve one interlocutor (p. 10).

Arguing along similar lines, Lerman (2006), for example, wrote:

Cognition is often contrasted against sociocultural theories but this is to misunderstand the role of theories of human development, which is to investigate the origins of the individual's knowing. A more appropriate contrast is that of cognition resulting from the individual's efforts and cognition resulting from internalisation from the social plane (p. 172).

Sfard (1998; 2001a; 2008; 2009) also cautioned that, although the acquisitionist and the participationist metaphors seem to contradict each other, these perceived contradictions may in fact be illusionary; that is, they are more likely the result from incommensurable rather than incompatible use of words when talking about the two metaphors.

2.5 Situated learning theory

Much of the work of Lave and Wenger (Lave, 1991; Wenger, 1998; 2000a; 2000b; Lave & Wenger, 1991; Wenger, 1991) was aimed at offering an alternative to the dominant cognitivist perspective of learning as the acquisition of (taught) knowledge through discrete, context-independent, cognitive processes; which can be summarized as follows:

Cognitive learning theories consider the acquisition of knowledge as a change in the conceptual structures within the mind of an individual. As such, what is learned is largely independent of the context in which the learning takes place. From a cognitive perspective, knowledge is viewed as an entity which is acquired in one setting and can be readily transferred to other situations (Prescott & Cavanagh, 2008, p. 407).

The cognitivist perspective of abstract and transferable knowledge is founded on a positivist assumption that knowledge reflects an objective reality that can be manipulated using rationalist and symbolic logic (Handley, Sturdy, Fincham, & Clark, 2006). Situated learning theory, which is the theoretical base of Lave and Wenger's (1991) work, offers a critique of the cognitivist perspective of learning by reconnecting the learner and the processes of learning with social activity. Handley, Sturdy, Fincham and Clark (2006) explained that, from a situated perspective, "individual learning should be thought of as emergent, involving

opportunities to *participate* in the *practices* of the community as well as the development of an *identity*" (p. 642 , italics in original). Therefore, situated learning theory represents an "attempt to rethink learning in social, cultural, and historical terms" (Lave, 1991, p. 64). Furthermore, according to Goos, Galbraith and Renshaw (2004), "learning should not be considered simply as the accumulation of internal mental processes and structures, but as a process of appropriating cultural tools that transform tasks, and the relationship of individuals to the tasks as well as to the other members of their community" (p. 93). In situated learning theory it is to be expected that context is important. Kwo and Intrator (2004) linked learning with context and identity: "Learning as the focus of the profession calls for understanding of the environment in which teachers' lives are situated... how teachers react to the environment reveals the core of this learning that cannot be understood without addressing their inner lives" (p. 282). Thus, the importance of context on the process of identity development is recognized (Kraib, 2008). The situated learning perspective is in direct contrast with the traditional cognitivist perspective of "the learner as a receptacle of (taught) knowledge, and learning as a discrete cognitive process that largely ignored its meaning in the 'lived-in-world'" (Fuller, Hodkinson, Hodkinson, & Unwin, 2005, p. 50).

Although participation in a social context is contrasted with individual cognition, the intention is not to create a "false dichotomy" (Peressini, Borko, Romagnano, Knuth, & Willis, 2004, p. 71) between the two; the intention is to highlight social participation as a reflexive counterpart to individual cognition. As Peressini, Borko, Romagnano, Knuth and Willis (2004), maintained, "students contribute to the development of practices within the classroom community; these practices, in turn, constitute the immediate context for their learning" (p. 71). All of this can be linked to identity: "Situative perspectives coordinate cognitive and sociocultural aspects of identity and identity construction" (p. 79). As Hoadley (2012) pointed out, "the anthropological view of knowledge and situated learning identifies not knowledge structures in the head (as with cognitive constructivism), nor behaviors (*sic*) conditioned by an environment (as with behaviorism), but rather as a property lying somewhere between individuals and cultures, involving practices in context" (p. 290). Similarly, from Lave and Wenger's (1991) perspective, learning and hence the identity of the learner, is embedded in the context of social activity in which the learner is a co-

participator. Lave and Wenger (1991) argued that, since learning is perceived as an integral dimension of social practice, it follows that participation in social practice necessarily involves learning. There is a further dimension to learning as participation in the social practices of a community however; the issue of membership of the community of practice, which provides the context within which an individual develops the practices and identities appropriate to that community (Handley, Sturdy, Fincham, & Clark, 2006). Fuller, Hodgkinson, Hodgkinson and Unwin (2005) explained: "It is the fact of becoming a member that allows participation, and therefore learning to take place. The processes, relationships and experiences which constitute the participant's sense of belonging underpin the nature and extent of subsequent learning" (p. 51). Wenger (1998), for example, distinguished between three categories of membership based on the individual's level of participation (or non-participation) in the practices of the community of practice, namely, marginal (non-participation), peripheral (a degree of non-participation), and core (full participation). Wardekker and Miedema's (2001) concise summary of the differences between cognitivist and situated perspectives of learning is particularly relevant here:

Learning processes, in this [the situated] view, are ultimately *not* just about the acquisition of knowledge and skills, *not* just about building cognitive and emotional maps of the world. They are about learning to see oneself as a possible participant and contributor to cultural practices and traditions, as somebody who has a commitment to such practices and their inherent values (p. 38, italics in original).

In addition, they link learning to changes in a person's identity: "This [learning] requires a continuous work of revising one's relation to a world that is always seen in a different light as one learns more about it, and thus, posits a challenge of revisiting one's identity story. Shortly, the real goal of all education is the enhancement of identity processes in their relationship to cultural processes and traditions" (p. 38). In the words of Anspal, Eisenschmidt and Löfström (2012): "Identity involves both the person and the context in which the individual functions. It is in the context that professional characteristics are learned and adopted in unique personal ways" (p. 198). Thus, from a situated perspective, identity suggests "a certain kind of person" (Gee, 2000-2001, p. 100) in a particular context. It should be born in mind, as Kelchtermans (2005) pointed out, that *context* has both a spatial dimension ("where") and a temporal dimension ("when") that are important.

In Wenger's (1998) seminal work, *Communities of practice: Learning, meaning, and identity*, he gives an outline of his social theory of learning which is underpinned by the



Figure 1: Components of a Social Theory of Learning (Adapted from: Wenger, 1998, p.5)

notion of “learning as social participation” (p. 4) In a graphic representation of the model, learning is depicted at the centre of four interconnected and mutually defined components as shown in Figure 1. Wenger (1998, p. 5) described these components as: *meaning* – our ability to experience our life and the world as meaningful; *practice* – shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action; *community* – the social configurations in which our enterprises are defined as worth pursuing and our participation is recognizable as competence¹¹; and, *identity* – a way of talking about how learning changes who we are and creates personal histories of becoming in the context of our communities. It is important to point out Wenger's (1998) suggestion that one can switch learning in the centre (as the primary focus) of the model with any one of the four peripheral components and the new model (with a new primary focus) would still make sense. The focus of this study is on teacher professional identity, so I will switch learning with identity in the centre, making identity the primary focus of the model. As Smith (2006) explained: “The construct of identity creates a partnership between the social and the individual that highlights the person within the practice of teaching and emphasises the importance of knowing who we are and what we believe as teachers” (p. 619).

¹¹ The notion is used here in line with Gresalfi, Martin, Hand and Greeno's (2009) view of competence as an attribute of participation in an activity system (e.g., a classroom) and therefore context-dependent; which is in contrast to the customary view of competence as a collection of context-independent skills and abilities attributed to individuals. Competence, therefore, is not a trait of the individual *per se*, but rather an interaction between the opportunities to participate competently and the way the individual takes up that opportunity.

It has been argued so far that situated learning theory differs from traditional cognitivist learning theories in two fundamental respects: Firstly, through its emphasis on the relational aspects of learning within communities of practice, situated learning theory sets itself apart from the individualistic assumptions of conventional cognitivist learning theories (Handley, Sturdy, Fincham, & Clark, 2006). Furthermore, situated perspectives of learning represent knowledge “not as an individual attribute, but as something that is distributed among people, activities and systems of their environment” (Boaler, 2002, p. 42). In addition, “[s]ituated learning theory questions the pedagogic assumption that classroom based learning is as effective as the learning that takes place through participation in the practices of a community of practice” (Handley, Sturdy, Fincham, & Clark, 2006, p. 641). As Prescott and Cavanagh (2008) noted, “while cognitive approaches focus on knowledge, situated perspectives view learning as authentic participation in the discourse and practices of a community i.e. within the culture of the school” (p. 408). Learning is therefore a social activity through which individual learners make sense of their experiences as they increase the range and level of their participation in the practices of a community (Lave & Wenger, 1991). Secondly, as Handley, Sturdy, Fincham and Clark (2006) suggested, situated learning theory emphasizes the sociocultural dynamic nature of learning rather than the abstract conception of learning emphasized by cognitivist learning theory. From this perspective “[learning] involves the construction of identity through changing forms of participation in communities of practice” (p. 643). Boaler (2002) supports this view that “people use knowledge differently in different situations and that knowledge, rather than being a stable, individual entity, is co-constructed by individuals and by other people with whom they are interacting in conjunction with aspects of the situation in which they are working” (p. 42). Lave (1991) recommended a decentered view of the locus and meaning of learning; that is, one in which:

[L]earning is recognized as a social phenomenon constituted in the experienced, lived-in world, through legitimate peripheral participation in ongoing social practice; the process of changing knowledgeable skill is subsumed in processes of changing identity in and through membership in a community of practitioners; and mastery is an organizational, relational characteristic of communities of practice (p. 64).

In other words, to participate in social practices of a community of practice is to learn; and to learn, is to shape one’s identity. Fraser, Kennedy, Reid, and McKinney (2007), for

example, argued that “professional change is best understood as coming about through a process of learning that can be described in terms of transactions between teachers’ knowledge, experience and beliefs on the one hand and their professional actions on the other” (p. 157). Furthermore, we need to heed Kostogriz and Peeler’s (2004) observation that: “How workplaces of teachers are imagined, represented and conceived is directly related to the construction of teachers’ professional identities” (p. 4). From a situated perspective the social practices within which learning takes place through participation need to be located somewhere, and this gave rise to the notion of communities of practice (Lave & Wenger, 1991) which will be discussed in more detail in section 2.7.1 of this chapter.

2.6 Identity: learning as becoming

Since its origins in the post-World War II writings of Erickson and subsequent rapid growth in response to the quest to interpret contemporary American society (Adams & Montemayor, 1983; Gleason, 1983; Weigert, 1983), identity has taken on many different meanings in the literature (Gee, 2000-2001; Day, Kington, Stobart, & Sammons, 2006; Buckingham, 2008; Anspal, Eisenschmidt, & Löfström, 2012). This is mostly because identity has been explored across different academic disciplines, for example, Philosophy (Ricoeur, 1991; Hall, 2000; Parekh, 2009; Sen, 2009), Psychology (Vygotsky, 1978; Erikson, 1963; 1967; 1970; Marcia, 1980), and Anthropology (Lave & Wenger, 1991; Holland, Lachicotte, Skinner, & Cain, 1998); but also, because of the lack of an “operational” definition of identity (Sfard & Prusak, 2005a; 2005b). Sometimes, the many meanings of identity is the result of the complete absence of an explicit definition (Beijaard, Meijer, & Verloop, 2004; Beauchamp & Thomas, 2009; Canrinus, Helms-Lorenz, Beijaard, Buitink, & Hofman, 2011). The danger, Sfard and Prusak (2005a) warned, is that: “In the absence of a definition, the reader is led to believe that identity is one of those self-evident notions that, whether reflectively or instinctively, arise from one’s firsthand, unmediated experience” (p. 15).

And then there is the “fundamental paradox of identity” (Buckingham, 2008) which emanates from viewing identity, on the one hand, as “something unique to each of us that we assume is more or less consistent... it is what distinguishes us from other people” (p. 1), and on the other hand, as something that “implies a relationship with a broader collective or social group of some kind... partly a matter of what we share with other people” (p. 1).

Trent (2011) also alluded to this “paradox” between the “flexible nature of [teacher] identity construction... as never complete” on the one hand, and “rigidity in their conceptions of who they are, and who others are, as teachers” (p. 530) on the other. According to Buckingham (2008), much of the debate around identity derives from the tensions emanating from this paradox. In the teaching domain, for example, MacLure (1993) coined the term “biographical attitude” (p. 311) to describe the generalised concern with the teacher as a person; arguing that in terms of research, policy, or development issues, it places the biographical subject (the teacher) at the centre of the analytic frame that fits well with the ideologies of holism and emancipation. But it is also methodologically, in qualitative research, where it offers “better theoretical linkages between individual agency and social structures... [and] lends virtue and validity to the research enterprise [by] striving to remain faithful to subjects’ own values and experiences, or letting them speak in their ‘own’ voices” (p. 312). Moreover, as MacLure (1993) explained, the notion of identity is seated at the centre of the “biographical attitude” (p. 312) and should thus be seen as some kind of argument, a resource, that people use to justify, explain, and make sense of themselves in relation to others and to their context.

Grootenboer, Smith and Lowrie (2006, pp. 612-613) identified three particularly influential views of identity that seem to emerge from the wide range of traditions and disciplines associated with the notion:

- a ***psychological/developmental perspective***, with its focus on the individual, tries to compartmentalise and categorise aspects of identity in order to better understand it and sees identity formation as largely self-determined through individual adaptation to life events and situations;
- a ***sociocultural perspective***, with its focus on interactions between individual, culture and society, locates identity both within and external to the individual, and identity formation in social and cultural practices; and
- a ***post-structural perspective***, which challenges the notion of identity formation as being either an individual or social phenomenon, and sees the notion of a fixed self as problematic, and the process of identity formation as a “*dynamic and somewhat unstable... continuing process of becoming*” (p. 613).

However, by Grootenboer, Smith and Lowrie's (2006) own admission, these divisions are arbitrary and it is thus possible for theorists and researchers to work across their boundaries. Furthermore, they noted that all three theoretical positions share the notion that "within the practice of mathematics teaching and learning, [both] the people within the practice, and the social conditions they experience, play a major role" (p. 614) in shaping identity; and hence, the choice of whether to adopt a psychological, sociocultural, or postmodern lens will depend on the researcher's persuasion in the debate about the location and origins – individual or social – of identity (p. 614). While some researchers see teachers' identities as relatively stable, "rooted in the core sets of values, beliefs and practices"; others see teachers' identities as "essentially unstable, their temporary stability likely to be affected at any time by either their own 'biographical projects', change in their working environments or a combination of the two" (Day, Kington, Stobart, & Sammons, 2006, p. 611). According to Day, Elliot and Kington (2005):

Whilst teachers may well mobilise 'occasional identities' in response to new challenges and changing circumstances... nested within these lie sets of core values-based identities which relate to strongly held purposes and principles of care and commitment to pupils' learning and achievement, and which transcend transitory agendas of imposed change (p. 575).

They concluded that neglect of these 'core identities' is likely to result in "a decline of the very qualities which are essential to the complex process of sustaining the commitment necessary to high-quality teaching over a career through times of challenge and change" (p. 575).

The reader is reminded that this study is framed by a sociocultural perspective which is in line with Sfard and Prusak's (2005b) view of identity as "a perfect candidate for the role of 'the missing link' in researchers' story of the complex dialectic between learning and its sociocultural context" (p. 43). Also, that Sfard and Prusak cautioned against the use of the notions of *personality*, *character*, and *nature* instead of identity; arguing that these are "irrevocably tainted with connotations of natural givens and biological determinants" (p. 43) which, in turn, represent an essentialist rather than a sociocultural perspective. The following subsection offers a brief critique of the essentialist perspective of identity.

2.6.1 Identity and essentialism

Essentialism is the belief that people are born with an underlying core or 'essence' which remains stable and unchangeable throughout their lifespan; in other words, human social behaviour is explained at the hand of biological, physiological, or genetic differences rather than psychological, sociological, or cultural differences. Buckingham (2008) explained the notion of essentialism and its potential risk for identity as follows:

[Essentialism is] the tendency to generalize about the members of a particular group and assimilate them to a singular identity. This approach runs the risk of fixing identity, for example in terms of people's biological characteristics or their historical origins, and ignoring their diversity. It neglects the fact that people have multiple dimensions to their identities, and may well resist having to select one that will override all others (p. 7).

Hence, an essentialist notion of identity imposes severe limitations on how identity development might be conceptualized. In reaction to this limitation, Settlege, Southerland, Smith, and Ceglie (2009), for example, commented as follows:

A misperception about identity development is that it represents an embrionic force waiting to be released. Rather than imagining identities as somehow hatching from within, it is more appropriate to regard identities as being constructed within a sociological context. As such, identity development is not the disclosure of a way of being that becomes stabilized once it surfaces. Instead, identities develop in concert within intercatons with other individuals (p. 105).

In a very similar argument, Sfard and Prusak (2005a, p. 15), using the notions of *beliefs* and *attitudes* as examples, suggested that while integral to our understanding of identity, these notions carry an inherent weakness that precludes them from single-handedly bridging the conceptual gap between learning and its cultural setting. They explained that the inherent weakness of these notions is their proclivity towards essentialist assumptions about their purported existence prior to and independent of human activity. In their own words, "the assumption that an intention (or tendency) exists in some unspecified 'pure' form independently of, and prior to, a human action [forms] a dubious basis for any empirical study" (p. 15). While *beliefs*, *attitudes*, *personality*, *character*, and *nature*, are all irrevocably tainted with essentialist connotations of natural givens and biological determinants, and therefore ill suited to answer sociocultural questions; *identity*, on the other hand, which is thought of as man-made and as constantly re-created in interactions between people, seems perfect for the task (Sfard & Prusak, 2005a). Identity, while being pragmatically

significant “because it encompasses a range of issues that are typically subsumed under the heading of affective factors, including students’ persistence, interest in, and motivation to learn mathematics” (Cobb, Gresalfi, & Liao Hodge, 2009, p. 224), is at risk of the same inherent weakness as these so-called “affective factors”; unless it is defined in such a way that any potential essentialist assumptions are explicitly excluded. According to Keltchtermans (2005) the very notion of *identity* has an essentialist connotation:

I purposefully have avoided the notion of “identity” because of its association with a static essence, implicitly ignoring or denying its dynamic and biographical nature (development over time). Instead I have used the word “self-understanding”, referring to both the understanding one has of one’s ‘self’ at a certain moment in time (*product*), as well as to the fact that this product results from an ongoing *process* of making sense of one’s experiences and their impact on the ‘self’” (p. 1000).

As we know, the professional identities of teachers are not stable; they are affected by both external (policy), internal (organisational), and personal experiences, both past and present (Snyder & Spreitzer, 1984; Day, Kington, Stobart, & Sammons, 2006). The challenge then is to define identity in such a way that it becomes operational, immune to undesirable connotations, and in tune with the claim about identity as man-made and collectively shaped rather than given (Sfard & Prusak, 2005a, p. 15). What is needed, according to Wardekker and Miedema (2001), is a shift from the untenable modernist view of identity as “a stable and essential core of personality that has either been discovered or developed in a process of personality development taking place in adolescence” (p. 37) to a postmodernist view of identity as “a continuous activity of construction and deconstruction, of developing, maintaining, and evaluating personal commitments to values, persons, and practices” (p. 37). According to Day, Elliot and Kington (2005), commitment to teaching goes beyond and is deeper than the teacher’s professional practice context, which includes, for example: commitment to students, school priorities, and discipline knowledge. They further argued that, regardless of circumstance, values are the drivers of commitment: “Because teachers refer to these [values] as a core and stable element of their professional identity, it is most significant in influencing practice. Thus commitment in these terms is generally expressed as a set of personal and professional values that extend well beyond the traditional ideas of caring and dedication” (p. 573). As Day, Kington, Stobart, and Sammons (2006) concluded: “The architecture of teachers’ professional identities is not always stable, but at certain

times or during certain life, career and organisational phases may be discontinuous, fragmented, and subject to turbulence and change in the continuing struggle to construct and sustain a stable identity” (p. 613). What Wardekker and Miedema (2001) were alluding to, as a postmodern alternative to the modernist view as discussed above, is a narrative view of identity:

[I]dentity is the way we explain, in the form of a life story (autobiography), the choices we make in our commitments, and their consistency, to others and ourselves... it does not posit the individual as the sole creator of its own self-concept. Individual stories are created through the use of story schemata, genres, motives, metaphors, examples, and other elements in culture (p. 37).

From this point of view, the potential of identity to bridge the aforementioned gaps between the individual and the social (Geijssel & Meijers, 2005) and also between learning and its cultural setting (Sfard & Prusak, 2005a) seems obvious. However, as Wardekker and Miedema (2001) duly pointed out, not only are the inclusion of cultural elements necessary to make the individual’s story comprehensible, but it also alludes to the role of others as ‘co-constructors’ of the story through the specific affordances and cultural limitations that they bring with them into the audience. As Snyder and Spreitzer (1984) observed, “others construct images of how they expect us to act in a given situation, which in turn leads the actor to reflect on how she or he appears in that position from the standpoint of others... [consequently] one’s identity is fluid and continually in a process of negotiation” (p. 158). In other words, as Day (2002) maintained, teacher professional identity is not fixed. Therefore, I concur with MacLure’s (1993) argument that “identity should not be seen as a stable entity – something that people *have* – but as something that they *use*, to justify, explain and make sense of themselves in relation to other people, and to the contexts in which they operate” (p. 312, emphasis in original). Moreover, cultural practices and traditions are neither static nor harmonious, and at any time may interpenetrate one another, which further complicates the construction of an identity story (Wardekker & Miedema, 2001). Therefore, a narrative definition of identity seems the obvious alternative, given Wardekker and Miedema’s (2001) argument for a postmodern view of identity. However, in order to serve as an analytic tool for investigating learning, a narrative view of identity must first be operationalized (Sfard & Prusak, 2005a; 2005b). The following subsection aims at offering such an operational definition of identity.

2.6.2 Defining identity

An operational definition of identity is only possible once the notion has been purged of any essentialist connotations. In their quest for an operational definition of identity, Sfard and Prusak (2005a; 2005b), for example, embraced the notion of identity-making as a ‘communicational practice’; in other words, taking a narrative view of identity. Moreover, in doing so they also rejected the essentialist notion of identity as an independently existing, extra-discursive entity that one merely represents or describes while communicating. So, “[r]ather than viewing identities as entities residing in the world itself, our [their] narrative definition presents them [identities] as *discursive counterparts* of one’s lived experiences” (2005a, p. 17, italics in original), which do not have to be accurate descriptions of the “identity-engendering experiences” (2005a, p. 17). In the sociocultural tradition, questions about human beings in action, and specifically the underlying mechanisms of these actions, compel us to look for answers beyond personality, character, and nature; all of which are tainted by essentialist connotations of natural givens and biological determinants. As Sfard and Prusak (2005a) explained, “human beings are active agents who play decisive roles in determining the dynamics of social life and in shaping individual activities” (p. 15); and therefore, identity being socially constructed and dynamic, is best suited for answering questions about human beings in action.

The operational definition of identity, which Sfard and Prusak (2005a) proposed as an analytical tool for investigating learning, equated identities with “stories about persons” (p. 14); more specifically, “a set of reifying, significant, endorsable stories about a person” (p. 14). Heyd-Metzuyanim and Sfard (2012) later pointed out two features of an endorsed, subjectifying utterance which will reveal whether it counts as identifying or not: firstly, its power to reify; and secondly, its significance for the speaker. *Reification* is linked to the use of verbs such as: *be*, *have*, or *can* rather than *do*, and with the adverbs *always*, *never*, *usually*, and so forth, all of which stress repetitiveness of actions (Sfard & Prusak, 2005a; 2005b). Moreover, *reification* also refers to the act of replacing sentences about processes with propositions about states and objects (Sfard, 2008); which could be conceived as *reifying* the actions of a person, and in doing so, attributing that person with certain identifying qualities (Heyd-Metzuyanim & Sfard, 2012). Sfard and Prusak (2005a) further explained that a story is *significant* if “any change is likely to affect the storyteller’s feelings

about the identified person” (p. 17). Heyd-Metzuyanim and Sfard (2012) added: “Operationally, this means that an alteration or removal of any of the main elements of the story would change how the author feels about the protagonist” (p. 132). The most *significant* stories, according to Sfard and Prusak (2005b), are the ones that imply membership or exclusion from various communities. Finally, for a story to be *endorsable* the person who the story is about must agree that it is a true story (Sfard & Prusak, 2005a; 2005b). Hence, identity refers to the way in which we define ourselves and how others define us (Wenger, 1998; Brown & Duguid, 2001; Sfard & Prusak, 2005a; 2005b; Grootenboer, Smith, & Lowrie, 2006; Anderson, 2007). According to Brown and Duguid (2001), for example, “Learning, in all, involves acquiring identities that reflect both how a learner sees the world and how the world sees the learner” (p. 200).

Sfard and Prusak’s (2005a; 2005b) narrative definition of identity is operational in the sense that it replaces the traditional notion of identity as some essentialist, fixed, unchanging core inside of an individual with an alternative notion of identity as a dynamic and relational “process in which individuals draw on diverse resources to construct selves... [a process] emerging in and through practice” (Watson, 2006, p. 509). Anderson (2007), for example, pointed out that: “As students move through school, they come to learn who they are as mathematics learners through their experiences in mathematics classrooms; in interactions with teachers, parents, and peers; and in relation to their anticipated futures” (p. 8).

Sfard and Prusak’s (2005a) operational definition, as explained above, is in line with the sociocultural perspective of identity (Grootenboer, Smith, & Lowrie, 2006) and at the heart of currently accepted notions in education that identity is dynamic and that a teacher’s identity shifts over time and is influenced by factors both internal and external to the individual (Beauchamp & Thomas, 2009; Thomas & Beauchamp, 2011). The importance of seeing each teacher’s life and work against the backdrop of the relevant social, historical and cultural contexts is reiterated by Malm (2001): “it is important... to understand the teaching profession as being constantly shaped and influenced by cultural as well as individual forces, by collaborative groups as well as reflective individuals” (p. 6). Moreover, according to McKeon and Harrison (2010): “Identity is used by individuals to justify, explain and make sense of themselves in relation to others and to the situations in which they

operate” (p. 27). Furthermore, as a trajectory (as opposed to a fixed destination) identity incorporates “the past and the future in the very process of negotiating the present” (Wenger, 1998, p. 155). Thus, the suggested operational definition is useful in explaining “how collective discourses shape personal worlds and how individual voices combine into the voice of a community” (Sfard & Prusak, 2005a, p. 15). It is also useful in explaining the mechanisms through which the collective and the common shape individual activities and vice versa. In this way, the sociocultural perspective adds a new dimension to the traditional cognitivist perspective with its exclusive focus on the individual as an autonomous entity. Sermijn, Devlieger, and Loots (2008), for example, wrote: “there is no such thing as a fixed authentic, prediscursive self that exists independent of the speaking... This means that the birth of the selves is coincidental with the speaking and that we speak ourselves as multiple in the multiple stories we create of ourselves” (p. 7). The sociocultural perspective marks a shift in focus from personal identity to social identity (Parekh, 2009); where a “social identity is defined as representing the set of values internalized from groups to which one belongs, as well as the affective valence assigned to membership in the group” (Schwartz, Zamboanga, & Weisskirch, 2008, p. 631).

By positioning identity as the ‘operational’ link between individual and collective activities, new theoretical insights are possible; for example, the notion that an individual might have multiple identities as a member of multiple communities. As Bullough (2005) asserts, “identity formation is not a passive but a dynamic affair, that involves a giving and withholding which simultaneously alters oneself and one’s context, with the result that alternative identities may form” (p. 146). In the following section, the notion of multiple identities will be explored.

2.6.3 Multiple identities

All individuals belong to many communities of practice at the same time; all pivotal in shaping individual identities in one way or another. The importance of such a relational understanding of identity, linked to multi-membership of different communities of practice, is underscored by Mishler (2006) who argued that:

A more adequate understanding of how we change throughout our lives requires a relational conception of identity, one that locates the recurrent restorying of our lives within the flux of contradictions and tensions of the

several social worlds in which we are simultaneously actors and respondents to others' actions (p. 42).

This link between multi-membership of different communities of practice and the notion of multiple identities is evident throughout the literature (e.g., Wenger, 1998; Gee, 2000-2001; Søreide, 2006; Anderson, 2007; Parekh, 2009; De Fina, 2006). Wenger (1998), for example, referred to the process through which we define who we are by the ways in which we reconcile our various forms of membership of various communities of practice into one identity as a "*nexus of multimembership*" (p. 159). This notion is contextualised by Søreide (2006) who argued that the negotiation between multiple identities is a necessary part of the construction of teacher identity. She contended that one of the implications of this understanding of teacher identity as *multifaceted* and *constructed* is that it excludes the belief that teacher education, school leaders, teacher unions, or curriculum can provide a *ready-made* and *universal* (one size fits all) identity (p. 527). Furthermore, as De Fina (2006) suggested:

[P]eople do not possess one identity related to the social categories to which they belong, but rather they represent and re-present themselves, choosing within an inventory of more or less compatible identities that intersect and/or contrast with each other in different ways and in accordance with changing social circumstances and interlocutors (p. 352).

The importance of "plural social identities" or multiple identities, according to Parekh (2009), can hardly be exaggerated. Amongst the many examples that he offered, there is one that stands out for me:

Since every social identity represents a particular way of looking at the world, plural identities mean plural perspectives, each supplementing the insights and correcting the limitations of others, and creating the possibility of a broader and more nuanced view of the world... The opposite happens when a single identity becomes dominant. Individuals then see themselves, their society and the world from a single perspective, and not only fail to notice several aspects of them, but take a highly skewed and distorted view of those they do (Parekh, 2009, p. 276).

In the remainder of this section I will provide further examples of such multiple perspectives of identity that were extracted from the literature.

As a first example I would like to refer to Gee (2000-2001), who illustrated how context moderates identity by suggesting a "kind of person" within a particular context; arguing that, while an individual might have a "core identity" which holds more uniformly across contexts; the same individual may also have multiple other identities that are

activated in different contexts. Gee (2000-2001, pp. 100-107) suggested four perspectives of what it means to be a “certain kind of person”:

- Nature-identity, stemming from one’s natural state; example gender, race, posture, and so forth;
- Institution-identity, derived from a position recognized by authority;
- Discourse-identity, resulting from the discourse of others about oneself; and
- Affinity-identity, determined by one’s practices in relation to external groups.

According to Gee (2000-2001), these four perspectives are not separate from one another; they interrelate in complex and important ways that focus our attention on different aspects of how identities are formed and sustained. As Beauchamp and Thomas (2009) pointed out: “The emphasis is on the multifaceted nature of identity and its changing shape in terms of external influences” (p. 177). This point is echoed and expanded in the work of Settlage, Southerland, Smith, and Ceglie (2009), who wrote:

The identity development of a teacher is a multifaceted ongoing process... to be or become a teacher is a continual project of forming and reforming oneself within an elaborate web of affiliational, institutional, discursive settings and natural elements. Thus, the moment-to-moment interactions with students, the day-to-day relationships with peers, and the year-to-year shifts in responsibilities all have the potential for nudging the path of a teacher’s identity (p. 105).

From this perspective, identities are conceived of as “ongoing construction projects that have the potential for reshaping as new people, places, and problems are encountered” (Settlage, Southerland, Smith, & Ceglie, 2009, p. 105).

As a second example, I would like to refer to the work of Anderson (2007, pp. 8-11), who, drawing on Gee’s (2000-2001) four perspectives of identity (as discussed above) and Wenger’s (1998) three modes of belonging (engagement, imagination, alignment), developed the following four faces of identity in the mathematics classroom:

- Engagement – How students see themselves and are seen by others as learners of mathematics through various degrees of engagement with mathematics, their teachers and their peers.
- Imagination – How the activities that students choose to engage with are related to the images of themselves in relation to mathematics in everyday life, in post-secondary education, and in future careers.

- Alignment – How students align their energies within institutional boundaries and requirements to mathematics (for example, the level of mathematics taken and to what end).
- Nature – The fallacy of a “missing math gene” holding them back.

Anderson (2007) suggested that these four faces might be represented by the four faces of a tetrahedron, with each face separately describing how individuals (and others) might see themselves as mathematics learners, but together these faces are all part of one inseparable whole.

As a final example, I would like to draw attention to the work of Jansen (2001) who, on the basis of how South African teachers feel about themselves politically, emotionally, professionally, distinguished between three perspectives of teacher identity:

- Liberator: the notion of teacher-liberators able to challenge apartheid’s legacy, taking charge of their classrooms, empowering learners, and transforming the curriculum;
- Facilitator: the notion of teachers as facilitators of a new learner-centered pedagogy in which learners took charge of their own learning; and
- Performer: the notion of the teacher as an officially regulated performer whose actions are identifiable and measurable against set standards and outcomes as determined by the state.

Jansen (2001) pointed out that the first two of these perspectives of teacher identity failed in the classroom. The perspective of the teacher as a liberator failed because, “how teachers see themselves professionally and how they see themselves politically are two very different realities” (p. 243). And the perspective of the teacher as a facilitator failed, because of teachers “lacking professional confidence and falling short of the required subject matter competence” (p. 243).

These examples provide evidence of how membership of many communities of practice and different contexts and discourses shape identities; it also raises questions with respect to the individual’s capacity to influence his or her own identity. According to Bradbury and Miller (2010), conceiving of identity as multiple interpretations of narrative suggests that “identity is amenable to change and creative interpretation... However, the

potential for generating storied versions of our lives is always constrained” (p. 687). In the following section, the notion of agency to change one’s own identity will be discussed.

2.6.4 Identity and agency

Sfard and Prusak (2005a) linked agency and identity claiming that “human beings are active agents who play decisive roles in determining the dynamics of social life and in shaping individual activities” (p. 15). This point was affirmed by Beauchamp and Thomas (2009) who noted that a sense of agency, of empowerment to move ideas, to reach goals, or to transform the context, may arise when a teacher begins to realize the role that his or her identity plays in performance within teaching contexts (p. 183). Such agency, however, is mediated by the interaction between the individual and the tools and structures of the social setting; for example, the available resources, the norms of the school, and externally mandated policies (Lasky, 2005). Nevertheless, agency marks a notable shift away from undesirable essentialist notions of identity towards a notion of identity as man-made and collectively shaped rather than given. This shift is one of the strengths of the proposed operational definition of identity as *reifying*, *endorsable* and *significant* stories about a person (Sfard & Prusak, 2005a, p. 16). By defining identity as stories, it is implied that identity might be re-storied; and therefore, that the notion of identity carries an inherent element of agency; which, in turn, is critical in understanding how teachers might shape their professional identities. According to Bamberg (2012) the realization that “the self” (identity) is open to change, and that this has to work through narrative, is at the heart of *narrative therapy* through which:

we are continuously urged to seek out the problem in our narrative, the one that is causing our lack of fulfilment and the suffering that comes in its wake... establishing a narrative connection that has led to the problem, not only is said to enhance self-reflection but is regarded the first step in a healing exercise that is supposed to free the narrator of the problem and the suffering it causes (p. 79).

This might be a very helpful technique in assisting teachers to re-story their professional identities. As Hiles, Cermák and Chrz (2010) proposed: “[B]y using narratives in our everyday lives the individual can position themselves with respect to the events that befall them. Individuals can actively participate in the *creation*, *compromise*, *celebration* and *configuration* of who they are” (p. 110, emphases in original). Moreover, “if we are always

making up stories and being made up in stories, then there is room for critical and creative transformation” (Leggo, 2004, p. 99). In other words, identities can be re-storied. In the following section, the influence of emotions on identity, in particular on teachers’ professional identities during reform efforts, will be discussed.

2.6.5 Identity and emotions

Day, Kington, Stobart and Sammons (2006), commenting on the emotional impact of reform on teacher professional identity, wrote: “reforms have an impact upon teachers’ identities and, because these are both cognitive and emotional, create reactions which are both rational and non-rational. A significant and ongoing (*sic*) part of being a teacher, then, is the experiencing and management of strong emotions” (pp. 611-612). According to Hargreaves (1998) emotions are even more influential than cognitive aspects in shaping teachers’ professional identities. The teachers’ experience of emotions forms the basis of their sense of professional self (Shapiro, 2010) and affect their attitudes to and practices of teaching and learning (Day, 2002; Day, Kington, Stobart, & Sammons, 2006). It has been argued, so far, that emotional reactions to school reform influence or shape teachers’ professional identities (Day, 2002; Day, Kington, Stobart, & Sammons, 2006); but, it also influences their risk taking behaviour (Reio Jr, 2005; Darby, 2008); professional vulnerability (Kelchtermans, 2005; Lasky, 2005; Hong, 2012); and, how they respond to challenging circumstances (Hong, 2012). Vulnerability can be described as “a fluid state of being that can be influenced by the way people perceive their present situation as it interacts with their identity” (Lasky, 2005, p. 901), as a fluctuating state of being triggered by critical incidents that intensify a person’s existing state of vulnerability (p. 901). Vulnerability, like risk taking, is necessary to adapt to changes and can be beneficial if it reduces potential losses and maximises potential gain. However, in an environment of school reform, characterised by ambiguity and conflicting understandings, “the meaning making process is influenced negatively by teacher’s emotions with possible professional and personal repercussions” (Reio Jr, 2005, pp. 987-988). Vulnerability can develop due to feelings of powerlessness, betrayal, or defencelessness, especially in situations of high anxiety or fear (Lasky, 2005); but, also in situations or relative safety with reduced potential losses and maximal potential gains.

Teachers are most likely to experience open vulnerability when they feel safe enough to risk opening themselves to the possibility of embarrassment and

emotional stress for the sake of relationship building and student learning when they believe a person or situation will benefit. They are most likely to experience inefficacious vulnerability when they feel defenceless, fearful, and highly anxious. In such contexts they are less likely to take risks for the sake of building student trust and learning (Reio Jr, 2005, pp. 986-987).

Thus, reform and change affect teacher learning and identity development by creating an environment of uncertainty; confirming “the importance of continuous teacher learning to the development of an identity as an effective teacher, an identity that can be influenced greatly by emotional reactions to change” (Reio Jr, 2005, p. 988). As Kelchtermans (2005) concluded, “the experience of vulnerability is mediated by the context (policy environment, social and cultural climate in school, etc.) and is directly linked to teachers’ identity” (p. 997). In other words, teachers feel vulnerable when they perceive their professional identity and moral integrity to be questioned; and their valued workplace conditions thereby to be threatened or lost (Lasky, 2005) as in the case of educational reforms. As Kwo and Intrator (2004) postulated, the implied premise of all educational reform is that success depends on the disposition and capacity of teachers to grow, learn, and expand their professional repertoires. However, teachers’ perspectives, work and life histories are all too often neglected in educational reforms; and, as Goodson and Numan (2002) cautioned: “If teacher perspectives are not considered, it is likely that a new crisis of change and reform will be generated. For, all too clearly, if teachers are not fully considered in the new initiatives, their centrality in the process will ‘act back’ against the very essence of the reforms” (p. 274). The result is reforms that are characterised by conflict, change, and ambiguity that often result in intense negative emotional responses (Schmidt & Datnow, 2005). As Day *et al.* (2006) explained: “Because of their emotional investments, teachers inevitably experience a range of negative emotions when control of long-held principles and practices is challenged, or when trust and respect from parents, the public and their students is eroded” (p. 612). Similarly, Schmidt and Datnow (2005) examined how emotions influence sense-making during educational reforms and found that teachers experience less emotional responses (positive and negative) to school level reforms than to reforms vis-à-vis their own classroom practices. They explained that the teachers’ emotions are a product of their interaction (or not) with the reforms, and that these are amplified in the classroom “[where] these interactions become in essence moral imperatives, as teachers’ emotions are more closely tied to their own moral purposes of teaching and learning, and ultimately what is best for

their students” (p. 961). In short, “emotions (and meanings) are social products in response to, and reflective of, interpersonal relations, morals, and politics” (p. 957). According to Hodgen and Askew (2007), the emotive reactions to professional change are especially strong for mathematics teachers:

The notion of identity provides a way of understanding this difficulty. Fundamental changes in teachers’ beliefs and knowledge necessitate fundamental changes to teachers’ identities involving more than ‘fixing’ or ‘topping up’ teachers’ inadequate knowledge. Professional change, then, involves at least in part becoming a ‘different’ person. Becoming ‘different’ involves letting go of what one has been at the same time as maintaining the more fundamental aspects of one’s identity (p. 474).

According to Darby (2008), the reform may sometimes not even be implemented at the classroom level if the teachers do not support the reform effort, or if they feel that it challenges their professional purpose, for example, to facilitate learning and making a difference in learners’ lives. Instead, teachers may experience fear and intimidation when their instructional approaches are challenged, and interpret these as a challenge to their professional self-understanding (p. 1164). In their study, Jephcote and Salisbury (2009) reported that teachers, when confronted by conflicting pressures of changing working conditions, reconciled by privileging what they understand to be the real needs and interests of the students, even if this involved subversion of the demands of their managers (as the embodiment of change); for example, spending substantial parts of lesson time on what is essentially pastoral work. However, teachers who are given opportunities to be actively involved in decision making and problem solving may feel less vulnerable and their professional identities may be less threatened (Hong, 2010). Hence, “[i]ncreased and consistent opportunities for learning equip teachers with the tools they need to develop their subject matter and instructional expertise, reduce negative emotional reactions related to ambiguity and uncertainty, and promote the formation of a positive personal and professional identity” (Reio Jr, 2005, p. 990). Therefore, “[t]he reform effort must take into account that teachers have natural emotional reactions to change that have both positive and negative influences on the construction of their professional and personal identities” (Reio Jr, 2005, p. 992). As Shapiro (2010) pointed out, both positive and negative emotions play a role in shaping the professional identities of teachers. For example, positive emotions include care, affection, and love; while negative emotions include disappointment,

loneliness and anger. What these emotions have in common, is that all of them are responses to human relationships, because as teachers “it is both our job and nature to care and connect with other human beings” (p. 617). Therefore, as Jephcote and Salisbury (2009) reported, teachers “faced with what seems like endless change” (p. 971) cope by investing heavily in emotional labour, by establishing nurturing relationships with learners and adapting their teaching style. In doing so, the teachers are “exercising their own agency, in control of and constructing their own professional identities” (p. 971). Similarly, findings were reported by Mpungose (2010) in his study of the professional identities of school principals. He reported how the behavioural choices and decisions of the latter about how to perform their duties are often based on personal values, interests, beliefs and expectations that they bring with them to the workplace.

The number of years a teacher has taught also has an influence on their acceptance of and emotional responses to educational reform initiatives (Darby, 2008; Hargreaves, 2005). Hargreaves (2005), for example, distinguished among: early career (five or less years’ experience); mid-career (between six and nineteen years’ experience); and, late career (over 20 years’ experience) individuals. Early career teachers are energetic, enthusiastic, adaptable and flexible with regard to educational change. However, they are less comfortable with their role as a teacher than more experienced teachers and often uncertain of their future in the profession. Mid-career teachers are more likely to be tired and emotionally drained; their enthusiasm tempered; and, although they remain open, they are selective in adopting change initiatives. Late career teachers are sceptical about the sustainability of the reform efforts and are likely to show resistance and resilience toward change. Similar findings are reported by Hong (2010) who found that teachers in different stages of their careers tend to perceive themselves differently in terms of value, efficacy, commitment, knowledge and belief, emotion, and micro-politics. In this study, all of the participants have been teaching for at least 20 years and can therefore be considered late career teachers according to Hargreaves’ (2005) categorization as discussed above. There seems to be a close link between emotions and the interpretation of life events; a view that is echoed by Kerby (1991), arguing that narration is an interpretive activity: “Prior to some degree of narration, the *meaning* of human events for us is obscure or simply absent... If, therefore, narration is linked to emotions, then emotions are likely to be keyed to, or

dependent on, the type of interpretation we give to events in our lives” (p. 48, italics in original). In the following section, the notion of teacher professional identity will be discussed.

2.6.6 Teacher professional identity

Teacher professional identity is a key factor in understanding teachers’ professional lives, decisions, and actions. As Watson (2006) noted, “professional action is doing professional identity” (p. 510). In other words, how teachers perceive themselves as professionals influences their choice of actions and judgements. Thus, insights into teachers’ professional identities are important for gaining insights into the essential aspects of their professional lives such as career decisions, motivation, job satisfaction, emotions, and commitment (Hong, 2010). This seems true for all teachers. For instance, Krabi’s (2008) description of the professional identity of the university educator as “a dynamic self-concept of oneself as an educator” (p. 248) holds for school teachers as well. Similarly, Robinson and McMillan’s (2006) argument about the importance of understanding the professional identities that teacher educators construct for themselves in affecting innovation in a changing policy environment applies to school teachers as well. In other words, teacher professional identity serves as an analytical lens through which teaching can be understood and experienced (Peressini, Borko, Romagnano, Knuth, & Willis, 2004). However, insights into teacher professional identity can also be obtained when the process is reversed so that essential aspects of their professional lives are viewed as indicators of their sense of professional identity. According to Canrinus, Helms-Lorenz, Beijaard, Buitink and Hofman (2011): “Teachers’ professional identity generally pertains to how teachers see themselves based on their interpretations of their continuing interaction with their context... this interaction manifests itself in teachers’ job satisfaction, occupational commitment, self-efficacy and change in level of motivation... and they represent a personal perspective on how teachers view themselves as professionals in their work” (p. 594). As Mockler (2011) contended, “teacher professional identity, [is] formed and re-formed constantly over the course of a career and mediated by complex interplay of personal, professional and political dimensions of teachers’ lives... [Moreover] teacher professional identity can function as a practical and political tool for the profession itself, useful in countering current orthodoxies and ‘common sense’ understandings of teachers’ professional practice” (p. 518).

In an article about the issues of professional identity faced by Australian teachers in the wake of significant changes in government policy and educational restructuring, Sachs (2001, p. 149) noted how the “associated changes in working conditions and professional expectations” have brought about renewed focus and contestations of the nature of “teacher professionalism” and the meaning of “teacher professional identity.” The issues she discussed resemble the issues with professionalism and professional identities faced by South African teachers in the wake of the post-apartheid educational reforms. The main point of the article, however, is that there is no consensus over the nature of teacher professionalism and what is meant by teacher professional identity; which implies that readers have the freedom to motivate for their own interpretations of the meaning of teacher professional identity. This was also the conclusion reached by Beijaard, Meijer, and Verloop (2004) after an extensive review of research, between 1988 and 2000, into professional identity in relation to teachers and teacher education. This is purportedly the period when teachers’ professional identity first emerged as a research area. They also observed that the literature lacks a clear definition of teacher professional identity. However, it would make sense to at least have a ‘working definition’ of teacher professional identity in order to proceed in a meaningful way. Beijaard *et al.* (2004), for example, suggested that teacher professional identity formation “is a process of practical knowledge building characterized by an ongoing integration of what is individually and collectively seen as relevant to teaching” (p. 123), which is more or less in line with the storied notion of identity (Sfard & Prusak, 2005a; 2005b). While Sutherland, Howard, and Markauskaite (2010), drawing on the work of others (e.g., Gee, 2000-2001; Geijsel & Meijers, 2005; Beijaard, Meijer, & Verloop, 2004) added that professional identity, which is only one of multiple perspectives of a person’s identity, emanates from a person’s position in society, interactions with others, and interpretations of personal experiences.

Reio (2005) provided a list of components of one’s identity as an effective teacher which include: “expertise with respect to subject matter, teaching methods, classroom management, effective relationships with administrators and parents, and the implementation of reform” (p. 988). A list of components, however, does not constitute a working definition. Mockler’s (2011) proposed working definition is particularly appealing:

[T]he concept ‘teacher professional identity’ is used to refer to the way that teachers, both individually and collectively, view and understand themselves as

teachers. Teacher professional identity is thus understood to be formed within, but then also out of, the narratives and stories that form the 'fabric' of teachers' lives, what Conelly and Clandinin (1999) have termed 'stories to live by'. Professional identity has a 'performative edge': the process of 'storying' and 'restorying' has the effect of both claiming and producing professional identity (p. 519)

In addition, I propose that the notion of teacher professional identity, as it is used in this study, refers to the identity of a teacher as an active participant in the practices of teaching an academic discipline (like mathematics). Furthermore, that the stories in Mockler's (2011) working definition be considered to be reifying, significant, and endorsable stories (Sfard & Prusak, 2005a; 2005b) about a teacher's participation in the practices of the academic discipline of mathematics. In other words, that these stories must be about: "how teachers define themselves to themselves and to others" (Lasky, 2005, p. 901) as professional mathematics teachers. Such a 'working definition' of teacher professional identity, I contend, would be in line with Sfard and Prusak's (2005a) operational definition of identity as well as with the MTEP research question: "How can a positive professional identity be grown?" (Schäfer, 2011, p. 5). As Day (2002) maintained, "sustaining a positive sense of identity to subject, relationships and roles is important to maintaining motivation, self-esteem or self-efficacy, job satisfaction, and commitment to teaching" (p. 689). Therefore, I wish to reiterate that this is a 'working definition' specifically suited to my purposes in this study, especially in the light of Sachs' (2001) caution that:

Within the context of uncertainty and multiple educational restructurings teachers' professional identity is not straightforward. There would be incongruities between the defined identity of teachers as proposed by systems, unions and individual teachers themselves and that these will change at various times according to contextual and individual factors and exigencies. Identity must be forever re-established and negotiated (p. 155).

What Sachs (2001) seems to be suggesting, is that far from being fixed, the definition of teacher professional identity will continue to vary according to the particular context and personal agendas of the identifiers. This idea is echoed by Flores and Day (2006) who describe the development of a professional identity as "an ongoing and dynamic process which entails the making sense and (re)interpretation of one's own values and experiences" (p. 220) which may be influenced by personal, social and cognitive factors.

Thus, at the same time as teachers' professional identities play a central role in determining how they juggle priorities and manage classroom dilemmas, their

professional identities must accommodate the ambivalence and tension these conflicts generate. Through this process of accommodation, teachers create and recreate their professional identities (Peressini, Borko, Romagnano, Knuth, & Willis, 2004, p. 80).

However, as Mockler (2011) cautioned, “The contention that professional identity is a career-long project connects with this notion of identity as both a reification and by-product of teachers’ narratives. The construction of identity, the process of creating and re-creating identifications across the length and breadth of our lives and careers is non-linear and downright messy” (p. 519). Timoštšuk and Ugaste (2010), for example, drawing on Wenger’s (1998) notion of learning, understood teacher professional identity to be “the person’s self knowledge in teaching-related situations and relationships that manifest themselves in practical professional activities, feelings of belonging and learning experiences” (p. 1564). This approach is based on the premise that initial teacher education has a deep impact on the professional identities of student teachers. Reciprocally, however, professional identity also affects what the novice teacher learns during the teacher education experience. As Peressini, Borko, Romagnano, Knuth and Willis (2004) explained, “a teacher’s concept of ‘self-as-a-teacher’ has a profound impact on learning, decision-making, and knowledge and beliefs about teaching. Professional identity serves as a filter through which learning takes place” (p. 80).

However, given the variation in how it is understood, it seems more feasible to describe the notion of teacher professional identity in terms of its characteristic features, rather than to try and pin it down in a neatly formulated definition. Here the work of Beijaard, Meijer and Verloop (2004) is particularly useful. After a systematic analysis of all the available literature on teacher professional identity, covering the period from 1998 to 2000, they came up with the following four essential features of teachers’ professional identities:

- Professional identity formation is an *ongoing process* (life-long learning, dynamic, not stable or fixed) involving the interpretation and reinterpretation of experiences, and driven by the question: “Who do I want to become?” rather than “Who am I at this moment?” (p. 122). Although this perspective seems to suggest that teacher professional identity may be associated with amount of experience, Canrinus, Helms-Lorenz, Beijaard, Buitink, and Hofman’s (2011) work points to the contrary;

concluding that “teachers’ sense of professional identity should not be viewed as a latent variable with a uniform structure and not exclusively related to experience” (p. 606).

- Professional identity implies *both person and context*. Within the context teachers learn professional characteristics that are adopted by individuals in unique ways (Beauchamp & Thomas, 2009, p. 177), or, as Beijaard, Meijer and Verloop (2004) put it: “Teachers differ in the way that they deal with these characteristics depending on the value they personally attach to them” (p. 122). Therefore, professional identity is not attributable in a similar fashion to all teachers – it is continuously being shaped through the interaction between person and context (Canrinus, Helms-Lorenz, Beijaard, Buitink, & Hofman, 2011; Anspal, Eisenschmidt, & Löfström, 2012).
- Professional *identity consists of sub-identities* related to teachers’ different contexts and relationships; some of which may be at the core of a teacher’s professional identity, while others may be more peripheral. The key is that these sub-identities are well balanced and do not conflict. The more central a sub-identity is, the more costly it is to change or lose that identity (Beijaard, Meijer, & Verloop, 2004, p. 122). Moreover, “[a]n individual’s prior knowledge and beliefs act as a filter for interpretation of his/her experiences; thus the characteristics of, relationships among, and coherence of these sub-identities will be unique to each individual” (Sutherland, Howard, & Markauskaite, 2010, p. 456).
- *Agency* is an important element of professional identity, which is in line with the constructivist notion that learning – both individually and collectively – takes place through learner activity. It comprises the active pursuit of professional development and learning in accordance with a teacher’s goals, and hence it may be argued that “*professional identity is not something that teachers have, but something that they use in order to make sense of themselves as teachers*” (Beijaard, Meijer, & Verloop, 2004, p. 123).

Beijaard, Meijer and Verloop (2004) suggested that these four features may function as a general framework for future research on teachers’ professional identity. In Akkerman and Meijer’s (2011) assessment, however, the literature reflects only three common, decidedly postmodern, characterizations of teacher professional identity: multiplicity; discontinuity;

and, its social nature. Their position, in turn, is dialogical (see Akkerman & Meijer, 2011) combining both modern and post modern views; and, typifying teacher professional identity as both unitary and multiple; both continuous and discontinuous; and, both individual and social. The thrust of their argument is that a purely postmodern view of teacher professional identity leaves some questions unanswered. For example, how any sense of self as a person can be maintained over time or “[i]f one claims that identity shifts according to others and with social participation, how is it that persons can still act as ‘unique’ individuals showing agency moving beyond the given context?” (Akkerman & Meijer, 2011, p. 310). Beauchamp and Thomas (2009) contend that teacher professional identity development involves an understanding of the self within a context outside of the individual, such as the classroom or the school, which in turn necessitates an examination of the self in relation to others, because “a teacher’s identity is shaped and reshaped in interaction with others in a professional context” (p. 178). They also argued that, in addition to the personal dimension of self, identity should be viewed with respect to the professional dimension of teaching; claiming that a combined view would help us to think more clearly about identity in terms of teacher development. Teacher professional identity, therefore, includes not only what teachers think and do, but also their sense of who they are as individuals (Grootenboer & Ballantyne, 2010). This notion of self, or self-concept, and its relationship to identity is one of the more complex issues related to the determination of what identity is. Therefore, I am contending that the notion of the self or self-concept, coupled with an element of personal agency, is resolved by the requirement that in order to count as identifying these stories about a person should at least be “endorsable” (Sfard & Prusak, 2005a, p. 14) by the identified individual.

In addition, Wenger’s (1998, p. 149) five dimensions of identity would be useful in thinking about teacher professional identity. These dimensions are: identity as *negotiated experience*, defining who we are by the ways we experience ourselves through participation as well as by the ways we and others reify ourselves; identity as *community membership*, defining who we are by the familiar and the unfamiliar; identity as *learning trajectory*, defining who we are by where we have been and where we are going; identity as *nexus of multimembership*, defining who we are by the ways we reconcile our various forms of membership into one identity; and, identity as *a relation between the local and the global*,

defining who we are by negotiating local ways of belonging to broader constellations and of manifesting broader styles and discourses. A central ingredient in such a combined view of identity is the notion of practice. Wenger (1998), for example, forged a close link between identity and practice portraying them as “mirror images of one another” (p. 149) which are best summarized in the Table 1 below:

Table 1: Parallels between practice and identity (From Wenger, 1998, p.150)

Practice as...	Identity as...
• Negotiation of meaning (in terms of participation and reification) • community • shared history of learning • boundary and landscape • constellations	• Negotiated experience of self (in terms of participation and reification) • membership • learning trajectory • nexus of multimembership • belonging defined globally but experienced locally

This notion of a close link between identity and practice is corroborated by Cohen’s (2008) argument that teacher identity is central to the beliefs, values, and practices that guide teachers’ engagement, commitment, and actions inside and outside of the classroom; and therefore, that it is important for education researchers to better understand the relationship between teacher identity and the theory of practice and teaching. Commenting on the irrevocable link between personal experiences and practice, Goodson and Numan (2002) wrote: “It is as if the teacher is her/his practice” (p. 272). Therefore, as Drake, Spillane, and Hufferd-Ackles (2001) suggested, “when [mathematics] teachers decide to change their practices... they also decide to transform who they are as mathematics learners and teachers. In other words, they embark on a process of re-forming their mathematics identities” (p. 2).

In line with the notion of identity as “*negotiated experience*” (Wenger, 1998, p. 149), teacher professional identity is negotiated through participation of teachers in the practices of teaching, and through the way in which that participation is reified by themselves and others. As Kelly (2006) explained:

Teachers’ identities are neither located entirely with the individual nor entirely a product of others and the social setting. They can be regarded as the ways in which practitioners see themselves in response to the actions of others towards

them; that is they are the constantly changing outcomes of the iteration between how practitioners are constructed by others, and how they construct themselves, in and away from social situations (p. 513).

Through their participation in the practices of teaching, teachers are afforded opportunities to negotiate their teacher identities with others, that is, through the reactions of these others to their practices. New teachers whose professional identities are only tentative, for example, would be more vulnerable to the identity-shaping influences of a community context and will therefore have to be more vigilant about the influence of the community on their identities (Beauchamp & Thomas, 2009, p. 180).

Participation in a community of practice subjects the teacher's identity development efforts to the influences of the community (Beauchamp & Thomas, 2009, p. 180). Wenger (1998) argued that for teachers, community membership "translates into an identity as form of competence... relating to the world as a particular mix of the familiar and the foreign, the obvious and the mysterious, the transparent and the opaque" (p. 153); and, that it entails: learning to act like a teacher through mutual engagement with others in the practices of teaching; learning to look at the world from a teacher's point of view in order to stay accountable to the communal enterprise of teaching; and, making sense of the repertoire of teaching practices through sustained engagement.

Within these communities there are various levels and degrees of expertise that should be seen as a shared set of professional resources. They require sustained engagement, and at the same time demand the development and negotiation of shared meanings. They are not intrinsically beneficial or harmful. Nor are they not privileged in terms of positive or negative effects. They are a force to be reckoned with (Sachs, 2001, p. 158).

Wenger (1998) argued that "as a locus of engagement in action, interpersonal relations, shared knowledge, and negotiation of enterprises, such communities hold the key to real transformation – the kind that has real effects on people's lives" (p. 85). He cautioned, however, that these very dimensions of "competence" within a community of practice could become a handicap when new practices have to be negotiated (as in the case of new curriculum requirements); in which case they would manifest as a lack of competence.

Arguing from a non-essentialist point of view, however, Wenger (1998) held that as our identities are constantly renegotiated throughout the course of our lives, "our identities form trajectories, both within and across communities of practice" (p. 154). He explained:

In using the term 'trajectory' I do not want to imply a fixed course or fixed destination. To me, the term trajectory suggests not a path that can be foreseen or charted but a continuous motion – one that has a momentum of its own in addition to a field of influences. It has coherence through time that connects the past, the present, and the future (Wenger, 1998, p. 154).

In his study of claims processors working for an insurance company, for example, Wenger (1998) observed how differences in their sense of trajectories gave these workers different perspectives on their participation and identities at work. He commented that, "As trajectories, our identities incorporate the past and the future in the very process of negotiating the present... A sense of trajectory gives us ways of sorting out what matters and what does not, what contributes to our identity and what remains marginal" (p. 155). For some teachers this sense of trajectory extends beyond the immediate context of the classroom and the school and teaching is viewed as a career with further prospects to be pursued; while for others teaching is just a temporary job with other career prospects beckoning. These different trajectories will translate into different teacher identities and commitments to the practices of teaching.

As human beings we all belong to and participate in many communities of practice at a time, all of which contribute to the shaping of our individual identities. Wenger (1998), noting the intertwined and often a-sequential nature of such multi-memberships and participation, suggested that instead of a single trajectory, identity should be viewed as a "nexus of multimembership" (Wenger, 1998, p. 159), which is especially useful when it becomes difficult to combine different practices and competing demands into an experience that corresponds to a single identity. In changing times, teachers are often faced with the difficulty of reconciling their personal values with often conflicting values of the context in which they teach. As Wenger (1998) observed, "[M]ultimembership is not just a matter of personal identity. The work of reconciliation is a profoundly social kind of work. Through the creation of the person, it is constantly creating bridges – or at least potential bridges – across the landscape of practice" (p. 161). This view is shared by Grootenboer, Smith, and Lowrie (2006) who also see identity as a "unifying concept that can bring together multiple and interrelated elements that all stakeholders (including teachers and students) bring to a learning environment... including beliefs, attitudes, emotions, cognitive capacity and life histories" (p. 612).

It is important for communities of practice to link their own local practices to the broader global context in which they are situated, because the broader global context is more likely to be publically reified than the local practices of communities of practice (Wenger, 1998). For teachers this means that their local practices within the school cannot be seen in isolation from what is valued as teaching practices in the broader global context within which the school is situated. This is a constraint to teacher identities and practices that cannot be reconciled with globally accepted teacher identities and practices. As Wenger (1998) sees it, “we define who we are by negotiating local ways of belonging to broader constellations and of manifesting broader styles and discourses” (p. 149). Beauchamp and Thomas (2009) added, “Identity development for teachers involves an understanding of the self and a notion of that self within an outside context, such as a classroom or school, necessitating an examination of the self in relation to others ... A teacher’s identity is shaped and reshaped in interaction with others in a professional context” (p. 178). From this perspective, identity is a negotiated and lived experience in the world.

What this section has illustrated is the close connection between teacher professional identity and practice. Commenting on her own experiences and subsequent classroom practices, Gratch (2000) noted that “I have found that understanding my own experiences [of] ‘becoming teacher’ is essential to my development as a teacher educator and to my understanding of my students’ experiences” (p. 121). She subsequently cautioned that student teachers should be engaged in critical dialogue about teaching in order for them to constitute and reconstitute their own identities as teachers or else their identities will merely reflect their own teachers’ attitudes and approaches combined with prior classroom experiences which were adopted uncritically without discussing what they meant for teaching and learning (p. 124). This cautionary note applies to both student teachers and experienced teachers.

Kelchtermans (1993) provides a useful conceptual framework for understanding the notion of teacher professional identity. In Kelchtermans’s (1993) framework, an individual teacher’s *professional self* is more than an idiosyncratic construction; although the teacher’s subjective perception remains of central importance, it is a product of his or her interaction with the environment. Anspal, Eisenschmidt and Löfström (2012) explained that the *self* is

shaped by writing or talking about it, and that teacher professional identity development puts the *self* in a specific context, for example, the school environment. Personal narration, according to Gubrium and Holstein (1998), can be linked reflexively to the interplay between discursive actions and the circumstances of storytelling. Kelchtermans (1993) acknowledged the interwoven nature of past, present and future in biographical perspectives in his framework. He split *professional self* (identity) into two dimensions (retrospective and prospective) and five components (descriptive; evaluative; conative; normative; and future perspective). Although Kelchtermans (1993) acknowledged that teachers' notion of their *professional self* (identity) and their *subjective educational theory* are intertwined and tightly woven into their interpretive framework, he nevertheless chose to separate them in his conceptual framework (see Figure 2 below); sufficing with a double

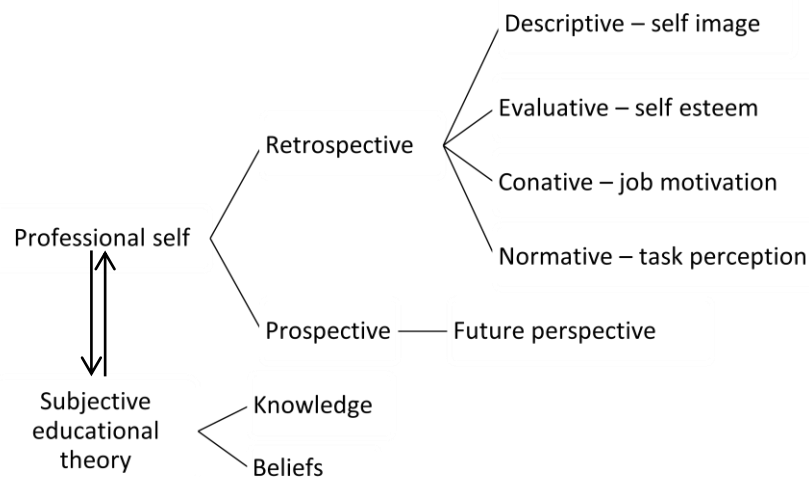


Figure 2: Components of the personal interpretive frameworks (Adapted from Kelchtermans, 1993, p.448)

arrow to indicate that they are actually intertwined. The *retrospective dimension* deals with conceptions of the professional self as the individual looks back from the present into the past. This dimension is further differentiated into five components (p. 449):

- *Descriptive (Self-image)* – the global characterisation of oneself as encapsulated in one's self descriptive statements. In other words, how a teacher describes him- or herself as a teacher. Often descriptions are formulated in terms of general principles that govern teachers' professional behaviour; but also by referring to the way teachers think they are perceived by others.

- *Evaluative (Self-esteem)* – the evaluation of oneself as a teacher. Often the learners are seen as the most important determinants of a teacher's self-esteem. Indicators include the learners' school results, but also the quality of the personal relationship with the teacher. Other important indicators include, for example, comparison with other teachers.
- *Conative (Job motivation)* – the motives for choosing the job, staying in it, or leaving it. In other words, the things about their job that motivates or demotivates teachers.
- *Normative (Task perception)* – the way teachers define their job. This is crucial as a norm in evaluating their professional behaviour and may include narratives of the quality of their relationship with their learners, and/or their striving for professional (didactical) competence.

The *prospective dimension* (future perspective) deals with teachers' expectations for future developments of their job situation and how they feel about this. The *subjective educational theory* is described as "the personal system of knowledge and beliefs teachers use while performing their job" (Kelchtermans, 1993, p. 450). It is the result of the career experiences a teacher has had and how this is, more or less reflectively, integrated into practice. As Kelchtermans (1993) explained: "In terms of the conceptual framework one could say that the subjective educational theory contains the knowledge and beliefs that are used by the teacher to implement the personal-professional programme implied in the task perception" (p. 450). However, Kelchtermans (1993) also cautioned that the *content* of a subjective educational theory can only be reconstructed in a fragmentary way:

One never gets the whole picture. Not only because it changes with new experiences, but also because the teacher per definition has no conscious access to his or her entire 'theory'. Further the reconstruction is bounded by the reflective capacity of the teacher and by the degree he or she is willing to share his or her ideals with someone else (p. 451).

In summary, Kelchtermans's (1993) conceptual framework, which comprehensively covers all of the properties of teacher professional identity as discussed in this section, will be the interpretive framework of choice in this study.

2.6.7 Mathematical identity

The professional identity of secondary school teachers is closely linked to the subject and to its status (Day, Kington, Stobart, & Sammons, 2006); therefore, the notion of mathematical

identity is discussed separately as a subset of the broader notion of teacher professional identity. The notion of mathematical identity is used here with reference to being an active participant in the discourse of mathematics and applies to both learners and teachers of mathematics. Moreover, I am contending that all of the claims about the mathematical identities of learners below apply to teachers as well.

According to Grootenboer and Zevenbergen (2008) the mathematical identities of students and teachers are made up of a range of dimensions which include knowledge, abilities, skills, beliefs, dispositions, attitudes, and emotions related to mathematics and mathematics learning so that “students enter the mathematics classroom with dimensions to their identity that are an integral part of their mathematics learning” (p. 244). Sfard and Prusak (2005a; 2005b), for example, showed how differences in the designated identities of two different groups of learners, those of native Israeli learners and those of immigrant learners from the former Soviet Union, impacted on the quality of learning that took place in the mathematics classroom. In their study, the immigrant learners’ designated identities included mathematical fluency, while the native learners’ designated identities did not; with predictable outcomes in terms of their respective motivations to learn. Noting how the observed dissimilarities in the learners’ learning during this study paralleled the difference in their sociocultural background, Sfard and Prusak (2005b) introduced the notions of actual and designated identities; with identity serving as the “missing link” that bridges the gap between culture and learning. This is consistent with Boaler and Greeno’s (2000) findings that learners will drop out of advanced mathematics when the practices of the mathematics classroom is not consistent with their emerging identities. In their own words: “The figured world of many mathematics classrooms, particularly those at higher levels, are unusually narrow and ritualistic, leading able students to reject the discipline at a sensitive stage of their identity development” (Boaler & Greeno, 2000, p. 171). In order to be successful, both the teacher and the learners need to develop identities that are compatible with the “figured world” of the mathematics classroom which Eaton and O Reilly (2009a) described as, “the relationship an individual has with mathematics, including knowledge and experiences as well as perceptions of oneself and others” (p. 229). As Boaler and Greeno (2000) explained: “Figured worlds are places where agents come together to construct joint meanings and activities. A mathematics learning environment could be regarded as a

particular figured world because students and teachers construct interpretations of actions that routinely take place there” (p. 173). It is in this “figured world” of the mathematics classroom that the mathematical identities of both learners and teachers are negotiated via active participation in the discourse of mathematics (or not). Clearly mathematics learners’ developing identities are an important success in secondary school mathematics; and yet, it is often neglected (Boaler, William, & Zevenbergen, 2000).

It has been argued, so far, that the salient factor in learners’ success in school mathematics is whether or not they see their success as relevant to their developing identities. If their sense of identity resonates with the discourse of mathematics, then they are more likely to do well and continue with further studies in mathematics than those whose identities do not (Boaler, William, & Zevenbergen, 2000). Anderson pointed out that the process of becoming mathematics learners (members of mathematical communities) entails more than developing mathematical concepts and skills, it also entails developing the identity of a mathematics learner, that is, “they must participate within mathematical communities in such a way as to see themselves and be viewed by others as valuable members of those communities” (p. 8). Hence, it would make sense for Mathematics Education researchers to pay attention to identity, because “the focus on the development of students’ *mathematical identity* provides an appropriate focus on the discipline of mathematics and the learner” (Grootenboer & Zevenbergen, 2008, p. 245). The term *narrative identity* was coined by McAdams (2008) to refer to “an individual’s internalized, evolving, and integrative story of the self” (p. 242). Kaasila (2007b) forged a useful link between *narrative identity* and *mathematical identity*:

I consider a person’s mathematical identity (or narrative mathematical identity) to be part of his or her narrative identity. One’s mathematical identity is manifested when telling stories about one’s relationship to mathematics, its learning and teaching. This means that a person’s mathematical identity is also context bound and always under construction (p. 206).

I shall return to this link between identity and narrative in the next chapter. For now, I concur with Hodgen and Askew (2007) that “developing a strong disciplinary bond is central to the teaching of any subject and as such teachers need space to develop both disciplinary intimacy and integrity” (p. 484). Just to reiterate, I am simply contending that research into mathematics teacher professional identity should focus on teachers’ mathematical identities as well as on their professional identities.

2.6.8 Learning and identity

The close connection between learning and identity is well recognized in studies of identity and teaching (Lave & Wenger, 1991; Wenger, 1998; Sfard & Prusak, 2005a; 2005b; Handley, Sturdy, Fincham, & Clark, 2006; Sfard, 2006a). According to Sfard and Prusak (2005b) “thinking can be usefully conceptualized as a form of communication” (p. 41); and hence, “learning becomes the activity of changing one’s discursive ways in a certain well defined manner” (p. 41). Furthermore, “learning to think mathematically is tantamount to being initiated into a special form of discourse, known as mathematical” (pp. 41-42). Within a discursive or narrative framework, therefore, “thinking is conceptualized as a special case of the activity of communication and learning mathematics means becoming fluent in a discourse that would be recognized as mathematical by expert interlocutors” (Kieran, Forman, & Sfard, 2001/2002, p. 5).

Lave and Wenger (1991) pointed out that “learning and a sense of identity are inseparable; they are aspects of the same phenomenon” (p. 115). Wenger (1998) later added that learning can be seen as an act of social participation; as “the process of being active participants in the *practices* of social communities and constructing *identities* in relation to these communities” (p. 4, italics in original). In the literature, this purported connection between learning and identity is evident in the way learning is described, for example (*key phrases underlined here to add emphasis*):

- Learning mathematics in schools involves becoming a ‘certain type’ of person with respect to the practices of a community (Anderson, 2007, p. 7)
- Learning changes who we are by changing our ability to participate, to belong, to negotiate meaning (Wenger, 1998, p. 226)
- Learning mathematics involves the development of each student’s identity as a member of the mathematics classroom community. Through relationships and experiences with their peers, teachers, family, and community, students come to know who they are relative to mathematics (Anderson, 2007, p. 7)
- Learning is not simply about developing one’s knowledge and practice, it also involves a process of understanding who we are and in which communities of practice we belong and are accepted (Handley, Sturdy, Fincham, & Clark, 2006, p. 644)
- Learning mathematics may now be defined as individualizing mathematical discourse, that is, as the process of becoming able to have mathematical communication not only with others, but also with oneself (Sfard, 2006, p. 162)

From the underlined key phrases in the above descriptions, it is evident that learning is purported to involve some form of personal change. Learning changes, not only what we can do, but also who we are (Wenger, 1998). More specifically, learning is described as the embodiment of some form of identity change; as a process of: *becoming; changing; developing; understanding or individualizing* who we are.

Sfard and Prusak (2005a) offers the following useful definition, “Learning may be thought of as closing the gap between *actual identity* and *designated identity*, two sets of reifying significant stories about the learner that are also endorsed by the learner” (p. 14). This definition is useful because, not only does it explicitly link learning and identity; it also refines our understanding of the notion of identity by splitting it into two subsets: “*actual identity*, consisting of stories about the actual state of affairs, and *designated identity*, consisting of narratives presenting a state of affairs which, for one reason or another, is *expected* to be the case, if not now then in the future” (p. 18). Wojecki (2007) explained that: “Actual identity stories are told in the present tense and hold a form of ‘truth’ for the individual” (p. 3). In the context of learning, the actual identity of the learner is shaped through previous experiences. Examples include the comments that learners make, such as: “I can’t learn this” or “I am not able to complete that”. Wojecki (2007) further explained that: “Designated identities are the identity stories one tells in a future tense. These are stories told about what a [learner] expects is possible or achievable for them... stories helping to shape the trajectory of the individual” (p. 3). In the context of learning, the designated identity of the learner is shaped by stories of what the learners think they are capable of achieving; the kinds of occupational identities they might imagine; the types of occupational communities they might belong to; and, the vocational pathways they might pursue by accepting or limiting what their capacity to learn and do is (pp. 3-4).

Wojecki’s (2007) interpretation of Sfard and Prusak’s (2005a) notions of actual and designated identities, as illustrated in Figure 3 below, shows how both identities are inextricably linked via the notion of a *current self*. The actual identity of the learner, or the current telling and re-telling of his or her stories of learning, directly contributes to the shaping of the stories the learner tells and re-tells in the process of contemplating his or her future.

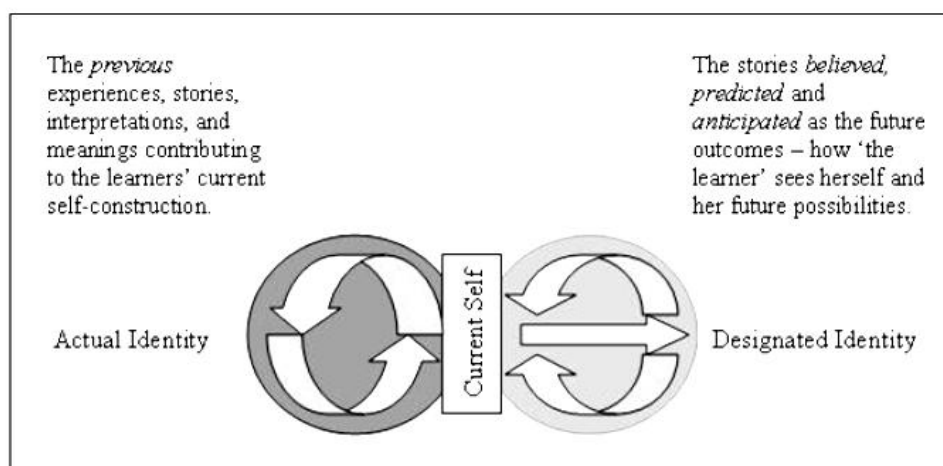


Figure 3: Working model of actual and designated identities (From Wojecki, 2007, p. 4)

Wojecki (2007) explained that stories of current experiences shape the individual's sense of self and form the boundaries of the future the individual anticipates; hence classroom pedagogy should be shaped with "the intention to help students narrate new stories in relation to their capacities for learning in order to tell new stories regarding their designated identities" (p. 4). To be able to do this, the educator must understand the origins of the stories that need re-telling. According to Wojecki (2007), resistance to learning can often be traced to "low self-image or poor and unfulfilling relationships with formalised learning" (p. 4). However, "learners... *can* and *do* recover to tell new and inspiring stories about themselves and their capacities for participation in learning" (p. 4).

It is not the intention to dwell here on different interpretations of Sfard and Prusak's (2005a; 2005b) notions of *actual* and *designated* identities. However, for the sake of completeness, it should be mentioned that Wojecki's (2007) interpretation of *actual* and *designated* identities, which incidentally closely matches my own interpretation of Sfard and Prusak's (2005a) work, is not the only one around. According to Settlage, Southerland, Smith, and Ceglie (2009), for example: "The stories we tell about ourselves create our *narrated* identity, whereas the stories others tell about us create our *designated* identities" (p. 105, their emphasis). They further explained that: "Our designated identities emerge as others recognize and interpret our thinking, activities, associations, and utterances... The identities each of us embodies exist not only because we re-present ourselves in different, context-dependent ways, but also because others are designating who we are by the stories they create about us" (pp. 105-106). This perspective is useful, because it expands Wojecki's

(2007) interpretation by explicitly giving agency to others in the (re-)storying of individual *designated* identities; something which is only implicated in Wojecki's (2007) work.

In Shaw's (2010) study the respondents, all adult workers, described significant learning in the workplace "as something that occurred when there was a change in their everyday practice, e.g., change of responsibilities; needing to find a solution to a problem within a specific context; and having to deal with unintended consequences e.g. previous ways of addressing issues did not work or the response from the organisation was not anticipated" (p. 89). Teachers are expected to face such changes on a day-to-day basis in their teaching practices; hence, every day of teaching presents multiple learning opportunities. Shaw (2010) contended that, "Learning in the work environment has the potential to contribute to identity formation and change as 'who am I' is negotiated relative to the roles and responsibilities and interactions with others" (p. 93). Mpungose's (2010) study focussed on the professional identities of school principals. The point he made, however, is not only similar to the ones above, but also relevant to mathematics teachers:

Individuals who intend to define themselves and their roles within an organization would first ask themselves the question: 'Who am I?' This question assists them in setting their personal identities in the context of the expectation of the group members. In order for individuals to define themselves, they need to first be in possession of the self concept [identity]... they have to own an idea about how they became what they are, and also where they are going (p. 528).

He subsequently argued that the answer to the "Who am I?" question is what eventually defines these school principals and how they respond to the professional and social demands of the workplace; but at the same time, "the manner in which the principals respond to their immediate socio-political and cultural environment results into building and accumulation of knowledge about themselves" (Mpungose, 2010, p. 528). The argument is based "on the fact that the feedback that principals receive from interacting with their staff, in formal settings or otherwise, is one of the major factors that largely influence ways in which they build their self-concepts and therefore reinforce their leadership styles" (Mpungose, 2010, p. 527). In order to have this effect, however, the feedback would have to be in the form of "a set of reifying, significant, endorsable stories" (Sfard & Prusak, 2005a, p. 14) about the principal. The above examples seem to confirm the purported role of identity as the conceptual bridge between the individual and the collective.

2.6.9 Identity linking individual and collective

Sfard (2006b) argued that, from a *participationist* point of view, human cognitive development is the result of two complementary processes: “*individualisation of the collective* and *communalization of the individual*” (p. 23). Furthermore, that the process of individualizing the collective revolves around the personalising of collective activities; that is, around a gradual transition from being able to take part in collective implementations of a task to becoming capable of implementing such task in its entirety and on one’s own accord (p. 23). From this point of view, learning entails the gradual transition from being only marginally involved as a mere follower of other people’s implementation of certain activities (for instance, learning to speak, cook, or solve mathematical problems) to full agency over these same activities as a competent participant; in other words, through individualization of these activities (Sfard, 2009). As McAdams (1993) explained, identities are shaped by the interaction between the individual and the social context:

[S]elves [identities] are made in a social context. The stories we live by have their sources within our own imaginations, in our personal experiences, and in the social world wherein we live and tell. Society has a stake in the stories we make. Not only does the social world contribute material for the construction of our personal myths, but the social world is also the beneficiary and the victim of the myths we live (pp. 268-269).

Holland, Lachicotte, Skinner and Cain’s (1998) notion of “identity in practice” (p. 271) is an example of such a contextualized view identity; premised on the argument that people construct their identities within contexts of “figured worlds” (p. 57) or culturally shared practices. Hence, as Sfard (2006b) argued, the link between the *individualization of the collective* and the *communalization of the individual* is provided by the notion of identity:

[T]he notion of identity, understood as a joint product of personal and communal influences’ mutual fine-tuning, comes to the fore as perhaps the best candidate for the part of a linkage between what is happening at the personal and interpersonal levels (Sfard, 2006b, p. 23).

In an extension of the above argument, Brandt and Tiedemann (2009) suggested that mathematics does not exist as an entity outside of human experience; but, that it is a human product. This suggestion about the purported sociocultural nature of mathematics has implications for our conception of the learning of mathematics. From this point of view, for example, “[learners] do not encounter mathematics itself, but a cultural practice that is recognized as mathematical by capable members of the belonging culture” (p. 2558). Hence,

if mathematics is seen as a social construct; then, consequently, learning mathematics must be seen as increasing participation in the sociocultural practices of mathematicians. In a similar argument, Boaler (2002) suggested that there is an intricate relationship between knowledge and practices; so that, “studies of learning need to go beyond knowledge to consider the practices in which students engage and in which they need to engage in the future” (p. 43). Hence, mathematical capability is more than just a function of knowledge; it resides in the complex relationship between knowledge and practice: “The site of knowledge transfer had shifted... from students’ minds to the mathematical practices in which they are engaged” (Boaler, 2002, p. 43). Thus, learning to teach mathematics entails more than content knowledge; it entails increasing one’s participation in the sociocultural practice of teaching mathematics.

The gist of the arguments above is that professional identities are constructed in relation to context and experience in relation to other individuals or groups; in other words, “these identities are not intrinsic or separate from social contexts and interactions; rather they are embodied and enacted in practice” (Schultz & Ravitch, 2013, p. 37). This is in line with the sociocultural point of view that learning can be linked to participation in the practices of a community of practice (Lave & Wenger, 1991; Brown & Duguid, 1991; 2001; Wenger, McDermott, & Snyder, 2002; Goos, Galbraith, & Renshaw, 2004; García, Sánchez, Escudero, & Llinares, 2006). What this means, is that a teacher’s professional identity is deeply connected to the communities of practice to which they belong and in which they learn to teach (Schultz & Ravitch, 2013, p. 37). In the following two sections, the notions of *learning as belonging* (section 2.7) and *learning as doing* (section 2.8) will be explored in relation to membership of a *community of practice* (Wenger, 1998).

2.7 Community: learning as belonging

The notion of *learning as belonging* is the central thrust of Wenger’s (1998) theory; that is, “that learning within a community of practice happens as a result of that community and its interactions, and not merely as a result of planned learning episodes such as courses” (Kennedy, 2005, p. 244). In other words, learning is about engagement in social practice, “[it] is the fundamental process by which we learn, and we become who we are” (Fernandez, Ritchie, & Barker, 2008, p. 190). As Goos, Galbraith, and Renshaw (2004) aptly

summarized: “The centrality of community in socio-cultural (*sic*) theory reflects the view that knowledge acquisition should be seen as progress to more complete participation the the practices, beliefs, conventions and values of communities of practitioners, and not primarily as the acquisition of mental structures *per se*” (p. 91, italics in original). However, a central aspect of the internalisation of learning through social engagement, according to Kennedy (2005), is the participants’ awareness of the existence of such a community of practice and the role they play in it.

2.7.1 Communities of practice

The notion of *communities of practice* originated in the seminal work of Lave and Wenger (1991), in a book entitled *Situated Learning: Legitimate Peripheral Participation*, and was later further refined by Wenger (1991; 1998; 2000a; 2000b) on his own; and in conjunction with others (Wenger & Snyder, 2000; Wenger, McDermott, & Snyder, 2002); but also by independent others (e.g., Brown & Duguid, 1991; 2001; Lindkvist, 2003; 2005; Cox, 2005; Handley, Sturdy, Fincham, & Clark, 2006; ten Dam & Blom, 2006). Over the years, however, the notion has evolved from being descriptive to being prescriptive (Cox, 2005; Hoadley, 2012). Kimble (2006), for example, traced its evolution through three key developmental periods: the early, fairly intuitive, heuristic approach in the initial exploratory work of Lave and Wenger (1991); followed later by the more concise, theoretical approach (Wenger, 1998); and finally, the current, more pragmatic, business oriented approach (Wenger, McDermott, & Snyder, 2002). The notion is often used in diverse ways, which, according to Cox (2005), stem from ambiguities in the use of the terms *community* and *practice*. Significantly, according to Hoadley (2012), two definitions of communities of practice can be derived from Lave and Wenger’s (1991) original work: a *feature-based* definition and a *process-based* definition. The *feature-based* definition is derived from the anthropological perspective that “learning was not a property of individuals and the representations in their heads (the cognitive view), but rather a more relational property of individuals in context and in interaction with one another (the situated view)... knowledge and therefore learning, were embedded in cultural practices” (p. 288). The *process-based* definition is “a description of the process of knowledge generation, application, and reproduction” (p. 290) through a constant process of legitimate peripheral participation (to be discussed in more detail in section 2.8.1). However, as Cox (2005) concluded in his critical review of four different

interpretations of the notion of communities of practice (viz., Lave & Wenger, 1991; Brown & Duguid, 1991; Wenger, 1998; Wenger, McDermott, & Snyder, 2002), regardless of the differences, “[t]he dominant usage of the term community of practice, at least in the organisational literature, is now to refer to a relatively informal, intra-organisational group specifically facilitated by management to increase learning or creativity. There is little point in attempting to prescribe other usage” (p. 23). As Kimble (2006) pointed out, this usage is in line with the sociocultural perspective of the notion of communities of practice as useful for explaining the processes of knowledge creation and reproduction; and, it offers a “social constructivist” (p. 218) theory of learning in groups; covering both Hoadley’s (2012) *feature-based* and *process-based* definitions. Communities of practice were originally conceived by Lave and Wenger (1991) as follows:

A community of practice is a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice. A community of practice is an intrinsic condition for the existence of knowledge, not least because it provides the interpretive support necessary for making sense of heritage. Thus, participation in the cultural practice in which any knowledge exists is an epistemological principle of learning (p. 98).

The critical point that defines a community of practice, as Wenger (1991) explained, is that the members “share ways of ‘going about doing some things’... in other words, they share a practice” (p. 148). Furthermore, according to Wenger and Snyder (2000), communities of practice are “groups of people informally bound together by shared experience and passion for joint enterprise” (p. 139). Lindkvist (2005) added that “communities of practice refer to ‘tightly knit’ groups that have been practising together long enough to develop into a cohesive community with relationships of mutuality and shared understandings” (p. 1189). In other words, the focus of the communities of practice approach is on the “social interactive dimensions of social learning” (Roberts, 2006, p. 624). As Wenger, McDermott, and Snyder (2002) duly explained: “Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interaction on an ongoing (*sic*) basis” (p. 4). Moreover, communities of practice are important constructs in terms of negotiation, learning, meaning and identity (Wenger, 1998).

According to Wenger (1998), communities of practice draw their coherence from what he refers to as *mutual engagement*, *joint enterprise*, and *shared repertoire* (pp. 73-85)

Wenger (1998) explained that *mutual engagement* is an important element of coherence, because practice in communal activities does not happen spontaneously, “[i]t exists because people are engaged in actions whose meanings they negotiate with one another” (p. 73). Furthermore, mutual engagement does not necessarily imply homogeneity; on the contrary, “each participant in a community of practice finds a unique place and gains a unique identity, which is both further integrated and further defined in the course of engagement in practice. These identities become interlocked and articulated with one another through mutual engagement, but they do not fuse” (pp. 75-76). Neither does mutual engagement necessarily imply peaceful coexistence: “A community of practice is neither a haven of togetherness nor an island of intimacy insulated from political and social relations” (p. 77). Disagreements, debates, and controversy contribute towards a community of practice that is “vital, effective, and productive” (Wenger, McDermott, & Snyder, 2002, p. 10). *Joint enterprise* is another important element of coherence in communities of practice. Wenger (1998) posed that it is based on members communally negotiating understandings and responses; taking ownership of responses to situations beyond their control; and being mutually accountable for their actions (pp. 73-82). The final element of coherence in communities of practice is that of *shared repertoire*; which, according to Wenger (1998), are communal resources for negotiating the meanings that the community had developed over time; reflect a history of mutual engagement; and, are inherently ambiguous (pp. 82-84). Such a shared repertoire of communal resources may include, for example, language, specific routines, artefacts and stories. In a community of practice consisting of mathematics teachers, such a shared repertoire could, for example, be a set of “guiding principles” based on a philosophy of how learners learn mathematics (Lieberman, 2009, p. 85).

Furthermore, Wenger (1998, pp. 173-181) distinguished between three modes of belonging to social learning systems which are useful in making sense of identity formation: engagement; imagination; and, alignment. *Engagement* is all about active involvement in the mutual processes of negotiating meaning; forming trajectories; and, unfolding of histories of practice; which, together, “becomes a mode of belonging and the source of identity” (p. 174). *Imagination* is about “creating images of the world and seeing connections through time and space by extrapolating from our own experience” (p. 173). *Alignment* is all about “coordinating our energy and activities in order to fit within broader

structures and contribute to broader enterprises” (p. 174). *Imagination* and *alignment* are necessary to make sense of the shaping of an identity in contexts where *engagement* in social practice is not possible; for example, when individuals see themselves “as participants in social processes and configurations that extend beyond their direct engagement in their own practice” (p. 173). Wenger (1998) claimed that each of the three modes of belonging, as discussed above, create relations that expand identity through space and time and even beyond the confines of the notion of communities of practice: “With engagement, imagination, and alignment as distinct modes of belonging, communities of practice are not the only kind of community to consider when exploring the formation of identities” (p. 181).

For the individual, membership in a community of practice entails active participation with other members in the collective activities of the community. Moreover, Wenger (1998) suggested that it is through the convergence of the processes of participation and reification that meaning is negotiated. He defined participation as “the social experience of living in the world in terms of membership in social communities and active involvement in social enterprises” (p. 55). Reification on the other hand was described as “the process of giving form to our experience by producing objects that congeal this experience into ‘thingness’” (p. 58). In other words, “aspects of human experience and practice are congealed into fixed forms and given the status of an object” (p. 59).

Learning takes place when these collective activities are internalised to a point where the individual can perform them entirely unassisted on his or her own accord (Sfard, 2006a, p. 157). As Wenger (1991) explained, “communities of practice are the locus of mastery, the site of the social negotiation of understanding, the seat of knowledge” (p. 148). Arguing that knowledge is inseparably intertwined with communities of practice; he added that “mastery is not primarily viewed as a collection of reified information that is brought to bear whenever applicable; it fundamentally consists in participation in the practices of communities, which are defined by the social organization of such practices in their day-to-day realization” (p. 148).

But learning is about more than internalizing and reproducing collective activities; more than simply developing one’s knowledge and practice; it is also about the process of understanding who we are and in which communities of practice we belong and are accepted (Handley, Sturdy, Fincham, & Clark, 2006). Lave (1991), for example, proposed

that learning be considered “not as a process of socially shared cognition that results in the end in the internalization of knowledge by individuals, but as a process of becoming a member of a sustained community of practice” (p. 65); adding that, “[d]eveloping an identity as a member of a community and becoming knowledgeably skilful are part of the same process” (p. 65). In the abstract of his PhD thesis, Wenger (1991) explained as follows:

The basic argument is that knowledge does not exist by itself in the form of information, but it is part of the practice of specific sociocultural communities, called here ‘communities of practice.’ Learning then is a matter of gaining a form of membership in these communities: this is achieved by a process of increasing participation, which is called here ‘legitimate peripheral participation.’ Learning thus is tantamount to becoming a certain kind of person (p. xxi).

He later expanded this argument to include: “knowing something is not just a matter of assimilating some information, but becoming a certain kind of person, constructing a certain identity with respect to the sociocultural communities in which some knowledge exists” (p. 3). As Lieberman (2009) conceded: “As teachers learn, they not only change their answer to the question ‘What do I know about teaching and learning?’, but also to ‘Who am I as a teacher?’” (p. 85). Thomas and Beauchamp (2011) contend that: “For a teacher, the self encompasses not only notions of ‘who am I?’, but also of ‘who am I as a teacher?’” (p. 763). The latter of the two questions, however, probes beyond the individual as a person and into the domain of the teacher as a participant in the cultural practices of a community of teachers. Hence, learning is about the ongoing process of developing an identity; and participation in a community of practice is a central source of such identity construction. Beauchamp and Thomas (2011) linked identity with practices when they added a third question: “What does this identity mean in terms of the way I teach?” (p. 6).

In order to exploit, as Sfard and Prusak (2005a) suggested, the potential of identity to explain how collective discourses shape individual worlds, and vice versa, how individual voices combine into the voice of a community, or simply, the mechanisms through which collective and the common discourses shape individual activities; we need the notion of communities of practice (Lave & Wenger, 1991; Wenger, 1998). From Wenger’s (1998) point of view learning, and hence identity, is an act of “social participation” (p. 4); which, in turn, includes more than thoughts and actions; it also includes membership within social communities of practice (Anderson, 2007). This view adds a social dimension to the traditional cognitivist approach of focussing exclusively on the individual; a move which

both Sfard (2005a; 2006b) and Gee (1999) referred to as a “*sociocultural turn*”, in direct reference to the shift from an acquisitionist (cognitivist) approach to participationist (sociocultural) approach to human growth and development. Lerman (2000) explained that, in Mathematics Education, “[t]he *social turn* is intended to signal... the emergence into the mathematics education research community... theories that see meaning, thinking, and reasoning as products of social activity” (p. 23).

Also arguing from a sociocultural perspective, Boaler, Wiliam, and Zevenbergen (2000) suggested that a normal school classroom also constitutes a community of practice, and hence the social nature of schooling cannot be ignored in explanations of what happens in a mathematics classroom. This is at variance with Wenger (1991) who argued that, from an analytical viewpoint, it is necessary to distinguish between institutions and communities of practice; the distinction being that, institutions (normal school classrooms included) may give rise to communities of practice, but the latter should not be conflated with the former. Wenger (1991) explained as follows, “communities of practice cannot be legislated into existence: they are naturally- occurring social phenomena... the formation of communities of practice always constitutes a *response* to a design and thus cannot be the *result* of design: they cannot *be* designed” (p. 149). Wenger and Snyder (2000) later added that, “[t]he organic, spontaneous, and informal nature of communities of practice makes them resistant to supervision and interference” (Wenger & Snyder, 2000, p. 140). Moreover, they consist of the ‘right people’, thrive in a supportive environment, and their value is best measured in non-traditional ways. This is a far cry from what a normal school classroom is all about. I think the point Wenger (1991) was trying to make is that the normal school classroom may, but does not necessarily constitute a community of practice. Boaler, Wiliam, and Zevenbergen (2000) further argued that most learners want to be successful at mathematics, but need to negotiate a way of doing so without alienating themselves from groups with whom they might feel affinity, and that the real pedagogical issue is one of ‘belonging’ rather than ‘ability’ which necessitate special pedagogical strategies (p. 202). Handley, Sturdy, Fincham and Clark (2006) added that individuals may decide for themselves whether they want to accept or reject opportunities to participate more fully in a community of practice, depending on how well these opportunities ‘fit’ or resonate with their current senses of self (p. 645). This point is confirmed by research evidence (Cotton,

2002; Ewing, 2003; 2004; 2005) of learners developing either an identity of participation or an identity of non-participation (Wenger, 1998) in the community of practice of mathematics learners in the classroom as determined by, for example, teacher communication (Ewing, 2003; 2004; 2005) or cultural capital (Cotton, 2002). Cultural capital is explained as “the ways in which aspects of certain pupils culture is acknowledged as an accepted way of learning, or responding to school” (Cotton, 2002, p. 7). An example of the latter is differences in the mathematical performance of immigrant learners from the Soviet Union and native learners from Israel as reported by Sfard and Prusak (2005a).

In their discussion of the notion of ‘community of practice’ in the context of teacher education, ten Dam and Blom (2006) asserted that in this case a ‘community of practice’ must function as a ‘community of learners’ so that the participants can contribute to the development of educational practice through shared practice and in dialogue with one another (p. 652). They contended that:

Participation in a ‘community of learners’ contributes in turn to the personal and professional identity development of teachers and novice teachers. In this way the latter learn to take responsibility for their own role in relation to that of others and to the totality of the school in which they participate. The university providing the education in co-operation with the school must play an important role in the creation of such a ‘professional learning community’ (ten Dam & Blom, 2006, p. 652).

The importance of participation is also echoed in Prescott and Cavanagh’s (2008) description of learning to teach as, “a process in which beginning teachers increase their participation in the activity of teaching and, through this participation, gain knowledge and insights about the practices of teachers” (p. 408). Furthermore, “beginning teachers learn to teach by interacting directly with their colleagues in schools, by talking with them, and by taking part in specific activities associated with teaching” (p. 408). According to Lieberman (2009), not only are the teachers’ professional identities mediated by such interactions, but the norms of the profession are mediated as well: “Through collegial interactions such as observations and meetings, teachers can develop and re-develop skills, knowledge, beliefs and philosophies of teaching and learning that directly influence their practice of teaching mathematics to students, and therefore their identity of who they are as teachers” (p. 85).

Lerman (2000) suggested that even the various subfields of the professional practice of mathematicians can be seen as particular social practices, arguing that: “To apply a

mathematical gaze onto a situation and to identify and extract factors and features to mathematics is the practice of mathematical modeling. It has its masters and images of mastery, its apprenticeship procedures, its language, and its goals, just like any other social practice” (p. 26). He added that there is a difference between the practices of mathematicians and the practices of the school mathematics classroom; that is, whereas mathematics is the chosen practices of mathematicians, it is not necessarily the chosen practices of learners in a school classroom.

Useful as it may be as a theoretical construct, the notion of communities of practice is not beyond criticism (Lindkvist, 2003; 2005; Roberts, 2006). For example, Roberts (2006) argued that, despite its usefulness as a means to explore the transfer of tacit knowledge, a community of practice is not always an appropriate knowledge management tool. She built her argument around four limitations of communities of practice: Firstly, the influence of the broad sociocultural environment, specifically the relative importance of the individual versus the community, on the success of the community of practice. Secondly, the influence of boundaries in the organizational context, specifically as it relates to the interaction between formal organizations and extra-organizational communities of practice. Thirdly, the influence of size and spatial distribution, specifically as it relates to prevalence of success of communities of practice of different sizes. Finally, the need to refocus on Lave and Wenger’s (1991) original conceptualization of communities of practice as a context for situated learning. She explained that: “One of the strengths of the communities of practice approach is that it can be applied in a wide range of organizational settings. However, this can also be viewed as a weakness, since it may encourage its inappropriate application” (Roberts, 2006, pp. 634-635). Lindkvist (2005), on the other hand, criticised the notion of communities of practice; he called them ‘collectivities-of-knowledge’, for not fitting temporary organizations or project organizations. He suggested that these are best covered by the alternative notion of ‘collectivities-of-practice’. In an earlier paper Lindkvist (2003) explained that temporary organizations or project groups (within organizations) which “consist of people, most of whom have not met before, who have to solve a problem or carry out a pre-specified task within set limits as to time and costs” (p. 2); and, that the diversity of environments and technologies make them too complex for a single individual to understand in their entirety. The result is that individual members of these ‘collectivities-of-practice’ usually have highly

specialized competences; which make it very difficult to establish shared understandings and a common knowledge base, so that the group has to operate on the basis of 'distributed knowledge'. This different kind of knowledge base necessitates other types of knowledge processes than those associated with 'knowledge collectivities' (Lindkvist, 2003, p. 2).

I am contending that, by their very nature, schools and long-term teacher professional development initiatives are 'collectivities-of-knowledge' rather than 'collectivities-of-practice'; and therefore Lindkvist's (2005) criticism as discussed above does not apply to them. Boaler, Wiliam, and Zevenbergen (2000), for example, also hold that the social nature of schooling cannot be ignored in explanations of what happens in the mathematics classroom (p. 194). Furthermore, most learners want to be successful at mathematics, but need to negotiate a way of doing so without alienating themselves from groups with whom they might feel affinity; that the real issue for the learners is 'belonging' rather than 'ability' (p. 202).

Lastly, as Wenger (1991) observed in his PhD thesis: "This concrete aspect of sharing a practice is crucial in making the concept of community of practice analytically robust: because it is defined by this shared practice, which takes place in the lived-in world, the concept of community of practice does not presuppose any of the structural features that it can be used to explain" (p. 148). Furthermore, he added: "Whether or not the boundaries of communities of practice follow institutional boundaries is purely incidental" (p. 148). Therefore, communities of practice in schools, for example, are not necessarily defined by institutional boundary lines, so that "some of them even find part of their identity in engaging in a practice that expands defiantly beyond institutional boundaries" (p. 148). Some of the teacher professional development initiatives (like MEP) would be prime examples of such cross-boundary communities of practice. "From an analytical standpoint," Wenger (1991) contended, "it is thus crucial to make a clear distinction between institutions and communities of practice" (p. 149). Teacher educators McKeon and Harrison (2010), for example, used Wenger's (1998) notion of "Communities of Practice" as a conceptual framework; arguing that members of an organization, such as a department of education, form many communities within it. While members of such communities may have different levels of expertise or power, they have "similar objectives in terms of promoting the successful teaching of student-teachers" (McKeon & Harrison, 2010, p. 27). This points to

mutual engagement in a joint enterprise. Furthermore, they added that: “Such workplace learning involves members learning from one another, through formal induction processes, informal learning and the accumulated expertise of experienced members” (p. 27).

2.7.2 Social Capital

In addition to Wenger’s (1998) notion of *communities of practice*, Bourdieu’s (1986) notion of *social capital* adds weight to the theory of individual benefits (like learning) accrued through group participation. *Social capital* refers to how individuals are privileged due to their membership of a group or social network:

Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words, to membership within a group – which provides each of its members with the backing of the collectivity-owned (*sic*) capital, a ‘credential’ which entitles them to credit, in the various senses of the word (Bourdieu, 1986, pp. 248-249).

However, social capital also refers to “family and community networks, norms and trust that facilitate coordination and cooperation for mutual benefit” (Zambrana & Zoppi, 2002, p. 34) of the whole group or network. From this perspective, the group or network could be viewed as a *community of practice* (Wenger, 1998); showing *mutual engagement* and *joint enterprise* through “coordination and cooperation for mutual benefit” (Zambrana & Zoppi, 2002, p. 34); and *social capital*, “the aggregate of the actual or potential resources” (Bourdieu, 1986, p. 248), as its *shared repertoire*.

The amount of *social capital* that individuals possess hinges on the size of their network (Bourdieu, 1986); and, on their economic and cultural standing (Gasman & Palmer, 2008). An important feature of *social capital* is its investment in social relations and interpersonal interaction (Israel, Beaulieu, & Hartless, 2001). According to Portes (1998) the idea “[t]hat involvement and participation in groups can have positive consequences for the individual and the community” (p. 2) is not novel; at least not for sociologists. The focus of *social capital* is on the benefits accruing to individuals or families by virtue of their participation in groups and, on the deliberate construction of sociability as a resource (Portes, 1998; 2000). Note that the same claim can be made of participation in the practices of a community of practice (Lave & Wenger, 1991; Wenger, 1998). Firstly, I am arguing that the immediate family makes up such a socially “durable network of institutionalized

relationships of mutual acquaintance and recognition” (Bourdieu, 1986, p. 248). Secondly, I am extending the network to include the community so that the notion of *social capital* includes “the set of supportive interpersonal interactions that exists in the family and community – promoting educational achievement” (Israel, Beaulieu, & Hartless, 2001, p. 44). From this perspective, the family support can be seen as a form of *social capital*; but also the interaction with individuals beyond the immediate family, for example, teacher role models, supportive colleagues, and peers. Moreover, the amount and quality of the social capital available to the participants as family support can be linked to them being first generation tertiary students in their families. According to Gibson, Bejéñez, Hidalgo and Rolón (2004), “[n]ot all students have [equal] access to the types of adult or peer interactions that facilitate academic success” (p. 131). All of the participants in this study, except P2, were first generation tertiary students who reported that their parents have not completed their school education and were financially stressed. Viewed from a social capital perspective, it is a potential academic disadvantage: “Those whose parents are college educated and who come from middle- and upper-class households generally have greater access to and greater ability to draw from the sorts of relationships in school that can aid their academic progress than do working-class children and children raised in poverty” (p. 131). Further confirmation can be found in the work of Israel, Beaulieu and Hartless (2001) which reaffirmed the significant role of parents’ socioeconomic status in shaping their children’s educational performance:

Children born into more affluent homes or born to well-educated parents tend to perform well academically. These family assets create an environment where educational achievement is valued and expected. In addition to family background attributes, however, social capital available in the family promotes a child’s educational achievement further. When youths are provided with a nurturing environment and with guidance on behaviours that are deemed appropriate and inappropriate, the effects of their educational progress are powerful and positive (Israel, Beaulieu, & Hartless, 2001, p. 60).

The key point here is that students whose parents are educated have more access to social capital that might be relevant in the education domain; that is, “while children from affluent households generally acquire this kind of social capital directly from their families, many working-class youth, particularly those from marginalized communities, may find it only through connections at school” (Gibson, Bejéñez, Hidalgo, & Rolón, 2004, p. 131). This is confirmed by research that suggests that working-class students typically gain social capital

from middle-class peers and adult role models in institutional contexts rich in social and cultural capital (Stanton-Salazar, 2004). However, Stanton-Salazar (2004) is not convinced that peer relations among working-class students also constitute social capital; preferring instead to use the term “social resources to speak to how peer relationships among working-class students can promote pro-academic subjectivities, behaviors, and performance” (p. 21).

Israel, Beaulieu, and Hartless (2001), for example, elaborated on the difference between *structural* features and *process* features of family social capital. They hold that *structural* features of the family, like the presence of one or both parents at home and the number of siblings can influence the extent of social capital. Such structural features determine the opportunity for interpersonal interactions between parents and their children, as well as the frequency and duration of such interactions. On the other hand, *process* features may include parents’ nurturing efforts; efforts to constrain inappropriate behaviours; helping children with their homework; monitoring homework; discussing important school activities with them; providing adult supervision when the children return from school; and, holding high aspirations for them. Such process features represents the quality of the parents’ involvement in their children’s lives. Together the structural and process features of family social capital shape, not only the quality and quantity of the family’s interactions, but also the children’s academic achievement and aspirations (Israel, Beaulieu, & Hartless, 2001).

2.8 Practice: learning as doing

The basic idea behind Wenger’s (1998) notion of “learning as doing” is that people learn through their participation in the practices of pre-existing communities of practice, which socially reproduce both the practices that their members share, and, the communities as defined by their membership. In other words, social practice is an indispensable part of learning (García, Sánchez, Escudero, & Llinares, 2006). However, for communities of practice to understand and support learning, “there must exist a refining practice across time and processes must be put in place that ensure new generations of practitioners” (Davis, 2006, p. 2). In other words, the practices must evolve, but for that to happen, new members with new life experiences must be recruited. Lieberman (2009), for example, explained how

teachers develop and re-develop their professional identities through participation with others in a community of practice:

When teachers interact with one another about teaching, they develop and re-develop their skills, knowledge, beliefs and philosophies of teaching and learning that directly influence how they teach mathematics to students. These interactions thus influence their professional identity – who they are as mathematics teachers. Professional identity includes knowing what [to] do as a teacher both with students and with colleagues (p. 96).

The leading idea behind collaborative school-based teacher education according to ten Dam and Blom (2006) “is that an important part of the process of learning to teach should be embedded in experiences in a school setting, thereby stressing the situated nature of knowledge and learning” (p. 648). The central idea is that “learning should be understood as increasing participation in communities of practice and that teacher education should be linked to school development” (p. 657). Moreover, ten Dam and Blom (2006) suggested that by learning through participation student teachers will be stimulated to develop their professional identities. In her study of teacher collaboration and classroom practice Smith (2001) found that a collaborative culture amongst teachers fosters a collaborative culture amongst their students and thus extends into their classroom practice.

Depending of the role played by the individual teacher as a member of a community of practice, learning could be either a positive and proactive, or a passive experience; the latter allowing the collective wisdom of the dominant group members to shape other individual’s understanding of the community and its practices (Kennedy, 2005). However, as ten Dam and Blom (2006) justly cautioned, when it comes to learning through participation “it is not just a question of taking part but of the quality of that participation” (p. 658) that matters.

2.8.1 Legitimate peripheral participation

Lave and Wenger’s (1991) central notion of ‘legitimate peripheral participation’ (LPP) forms a conceptual bridge between the individual as a person and the community of practice as a collective. As the individual participates in the practices of a community of practice, he or she becomes more knowledgeable, greater mastery of the shared practices is gained, and the individual shifts from being a ‘newcomer’ to being an ‘oldtimer’ in the community of practice. Fox (2006) explained as follows:

Lave and Wenger's (1991) central idea 'legitimate peripheral participation' stems from the observation that when you come to practice some specific sort of practical activity – whether tailoring, quarter-mastering, or midwifery – you do so mainly through interaction with others who already know how it's done. Thus you start as a peripheral participant in some practice and pick up knowledge by talking with and witnessing master practitioners at work, through a kind of practical social apprenticeship. Through this apprenticeship, you gain legitimate membership of the community of practitioners, because you are able to perform usefully within it, which shapes not only your knowledge and skill but also your identity in the social world (p. 427).

In a sense then "[LPP] crucially involves participation as a way of learning – both absorbing and being absorbed in – the 'culture of praxis'" (Lave & Wenger, 1991, p. 95). This shift from the periphery to full membership, or mastery status, is accompanied by a change in the stories that individuals are able to tell about themselves; and, in the stories that others in the community are able to tell about those individuals. Hence, LPP can be used to explain both the developing identities of people, and the production and reproduction of communities of practice (Adler, 1998). From this perspective, learning to teach mathematics can be seen as an act of legitimate peripheral participation in a community of practice consisting of mathematics teachers; as the act of constructing a professional identity as a mathematics teacher; but also, as contributing to the reproduction of a community of mathematics teachers.

For Lave and Wenger (1991), however, the overarching issue was not learning *per se*; but social practice. They saw learning as a necessary dimension of any social practice, but not as the primary reason for starting a social practice. According to Adler (1998) this view is in sharp contrast with traditional learning theory (like Acquisitionism) which puts learning at the centre of practice with its emphasis on internalization of knowledge and its transfer and application to a range of contexts. She argued that: "Knowing about teaching and becoming a teacher evolve, and are deeply interwoven in ongoing activity in the practice of teaching. Knowledge about teaching is not acquired in courses about teaching, but in ongoing participation in the teaching community in which such courses might be part" (Adler, 1998, p. 4). Thus, teachers learn about teaching by participating in the practices of the teaching community.

To take a decentered view of master-apprentice relations leads to an understanding that mastery resides not in the master but in the organization of the community of practice of which the master is part: The master as the locus

of authority (in several senses) is, after all, as much a product of the conventional, centered theory of learning as is the individual learner (Lave & Wenger, 1991, p. 94).

According to Lindkvist (2003), to take a decentred perspective is to accept that “knowledge resides in the practice” (p. 7), and hence that it cannot be transferred from the master to the apprentice, neither can the apprentice learn directly from the master. This means that from a LPP point of view:

[L]earners do not receive or construct abstract ‘objective’ individual knowledge ... Instead they learn how to function in a community. This they do by acquiring that particular community’s subjective viewpoint and learn to speak its language (Lindkvist, 2003, p. 8).

It also means that, for a new or novice teacher, potential problems may arise when the practices of the teaching community to which he or she had gained access through LPP deviate significantly from the teaching practices valued by the broader society in which that community is situated. Thus, as Davis (2006) aptly pointed out: “Legitimate peripheral participation expands the understanding of identity development in context and provides a language with which to express the processes that occur in identity development” (p. 2).

2.8.2 Legitimate peripheral participation in schools

In their work, Fuller, Hodkinson, Hodkinson, and Unwin (2005) explored the role of LPP in workplace learning in modern apprenticeships in the United Kingdom. They did this through case studies conducted in the steel manufacturing industry; as well as in selected subject departments of secondary schools, specifically focussing on how teachers learn at work. In their conclusions they state that the complexity of the settings in these modern workplaces play “a crucial role in the configuration of opportunities and barriers to learning that employees encounter” (p. 50). This study is useful because it prompts one to view potential opportunities and barriers to workplace learning for mathematics teachers through LPP coloured lenses. To illustrate, I will now briefly discuss some of these “opportunities” with reference to South African schools.

Firstly, Fuller et al. (2005) acknowledged the power of Lave and Wenger’s (1991) emphasis on participation in social practice as a prime determinant of workplace learning, and they added another dimension to it; that is, the notion that experienced workers can also learn through their engagement with novices, and that part of LPP for novices is to help

others (including the experienced workers) learn. This dimension, that was “overlooked” by Lave and Wenger (1991) in their original work, is especially relevant in South African schools where novice teachers are often better equipped academically to teach specialist subject disciplines, such as mathematics, than more experienced teachers that have been teaching for a long time. Typically, novice teachers will enter the schools with better academic qualifications and knowledge of the latest pedagogical strategies, which in turn can enhance learning in the community of practice for both novice and experienced teachers. In their study of five beginning teacher educators (all of them experienced classroom teachers, but inexperienced teacher educators) McKeon and Harrison (2010) found that these “newcomers” (to teacher education) function as both novice and expert with high expectations of their initial proficiency in teacher education. This is in contrast to Lave and Wenger’s (1991) notion of professional learning which represents LPP as the process through which newcomers gain membership of a community of practice through their participation in “low-risk” activities while working alongside more experienced members of that community. However, if new teachers can be both novice and expert at the same time, then it is desirable for schools to employ newly qualified teachers with new insights to challenge and possibly change ancient teaching practices. In this way learning can be stimulated in existing communities of practice.

Secondly, Fuller et al. (2005) showed how an expert can turn into a novice, just by changing jobs. In their study, Sam, a Head of Department in his own school, found that he had shifted from the full participation to peripheral participation when he moved to a different school. This finding is consistent with Lave and Wenger’s (1991) relational approach to LPP that the peripheral status of a person can vary depending on the specific circumstances. South African schools differ greatly, with most schools still reflecting the social and socio-economic inequalities of the past. I am contending that, in line with Fuller et al’s (2005) finding and Lave and Wenger’s (1991) relational approach to LPP, a teacher’s specific circumstances at work will determine his or her peripheral status; and subsequently also opportunities to learn from professional communities of practice such as subject departments in school, the school itself, and wider communities of subject specialist teachers.

In their work, Fuller et al. (2005) identified four limitations or “barriers” in Lave and Wenger’s (1991) approach that need to be addressed before applying LPP elsewhere. To illustrate, I will now briefly discuss some of these “barriers” with reference to South African schools.

Firstly, Fuller et al. (2005), found Lave and Wenger’s (1991) attempts to stretch LPP to cover all learning in the workplace unconvincing. They noted that initially Lave and Wenger focused their theory of learning on novices, placing the emphasis on learning as a progression from newcomer to full participation, and largely ignoring the effect on communities when they import ‘old timers’ from elsewhere, a limitation that they seem to have belatedly recognized and then covered up by suggesting that in some respects everyone’s participation is a form of LPP (pp. 51-52). Strict adherence to Lave and Wenger’s (1991) notion of learning as LPP would restrict professional development to novice teachers learning from expert teachers who are already full participants. In contrast, Fuller, et al (2005) argued that employees learn throughout their working careers, even those who have already achieved full membership of their communities of practice for a long time continue to learn. From this perspective professional development is a learning opportunity for all teachers.

Secondly, Fuller et al. (2005) noted that Lave and Wenger (1991) are dismissive of the role that ‘teaching’ plays in workplace learning, both on-the-job and off-the-job; while research is beginning to show that a wide range of knowledge and skills are indeed taught in the workplace, suggesting that “apprentices as well as more experienced employees may have areas of ‘knowledgable skill’ which they are capable of sharing with others” (Fuller, Hodkinson, Hodkinson, & Unwin, p. 65). Hence, Fuller, et al (2005) argued that learning through teaching can indeed form an integral part of learning through participation in a community of practice, and that this would work best when it is accepted as a legitimate activity in which both novices and full members should participate (p. 66). This extension of Lave and Wenger’s (1991) notion of LPP to include teaching, presents a strong argument in support of explicitly teaching teachers how to teach, for example through professional development initiatives in which the knowledge and skills of teaching are explicitly taught, both on-the-job (involving a more knowledgeable peer) and off-the-job (for example, during workshops on a university campus). This will work best, as Fuller, et al (2005) cautioned, if

the initiative is accepted as a legitimate activity of the school in which both novice and experienced teachers must participate.

Thirdly, Fuller et al. (2005) noted that Lave and Wenger (1991) focused almost exclusively on how the community of practice shapes the identity of the individual, at the expense of focusing on how the individual, by virtue of what he or she brings from the outside, shapes the community. They wrote: "Lave and Wenger (1991) implicitly treat their newcomers as *tabula rasa*. Yet, paradoxically, their overall position is consistent with the view that people come to a workplace already formed, with beliefs, understandings, skills and attitudes" (p. 66). Fox (2006) added that: "As learners move towards full participation in the community of practice, the practice itself is in motion; it is changing partly as a result of the masters' continued learning, which will exploit inexperienced perspectives and naïve questions as readily as the practices of peers and competitors" (p. 428). Lave and Wenger's (1991) approach may be justified, however, given that it is based on ethnographic studies of apprenticeships of Vai and Gola tailors' in Liberia; Yucatec Mayan midwifery; butchers' apprentices; nondrinking alcoholics; and navy quartermasters, which differs widely from fully trained novice teachers entering the profession. Novice teachers would have had prior training in specialist subject disciplines and the latest pedagogic strategies and prior experiences of being taught themselves. Hence, I want to reiterate a previously made point here, which is that novice teachers typically enter the schools with better academic qualifications and knowledge of the latest pedagogical strategies, which in turn can enhance learning in the community of practice for both novice and experienced teachers.

Lastly, Fuller et al. (2005) justly pointed out that Lave and Wenger (1991) acknowledged the significance of unequal power relations and conflict, but failed to fully explore it. They explained that the issue of power is very relevant to our understanding of the opportunities and barriers to learning in an organization, because those who are in control of the resources have the "power to create or remove barriers and boundaries which facilitate or inhibit participation" (p. 66). The concern relates to exploitation in the workplace. Fuller, et al (2005) reported that in the steel industry apprentices were used as 'old timers' whilst they were still formally classed as peripheral participants, which they saw as a marked departure from the practices described in Lave and Wenger's (1991) case studies where novices, through a slow protected maturation period, become 'old timers'.

Often using apprentices as 'old timers' is accompanied with differential terms and conditions of employment, affecting their participation and sense of belonging and ultimately their identity (p. 59). This reminds strongly of the way in which many unqualified teachers, temporary teachers, and teachers in governing body posts are exploited in schools; not only financially, but also by denying them opportunities of LPP and hence limiting opportunities for constructing a teacher identity. On a wider scale it also relates to unequal distribution of resources between schools and the opportunities and barriers to learning that these might present. As Smit and Fritz (2008) concluded: "The reality is that the power of the working environment, coupled with the personal and social identity, is a much stronger force in the development of teacher identity than national education policies" (p. 100). Notwithstanding the limitations or "barriers" to applying LPP elsewhere (as articulated by Fuller, Hodkinson, Hodkinson, & Unwin, 2005), there is still, however, a place for LPP in the educational system (Hoadley, 2012). For example, as Adler (1998) suggested, "LPP can illuminate how teachers learn about teaching. It can also be used to throw light on teachers' knowledge about teaching" (p. 3).

2.9 Meaning: learning as experience

When Castells (2004) describes identity as "people's source of meaning and experience" (p. 6) he is in line with Wenger's (1998) social theory of learning; more specifically, with the modified version thereof, depicting identity in the centre of the four interconnected and mutually defined components, namely: learning, experience, doing and belonging. In their study of how initial teacher education students understand and describe their professional identity, Timoštšuk and Ugaste (2010) report that experience stood out as the most important component influencing the professional identities of these student teachers. While this finding strongly supports Wenger's (1998) claim that learning is fundamentally experiential and social, it does not support his view of a close mutual connection between all four components of learning. My view is that this purported anomaly can be ascribed to the narrative methods that were used to collect the data (semi-structured interviews) and that these were biased towards experience and meaning. For example, Timoštšuk and Ugaste (2010) wrote: "When students described experiencing the world as meaningful they first and foremost described their personal experiences connected to the teaching of their

own subject and relations with their pupils and supervisors” (p. 1568). Stories play a central role in making meaning of experiences. Lewis (2011), reflecting on the relationship between storytelling and research, wrote: “When I recollect my experiences and share them through stories, I am eliciting my own potential for making meaning” (p. 505).

Meaning is continually constructed and reconstructed. This construction and reconstruction occurs within, and is made visible through, *stories*. We not only live our lives as a story, as we tell our stories we relive, reconstruct, and reinterpret our experience for later retelling and further reconstruction and reinterpretation. Stories both reflect experience and are constitutive of experience (McCormak, 2000, p. 186, italics in original).

In the following section it is argued that the role that narratives, specifically stories¹², play in understanding the meaning of experiences not only privileges them as a tool to access identity, but also enables them to shape identities.

2.9.1 Identity as a narrative construct

A comprehensive understanding of teacher identity must include emphasis on both practice and discourse. So far the discussions have focussed mostly on practice; but from this point onwards, the discussions will focus more on discourse (or narrative). Trent’s (2011) distinction between “identity-in-practice” and “identity-in-discourse” neatly encapsulates the transition from “an action-oriented approach to understanding identity, underlining the need to investigate identity formation as a social matter, which is operationalized through concrete practices and tasks” (p. 531) to a discursive (or narrative) approach, whereby “identities are discursively constituted, mainly through language... [Moreover, that] language and identity are mutually constitutive; while language presents to the individual historically specific ways of giving meaning to social reality” (p. 531). As Richardson (2001) puts it: “Language constructs one’s sense of who one is, one’s subjectivity. What something means to individuals is dependent on the discourses available to them” (p. 36).

In recent years, narrative has been used increasingly as a tool to access identity (Clandinin & Connelly, 2000; De Fina, 2006; Smith & Sparkes, 2006; Kaasila, 2007a; Eaton & O Reilly, 2009a; Slay & Smith, 2010; Lewis, 2011). According to Smith and Sparks (2006) “a

¹² In Chapter 3, section 3.4.1, it is argued that it is important to distinguish between *narrative* and *story* in narrative analysis.

person is basically a story telling animal” (p. 170) and “stories shape identity, guide action, and constitute our mode of being” (p. 170). Moreover, Crites (1986) maintained that:

[S]tory-like narrative establishes a particularly strong sense of personal continuity, because it can link an indefinite number of remembered episodes from a single point of view of the one who recounts or merely recalls story. This single point of view is the “I” who now speaks or recalls, and this “I” which situates my story and distinguishes it from others also anchors what I call my self in this identity over time... What I own as my self is always present as the character in the story from whose perspective its episodes are recalled, claimed as its own self by this “I” who recalls (p. 159).

Hence, as Lewis (2011) observed, “Story is central to human understanding – it makes life livable (*sic*), because without a story, there is no identity, no self, no other” (p. 505). As research into narrative has shown, individuals do not only know themselves in the form of stories; their stories also frame and guide the ways in which they understand and act on new information (Bruner, 1990; McAdams, 1993; Drake, 2006). Moreover, as De Fina (2006) pointed out, in the field of discourse analysis researchers have shown that:

by telling stories, narrators are able not only to represent social worlds and to evaluate them, but also to establish themselves as members of particular groups through interactional, linguistic, rhetorical and stylistic choices... what defines people as members of a group is not only content of their stories, but the way in which they use socially established resources to tell them (p. 352).

In other words, narrative can be both a method for understanding and a tool for effecting personal change. Eaton and O Reilly (2009a), for example, added that stories can be quite useful in the mathematics classroom: “It is hoped that by providing an opportunity for students to tell the story about their own relationship with mathematics, identity will emerge and themes will come to the fore that give insight into their thinking and attitudes” (p. 229). In the introduction to his book, *Narrative and the Self*, Kerby (1991) suggested that:

[T]he self is given content, is delineated and embodied, primarily in narrative constructions or stories... the self is perhaps best construed as a character not unlike those we encounter almost every day in novels, plays, and other story media. Such a self arises out of signifying practices rather than existing prior to them as an autonomous or Cartesian agent (p. 1).

The notion of “the self” as it is used here is taken to be synonymous with the notion of identity as it is used in this study. However, Kerby (1991) explained that “the self” is a narrative construction, and not some kind of essentialist “spirit” haunting the human body of which an individual can claim ownership and that can be discovered by some form of introspective vision. As Smith and Sparkes (2006) pointed out, this a departure from “the

traditional Cartesian view that sees that self as a 'thing', existing apart from and having a different substance than the body" (p. 170). Furthermore, Kerby (1991) claimed that: "If we believe so strongly in such an internal subject ['the self'] it is perhaps because we have imagined such an entity to exist; we have either told, or somehow been misled by, stories and theories that posit such an ethereal being" (p. 1). As Crites (1986) astutely observed: "The [notion of a] self-isolated organism enclosing an atomistic self is an optic illusion, an appearance in a visual field not closely observed" (p. 155). However:

This is not to say, however, that the concept of self is therefore unimportant and of no practical value... On the contrary, the development of selves (and thereby of persons) in our narratives is one of the most characteristically human acts, acts that justifiably remain of central importance to both our personal and our communal existence (Kerby, 1991, p. 1).

Crites (1986) would agree with the above; after all, he refers to the 'self' as "a conversation rather than a monologue" (p. 156). He did, however, caution against over-simplification:

The phenomenon of self-certainty seems intuitively clear, even to those who find it ideologically embarrassing. But it would be incautious to assume that the phenomenon implies that this individuated self is an unproblematic and self-explanatory entity, much less an irreducible metaphysical substance (Crites, 1986, p. 156).

The argument, as previously pointed out, is that in the context of this study the notion of 'self' is used synonymously with that of 'identity' and that, as a narrative construct, it can be studied narratively. As De Fina (2006) argued, "narrators build shared representations about who they are by creating story-worlds in which identities are characterized in common ways and routinely related to specific actions or reactions" (p. 351). Therefore, as suggested previously, narrative inquiry can be both a method of inquiry and a means of personal and professional development. Cohen (2010), for example, pointed out that: "Close attention to teacher narratives and storytelling develops an important avenue for understanding the characteristics of teacher professional identity and the processes through which that identity is developed" (p. 474). For example, Trent (2011) highlighted four strategies that individual teachers use to explain and legitimate the texturing of their identities: authorization, when they refer to tradition, laws, or institutional authority; rationalization, when they refer to the utility of a particular course of action; moral evaluation, when they appeal to value systems; and, mythopoesis, (a notion taken from the work of Fairclough) which is when legitimation is derived from "a narrative structure... that presents a moral

tale in which teachers who engage in the desired behavior (*sic*) of caring are rewarded with better learning outcomes” (p. 534). The bottom line, however, is that it is important to listen to the stories that teachers tell, because: “Through listening, it is possible to sense the situation, to understand what is taken for granted, to ask questions, and to perceive shortcomings in understanding educators and supporting them” (Krabi, 2008, p. 248).

2.10 Chapter summary

In this chapter, which covered the literature review, the study was located in a sociocultural theoretical framework and the key notions of identity, community of practice, social capital and legitimate peripheral participation were clarified. It positioned identity as a conceptual bridge, not only between learning and its cultural setting, but also between the individual and the social. In addition to an operational (narrative) definition of identity, an interpretive framework for studying teacher professional identity was proposed. The overall coherence of the chapter is provided by Wenger’s (1998) Social Theory of Learning¹³ which, taking a situated learning perspective, links the shaping of an identity to the notion of learning as becoming (identity); belonging (community); doing (practice); and, experience (meaning). In the next chapter this study will be located in what is perceived to be the most appropriate research paradigm for a narrative inquiry.

¹³ See section 2.5, figure 1, page 26

Chapter 3: Introducing Narrative Inquiry

3.1 Introduction

The aim of this chapter is to locate narrative inquiry in the most appropriate research paradigm, illuminating some of its theoretical underpinnings; and also to show its relevance as the research methodology of choice in this study. It is argued that narrative research is best located in the constructivist/interpretive research paradigm. Drawing on Bruner's (1986) distinction between the paradigmatic and narrative modes of knowing, narrative inquiry is linked to the narrative mode of knowing. Several key aspects of narrative inquiry of particular relevance to this study, are illuminated, for example: a distinction is made between story and narrative; it is argued that narrative and identity can be linked via a "narrative plot" (Polkinghorne, 1995; 1988); a distinction is made between the different stories told in different contexts of the professional knowledge landscape (Clandinin & Connelly, 1996; 1998), namely, secret, sacred, and cover stories (Clandinin & Connelly, 1996); a search for "turning points" (Denzin, 1989; Bruner, 2001; Drake, 2006; Mishler, 2006) is suggested as a viable starting point in distinguishing identity shaping stories; and, a distinction is made between "big stories" and "small stories" (Bamberg, 2006a; Georgakopoulou, 2006; 2008). Two types of narrative inquiry are discussed, namely, "analysis of narratives" and "narrative analysis" (Polkinghorne, 1995).

The detailed exposition of narrative inquiry in this chapter is deemed necessary: firstly, because it provides the theoretical underpinnings for the methodology presented in Chapter 4 and applied in Chapters 5 and 6; and secondly, because narrative inquiry is a relatively novel approach in Mathematics Education and therefore it could be argued that such detail would be of interest to the target audience for this thesis, namely Mathematics Education researchers. The exposition is supplemented with a summary of why narrative inquiry is relevant in this study. The chapter concludes with a few words of caution about the limitations of narrative inquiry.

3.2 Locating narrative research in a research paradigm

The location of a study in one or other research paradigm is important: firstly, because it guides the researcher's philosophical assumptions about the research; secondly, it shapes

the research questions and the method of data collection and analysis; and thirdly, it has a bearing on the criteria for judging the quality and credibility of a study. Hence, according to Hart (2002), the researcher has a responsibility “to ground his or her methods in methodologies, each of which implicates a particular view of knowledge as well as of reality” (p. 144). For example, “the core of narrative inquiry combines both a philosophical stance towards the nature of social reality and our relationship with it, and the mode in which it should be studied” (Spector-Mersel, 2010, p. 206). It is worth noting that the notion of a ‘*narrative paradigm*’ was first proposed by Fisher (1984; 1985; 1989) as an alternative paradigm for human communication; one that is worthy of co-existing side-by-side with the ‘*rational world paradigm*’. He explained as follows:

[T]he narrative paradigm insists that human communication should be viewed as historical as well as situational, as stories competing with other stories constituted by good reasons, as being rational when they satisfy the demands of narrative probability and narrative fidelity, and inevitably moral inducements. The narrative paradigm challenges the notions that human communication – if it is to be considered rhetorical – must be an argumentative form, that reason is to be attributed only to discourse marked by clearly identifiable modes of inference and/or implication, and that the norms for evaluation of rhetorical communication must be rational standards taken essentially from informal or formal logic. The narrative paradigm does not deny reason and rationality; it reconstitutes them, making them amenable to all forms of human communication (Fisher, 1984; p.2).

Initially, Fisher’s (1984; 1985; 1989) *narrative paradigm*¹⁴ has been met with a mixture of enthusiasm and skepticism (e.g., Rowland, 1987; 1989; Warnick, 1987; Owens, 2007). Over time, however, the narrative paradigm as initially conceived by Fisher (1984; 1985; 1989) has become more acceptable. I am convinced that it has been subsumed into the *narrative approach*, as conceived by Spector-Mersel (2010; 2011). The latter constitutes a non-positivist, interpretive or constructivist paradigmatic approach to qualitative research (Kelchtermans, 1993; Bruner, 2004; Spector-Mersel, 2010). As a narrative perspective, the narrative paradigm “focuses on the innate nature of human beings to understand and interpret the world around us through storytelling” (Sellnow, 2010, p. 37); which is also one of the premises of Spector-Mersel’s (2010; 2011) narrative approach.

¹⁴ According to Fisher (1989), a *narrative paradigm* is no more than a philosophical statement offering an alternative way of interpreting and assessing human communication.

At the core of interpretive research, according to Borko, Liston and Whitcomb (2007), is a search for local meanings: “It seeks to describe, analyse, and interpret features of a specific situation, preserving its complexity and communicating the perspectives of participants. Interpretive researchers attempt to capture local variation through fine-grained descriptions of settings and actions, and through interpretation of how actors make sense of their sociocultural contexts and activities” (p. 4). This corresponds with Fisher’s (1984) notion of a narrative paradigm: “The ground for determining meaning, validity, reason, rationality, and truth must be a narrative context: history, culture, biography, and character” (p.3). In the narrative approach the focus is on “the composition of a story as a way to represent experiences” (Leggo, 2004, p. 97). Bruner (2004) argued that: firstly, “[w]e seem to have no other way of describing ‘lived time’ save in the form of a narrative” (p. 692); and secondly, “the mimesis between life so-called and narrative is a two-way affair... Narrative imitates life, life imitates narrative. ‘Life’ in this sense is the same kind of construction of the human imagination as ‘a narrative’ is” (p. 692). In terms of identity, narrative research constitutes “the study of personal identity as it is manifested in people’s identity stories” (Polkinghorne, 1996, p. 363). In the following paragraphs the three premises of the narrative approach (Spector-Mersel, 2010; 2011) will be discussed in more detail.

The first premise is that the narrative approach relies on constructivist, postmodern, and performance notions. According to Spector-Mersel (2010, p. 207), in addition to providing renewed legitimization for narrative methods, the “narrative turn” also altered the basic premise from conceiving a life story as a reflection of an objectified essence located either within the narrator or outside of him or her to a discursive, constructivist or postmodern approach. The latter focuses on the fluid nature of the narrative and on the relationship between the narrative and the phenomenon that it is describing. In other words, the “narrative turn” also signalled a turn from modernism, and its fixation with “master narratives” and “objectivity tests”, to postmodernism and poststructuralism where “the notion of a singular, knowable, essential self is judged as part of the social production of individualism, linked to agentic selves in pursuit of progress, knowingness, and emancipation. Assumptions of linearity of chronological time lines and story lines are challenged in favor (*sic*) of more multiple, disrupted notions of subjectivity” (Goodson, 2001,

p. 137). Traditional pre-narrative turn approaches depicted narrative as a way to get to a pre-existing (*essentialist*) entity. Current post-narrative turn approaches do not claim to mirror such pre-existing entity; but rather to play a role in constructing it, so that “Instead of a real essential and objective reality *reflected* in narratives, it proposes a subjective and relativist reality, largely *invented* by narratives” (Spector-Mersel, 2010, p. 208). Human knowledge of the world is relative; that is, instead of a single, dominant, or static reality, there are a number of realities that are constructed in the process of interactions and dialogues (Moen, 2006). This is inline with postmodernism which, according to Agger (1991), challenges the notion of a singular reality accessible via singular (scientific) methodologies:

It [postmodernism] would seem to argue for multiple methodologies as well as multiple class, race, and gender perspectives on problems. This has the additional advantage of empowering a variety of heretofore muted speakers to join discussions about social issues, legitimating their noncredentialed interventions into the scientific field and deprivileging the mainstream positivist voice (Agger, 1991, p. 121).

According to Patton (2002), therefore, “[constructivists] view the social world (as opposed to the physical world) as socially, politically and psychologically constructed, as are human understandings and explanations of the physical world. They [constructivists] triangulate to capture and report multiple perspectives rather than seek a singular truth” (p. 267). Conceiving of narrative in this way, confers upon it enormous power to shape reality; which in turn has profound implications for the narrator, because “If we narrate ourselves as active agents, we will conduct ourselves in the ‘real world’ very differently than if we base our life stories on victimhood” (Spector-Mersel, 2010, p. 208).

The second premise is that the narrative approach is not isolated or detached from qualitative research; rather it could be construed as a distinctive qualitative paradigm which contains both commonalities and differences with other interpretive paradigms. Arguing that the narrative research is more than a methodology, Spector-Mersel (2010) claimed that: “The narrative approach entails a distinct type of research, but over and above that it comprises a clear vision of the social world and the way we think, feel and conduct ourselves in it. At the present stage of its development, the narrative approach forms nothing less than a *paradigm*” (p. 209, *emphasis in original*); and that, “it is important to recognize it as one of the nonpositivist (*sic*) paradigms of qualitative research” (p. 209).

In contrast to the positivist and postpositivist paradigms which posit a single, objective and uniform reality, interpretive paradigms suggest a multifaceted reality, exchanging the positivist desire to create a 'true', neutral and unbiased picture of the 'actual' reality for an emphasis on the subjective component inherent in the study of social reality... positivist and postpositivist studies attempt to formulate rules beyond time and place in order to control and predict, whilst interpretive researchers focus on the particular, seeking to expand the understanding of the phenomenon through the individual case. The difference between interpretive and positivist/postpositivist paradigms then, lies not in the methodology – for the first may employ quantitative techniques and the latter may use qualitative tools – but in the philosophy (Spector-Mersel, 2010, p. 209).

Furthermore, “[t]he interpretive paradigms challenge that positivist ontology and epistemology, proposing a different conception of the research aim, the positions of the researcher and the participants and the nature of the findings” (Spector-Mersel, 2010, pp. 209-210). As Griffiths and Macleod (2008) cautioned, undue emphasis on scientifically proven or ‘objective’ research in education in pursuit of the elusive ‘one size fits all’ solution to effective teaching feeds a tendency to disregard the expertise of teachers.

The third premise is that the narrative approach constitutes a broad, yet distinct framework within which various approaches, theoretical orientations and analysis practices coexist; and that “the narrative paradigm in no way overlooks the considerable diversity existing within it” (Spector-Mersel, 2010, p. 206). Some consider this a limitation, for example, according to Borko, Liston and Whitcomb (2007):

A central limitation of research in the interpretive genre is the lack of shared conceptual frameworks and designs, which makes it a challenging task to aggregate findings and to draw comparisons across studies, even when those studies are of similar phenomena (p. 5).

This may be especially applicable to the novice narrative researcher, for whom it can be a bewildering experience to navigate the plethora of approaches, theoretical orientations, and analysis practices in the literature. In summary, Fisher (1989) described his proposed narrative paradigm as “a philosophical statement that is meant to offer an approach to interpretation and assessment of human communication – assuming that all forms of human communication can be seen fundamentally as stories, as interpretations of aspects of the world occurring in time and shaped by history, culture, and character”(p.57). These are particularly appropriate contextual issues to be considered when examining the narratives of the seven participating mathematics teachers in this study.

In the preface to *Storylines: Craftartists' Narratives of Identity*, Mishler (1999, p. xvi) suggests that the interpretation of narratives depends upon two theoretical assumptions: Firstly, that an interview is a dialogic process; a sequence of exchanges through which the interviewer and the interviewee negotiate and hopefully reach some level of agreement on what they will talk about and how. Any interpretation must hence pay as much attention to the interviewer's questions and statements as to the interviewee's responses. This assumption allows an exploration of how the interviewee's stories may be influenced by their location in the course of the interview against the background of the social relationship established during its course. And secondly, that narratives, like other discourse genres, are social acts: "This pragmatic view of language highlights what we are doing as social actors in selecting and organizing the resources of language to tell our stories in particular ways that fit the occasion and are appropriate for our specific intentions, audiences, and contexts" (Mishler, 1999, p. xvi). Bell's (2002) summary of narrative analysis provides a fitting conclusion for this section:

Hallmarks of the analysis are recognition that people make sense of their lives according to the narratives available to them, that stories are constantly being restructured in the light of new events, and that stories do not exist in a vacuum but are shaped by lifelong personal and community narratives (p. 208).

This summary is fitting because it captures the *ontology* of relativism; transactional and subjectivist *epistemology*; and hermeneutical and dialectical *methodology* of the narrative approach; and, in doing so, firmly locates this study in the constructivist paradigm (Guba & Lincoln, 1994). In terms of locating narrative inquiry in the broad spectrum of qualitative research, Savin-Baden and Van Niekerk (2007) wrote: "it tends to be positioned within a constructivist stance with reflexivity, interpretivism and representation being primary features of the approach" (p. 460). Borko, Liston, and Whitcomb (2007), for example, held that: "Consistent and distinguishing features of interpretive research include the privileging of 'insider's' perspectives and a focus on understanding sociocultural processes in natural settings in which individuals learn to teach" (p. 5). This closely describes what narrative inquiry does and therefore makes a compelling argument for narrative inquiry to be located within a constructivist/interpretive paradigm.

3.3 Two different modes of knowing

Bruner (1986) has argued that human beings understand the world in two very different ways. He distinguished between a “paradigmatic mode” (also known as the “logico-scientific mode”) and a “narrative mode” of understanding. Although complementary, neither of the two modes of knowing is reducible to the other; each providing a distinctive way of ordering experience and constructing reality (Lyons & LaBoskey, 2002, p. 15). The *paradigmatic mode*, focussed on the narrow epistemological question of ‘*how to know the truth*’, entails comprehension of our experiences through tightly reasoned analyses, logical proof, and empirical observation. The *narrative mode*, focussed on the broader, more inclusive question of ‘*the meaning of experiences*’, entails concerns with human wants, needs, and goals. McAdams (1993) described the latter as “the mode of stories, wherein we deal with ‘the vicissitudes of human intention’ organized in time” (p. 29). Lyons and LaBoskey (2002) explained the difference as follows: “One seeks explications context free and universal, and the other context sensitive and particular” (p. 15).

Narrative inquiry is predicated on the narrative way of knowing (Kramp, 2004, p. 107), which distinguishes it from other more traditional research methods which are predicated on the paradigmatic (logico-scientific/mathematical) way of knowing. The main difference between the two ways of knowing revolves around issues of truth and validity/verifiability of the outcomes (Bruner, 1986; McAdams, 1993; Kramp, 2004). As Bruner (1986) explained:

A good story and a well-formed argument are different natural kinds. Both can be used as means for convincing another. Yet what they convince *of* is fundamentally different: arguments convince one of their truth, stories of their lifelikeness. The one verifies by eventual appeal to procedures for establishing formal and empirical proof. The other establishes not truth but verisimilitude (p. 11).

Bruner (1986) described them as “two modes of cognitive functioning, two modes of thought, each providing distinctive ways of ordering experience, of constructing reality” (p. 11). He noted that the one cannot be reduced to the other; neither can the one be ignored at the expense of the other without failing to capture the rich diversity of thought (Bruner, 1986, p. 11). The following two subsections offer a more detailed, albeit brief, description of the differences between the two modes of knowing.

3.3.1 Paradigmatic (logico-scientific/mathematical) knowing

According to Kramp (2004, p. 107), paradigmatic or logico-scientific/mathematical knowing searches for *how we come to know the truth*. It is based on positivist assumptions; driven by reasoned hypotheses; and, results in a rigid principle or a law; an abstraction or a generalization; that leads to a theory, information, or both that can be used to predict or control human behaviour or natural forces (p. 107). She further explained that “Paradigmatic thinking pursues empirical truth and requires logical proof” (p. 107). From this perspective, the researcher’s job is to eliminate ambiguity and uncertainty. In paradigmatic knowing “there cannot be two equally credible accounts” (p. 108). The researcher who seeks to explain or explicate the truth, only takes into account evidence that is observable through the senses. Paradigmatic knowing is typically expressed in denotative language, emphasizing definition, abstraction, conceptual analysis, evidence, and truth. As Giovannoli (2000) observed, “[I]n this perspective stories are analyzed for criteria that would place them in one or the other category and thus reinforce a hypothesis” (p. 34). Similarly, Polkinghorne (2010, p. 395) noted that paradigmatic thinking structures experiences by identifying and categorizing them into concept groups; followed by causally relating these to other concept groups.

According to Bruner (1986) the paradigmatic or logico-scientific mode “attempts to fulfill (*sic*) the ideal of a formal, mathematical system of description and explanation. It employs categorization or conceptualization and the operations by which categories are established, instantiated, idealized, and related one to the other to form a system” (p. 12). At a gross level then:

the logico-scientific mode deals in general causes, and in their establishment, and makes use of procedures to assure verifiable reference and to test for empirical truth. Its language is regulated by requirements of consistency and noncontradiction (*sic*). Its domain is defined not only by observables to which its basic statements relate, but also by the set of possible worlds that can be logically generated and tested against observables – that is it is driven by principled hypotheses (Bruner, 1986, p. 13).

In pondering the potential of the paradigmatic (logico-scientific/mathematical) mode of knowing to make sense of human experiences, McAdams (1993) wrote:

For all its power and precision, however, the paradigmatic mode is a strangely humbler form of thought than story making. It is not able to make much sense of human desire, goals, and social conduct. Human events are often ambiguous,

and resistant to paradigmatic efforts to understand them (McAdams, 1993, p. 29).

A good story in the narrative mode, in contrast, is especially effective when it triggers presuppositions and generates many different meanings (McAdams, 1993, p. 30). For example, Atkinson and Delamont (2006), arguing for a degree of caution and methodological scepticism during narrative inquiry, wrote:

Our concern would not be whether a given *testimonio* is internally consistent or entirely accurate. Since we do not believe that any account simply mirrors some antecedent reality, but helps to create that very reality itself, we also believe that such performances cannot be held to give privileged access to a political 'truth'...we must sustain a commitment to an analytic stance, and not a celebratory one. We need, therefore, to retain a degree of distance from the narrative materials we collect, analyse and reproduce (p. 169).

They explained that the political orientations of the inquirer "should not become an excuse for the uncritical celebration of particular kinds and sources of social acts, nor for the abandonment of obligations to treat them as social 'facts' susceptible to sustained analytic inspection" (p. 169).

3.3.2 Narrative knowing

Polkinghorne (2010) argued that narrative thinking is more closely attuned to expressing human experience than paradigmatic thinking. As Bruner (1986), explained:

The imaginative application of the narrative mode leads instead to good stories, gripping drama, believable (though not necessarily "true") historical accounts. It deals in human or human-like intention and action and the vicissitudes and consequences that mark their course. It strives to put its timeless miracles into the particulars of experience, and to locate the experience in time and place (p. 13).

According to Kramp (2004, p. 108), narrative knowing asks two questions: "How do we come to endow experience with meaning?" and "What is the meaning of experience?" In narrative knowing the answers to both these questions lie in a story. As Marlett and Emes (2010) pointed out:

Stories are used in research because meaning is created in conversation as stories are told and explored. There is no established truth that we are trying to find, no theory about what is right... Meaning, in a narrative approach, is contained in stories about events, relationships, emotions, and thoughts. In narrative research, we look for stories to provide information (p. 132).

The narrative inquirer interprets the experiences and events as told by the story teller and this gives them meaning. Leggo (2008) wrote: "I am not sure that narrative bestows meaning as much as it recognizes some of the possibilities of meaning that lie always in the seemingly tangled messiness of lived experience" (p. 5). As Kramp (2004) explained:

The researcher understands that each story has a point of view that will differ, depending on who is telling the story, who is being told, as well as when and where the story is told. Consequently, *verisimilitude* – the appearance or likelihood that something is or could be true or real – is a more appropriate criterion for narrative knowing than verification or proof of truth. What the story teller 'tells' is what is significant for the researcher, who desires to understand the meaning of a particular phenomenon rather than to gather information about it (p. 108).

She continues that narrative knowing is best expressed in connotative language: revealing effective causal thinking; creating order; revealing intentionality; and, structuring human experience; so that "[c]lear accounts of an experience, typically jargon-free, are structured in story form, constituting a meaningful story, sometimes not known to the storyteller until it is told" (Kramp, 2004, p. 108).

Polkinghorne (1988), noting that people ordinarily explain their own actions, and that of others, by means of a plot, suggested that this is because: "In the narrative schema for organizing information, an event is understood to have been explained when its role and significance in relation to a human project is identified" (p. 21). He further comments that this way of explaining differs from the logico-mathematical way of explaining where understanding is thought to occur when an event is identified as a particular instance of and established law, pattern, or relationship among categories; noting that explanation through narrative is contextually bound and therefore differs in form from formal scientific explanations. Making sense of a human event is not dependent upon whether a person can place it into the proper category or not; rather making sense depends upon whether a person is able to integrate it into a plot and understand it in the context of what has happened (Polkinghorne, 1988, p. 21). Usually human events are explained in the narrative mode rather than the categorical mode. Narrative explanation answers questions by:

[C]onfiguring a set of events into a story-like causal nexus... focussing on the events in an individual's life history that have an effect on a particular action, including the projected future goals the action is to achieve... explains an event by tracing its intrinsic relations to other events and locating it in its historical

context... narratives exhibit an explanation rather than demonstrating it (Polkinghorne, 1988, p. 21).

Narrative explanation breaks the characteristic symmetry between explanation and prediction exhibited by logico-mathematical reasoning. It does so by refusing to subsume events under laws; instead explaining it by clarifying their significance retrospectively on the basis of their subsequent outcomes (Polkinghorne, 1988, p. 21).

Dhunpath (2000, p. 544) coined the term “narradigm” to describe how, in a “post-paradigmatic age” that actively sponsors the “long-absent” voices of teachers, teacher-educators, and learners, “narrative research enables us to reconceptualise our studies of teaching and curriculum in fundamentally different ways” (p. 544). She explained that: “The notion of a ‘Narradigm’ affirms the reality that our lives are intrinsically narrative in quality. We experience the world and re-present our experience narratively” (Dhunpath, 2000, pp. 544-545). Explaining how this is different from traditional positivistic approaches, she wrote:

Traditionally, research has tended to present an archetypal image of teachers, by using positivistic approaches aimed at quantifying teaching performance. These positivistic approaches strip research of the rich tapestry of human experience and emotion. They attempt to make sense of pieces of teachers’ lives without understanding the narrative wholes in which the pieces are embedded (Dhunpath, 2000, p. 548).

In summary, the difference between the positivistic “paradigmatic” (logico-scientific/mathematical) mode and the “narrative mode”, as Polkinghorne (1988, p. 17) suggested, is that the paradigmatic mode searches for universal truth, whereas the narrative mode searches for connections between events. Moreover, “different kinds of knowledge require different kinds of evidence and argument to convince readers that the claim is valid” (Polkinghorne, 2007, p. 4). Bamberg (2012) argued that narrative knowing is centred “around the particularity and specificity of what occurred and the involvement (and accountability or responsibility) of human agents in bringing about these specific and incidental events” (p. 79). He added that: “The term *narrative as method* implies a general approach that views individuals within their social environments as actively conferring meaning onto objects in the world, including others and selves; the way this happens in everyday situations as well as in interviews or surveys, is necessarily subjective and interpretive” (pp. 79-80). As Keltchtermans (1993) pointed out, human behaviour is the result of such meaningful interaction with the environment or the context (social, cultural,

material, and institutional). Moreover, meanings are construed throughout interactions with, especially, the social and cultural environment. In the following section, the readers will be introduced to narrative inquiry, a research methodology that is based on the narrative mode of knowing.

3.4 Narrative Inquiry

Often described as “the study of stories” (Polkinghorne, 2007, p. 1), narrative research has a rich history and is undertaken in various academic disciplines. However, narrative research is about much more than just the study of stories; it is about studying and understanding experience, and doing so narratively (Clandinin & Huber, 2010). Nevertheless, it is important to study stories because stories represent a way of knowing and thinking that is particularly suited to explicating the knowledge that arises from action; thus, stories are especially relevant as a form of expressing teachers’ practical understandings (Carter, 1995; Carter & Doyle, 1995). The rapid growth and immediate attraction of story in teacher education is explained by Carter (1995), who claimed that, in contrast with the technical rationality of the standard research discourse:

[S]tory was a way of grasping the richness and indeterminacy of our experiences as teachers and the complexity of our understandings of what teaching is and how others can be prepared to engage in the profession. Furthermore, with the vigorous emphasis on cognition in teaching, story came to represent a way of knowing and thinking that is particularly suited to explicating teachers’ practical understandings (p. 326).

Storytelling can be described as a way of recounting and creating order out of experience that starts in childhood and continues through all of our life stages (Kelchtermans, 1993; Bullough, Jr. & Baughman, 1996; Oliver, 1998; Moen, 2006). Bullough, Jr. and Baughman (1996), for example, argued that: “The story of one’s quest to become a teacher is embedded in the story of one’s life” (p. 389). In other words, the narratives that shape the professional identities of mathematics teachers will intersect with, but are not limited to their professional biographies or career stories. Kelchtermans (1993) defined a professional biography or career story as, “the retrospective and narrative reconstruction of the career by the teacher, in which his or her professional experiences are reconstructed in a meaningful ‘Gestalt’” (p. 446). As a theoretical construct, the biographical perspective has

five features, it is: narrative, constructivistic, contextualistic, interactionistic, and dynamic (Kelchtermans, 1993, pp. 443-444).

In research into teaching and learning, much of the current debate around the appropriateness of narrative knowing is purpose driven; because, “[w]hat one hopes to accomplish or claim has a great deal to do with whether one’s decisions about method are appropriate or not” (Doyle, 1997, pp. 93-94). As Patton (2002) pointed out, “the challenge is appropriately matching methods to questions rather than adhering to some narrow methodological orthodoxy” (p. 264). In other words, the methodology is dictated by the topic and the goals of the research (Bowen, 2005). The allure of narrative research in the social sciences, and in this study specifically, has to do with “the premise that human life is itself storied, and that narrative is both a method of knowing and an ontological condition of social life... the stories that people tell and hear from others form the warp and weft of who they are and what they do” (Smith & Sparkes, 2006, p. 169). As narrative gerontologists Kenyon and Randall (1999) aptly explained: “From an ontological perspective, human beings are to be understood as fundamentally storytellers and storylisteners. This means that we think, perceive, feel and act on the basis of stories... We are biographical beings as much as we are biological ones” (p. 1). Stories offer a way of understanding the meaning of experiences, “and it is the meaning of experiences, not the underlying ontological structure of objects, that constitutes the reality that we [humans] respond to” (Oliver, 1998, p. 247). Furthermore, as Oliver (1998) reminded us: “Because people give meaning to their lives through the stories they tell, it seems appropriate for those who study human experience to use a research methodology that connects with how people construct the meanings of life experiences” (p. 244). Like all other human beings, however, “teachers tell and retell their stories of experience both for themselves and for others in different social settings, at different times and for different addressees” (Moen, 2006, p. 5). Moreover, according to Smith and Sparks (2006), “stories shape identity, guide action, and constitute our mode of being” (p. 170). Therefore, the most appropriate way to study the professional identities of teachers seems to be through the stories that they tell. Moreover, “as we come to better understand students’ and teachers’ stories, their interpretations of experiences, we may be able to better understand what we *need* or *ought* to do, and as teacher educators and researchers that *is* our moral obligation” (Oliver, 1998, p. 247, emphasis in original).

Fenstermacher (1997) concluded his review of five articles in a special issue of the journal *Teaching and Teacher Education* dealing specifically with narrative, as follows:

[O]ne of the truly valuable contributions of narrative inquiry in education is the revelation of the intentions and beliefs of teachers. Through narrative, we begin to understand the actor's reasons for action, and are thereby encouraged to make sense of these actions through the eyes of the actor. This understanding constitutes an enormous contribution to learning about and getting better at teaching... in story we have one of the most truly useful ways of helping other teachers (pp. 123-124).

However, as Feldman, Sköldbberg, Brown and Horner (2004) reminded us: "The use of any analytical tool must be related to the question being asked of the data" (p. 167). It is worth noting Kieran, Forman and Sfard's (2001/2002) caution that "the uncompromising insistence on methodological rigor, especially if gauged according to criteria borrowed from the 'exact' sciences, forces researchers to bend, and eventually forget, the original focus of their endeavor" (p. 2), which eventually manifests "in their inability to bring about a lasting betterment of the human condition, which is the ultimate goal of any scientific endeavor" (p. 3). Thus, the overarching methodological question is this: Does the method suit the purpose of the inquiry?

This study, with its focus on the narratives that shape the professional identities of mathematics teachers, is indisputably tied to narrative knowing; therefore, the research methodology of choice is that of narrative inquiry. Connelly and Clandinin (1990) explained that "narrative inquiry" is grounded in the premise that "education is the construction and reconstruction of personal and social stories" (p. 2). However, according to Clandinin and Huber (2010), it is important to justify narrative inquiry in three ways: personally – justifying the inquiry in the context of the researcher's own life experiences, tensions, and personal inquiry; practically – justifying the inquiry in terms of potential shifting or changing practice; and, socially – justifying the inquiry in terms of the "so what?" and "who cares?" questions. These justifications will be dealt with at different places in the thesis. For instance, personal justification will be dealt with in Chapter 4, section 4.2, covering the researcher's own story and linked to the concluding remarks in Chapter 7, section 7.5; while practical and social justification will be dealt with in Chapter 7, section 7.2, exploring the potential significance of this study.

By its very nature, narrative inquiry is based on at least five premises, all very neatly articulated by Burns and Pachler (2004, pp. 152-153): The first premise is that teachers are great story tellers; nicely captured in Fisher's (1984) metaphor of human beings as "*homo narrans*" (p.6) or *storytellers*. The second premise is that the meanings of teacher narratives can be shared with peers to bring about professional learning. The third premise is that teachers confirm those aspects of their professional lives that are significant to them through storytelling. The fourth premise is that narrative has an impact in terms of shaping the professional identities of teachers; that is, "[i]t is thought that the process of telling and retelling of stories allows teachers to establish what sort of teacher they are" (p. 152). The last premise is that "teachers' knowledge is constantly developing and evolving from the daily experiences they have both inside and outside of their classrooms" (p. 152). Moreover, their interpretation of those experiences is accessible through the stories that they tell. It is also worth noting Sarbin's (1986) view of narrative as an organizing principle for human action; that is, "human beings think, perceive, imagine, and make moral choices according to narrative structures" (p. 8). This view is in line with the notion of narratives shaping professional identities of mathematics teachers. Sarbin's (1986) view, in conjunction with the five premises of narrative inquiry articulated by Burns and Pachler (2004), present a convincing argument for narrative inquiry as the methodology of choice in this research project with its focus on the narratives that shape the professional identities of mathematics teachers. As Carter and Doyle (1995) maintained in their comments on the rapidly expanding interest in personal narrative and biography in teaching and teacher education: "This work is based on the premise that the act of teaching, teachers' experiences and the choices they make, and the process of learning to teach are deeply personal matters persistently blended with a teacher's identity and, thus, his or her life story" (p. 165). In the following two sub-sections I will distinguish between narrative and story and then explain how they relate to narrative plot.

3.4.1 Distinguishing between narrative and story

Even though the words *narrative* and *story* are often used interchangeably (e.g., Sarbin, 1986; Richmond, 2002; Kramp, 2004), they do not necessarily mean the same thing (Connelly & Clandinin, 1990; Kelchtermans, 1997; Feldman, Sköldberg, Brown, & Horner, 2004; Riley & Hawe, 2005; Foster, 2006; Watson, 2006; Riessman & Speedy, 2007; Gubrium

& Holstein, 2008; Ramsdell, 2010; Stanley, 2010). According to Feldman, Sköldberg, Brown, and Horner (2004), for example, “A story is a subset of narrative. There are narratives that are not stories but, in fact, are more encompassing. We understand the encompassing narrative to be the grand conception that entertains several themes over a period of time... Stories are instantiations, particular exemplars, of the grand conception” (p. 149). Similarly, Connelly and Clandinin (1990) hold that the phenomenon is the *story*, whereas the inquiry is the *narrative*; explaining that, “people by nature lead storied lives and tell stories of those lives, whereas narrative researchers describe such lives, collect and tell stories of them, and write narratives of experience” (p. 2). In other words, through their interpretation of the stories that people tell, narrative researchers are able to uncover the narrative “grand conception” (Feldman, Sköldberg, Brown, & Horner, 2004, p. 149). As Riley and Hawe (2005) agreed: stories are told by people; whereas, narratives arise from the analysis of such stories. A *story*, according to Emden (1998), “can take many forms and defies categorisation” (p. 35); whereas a *narrative*, according to Polkinghorne (1988), is “a kind of organisational scheme expressed in story form” (p. 13). Kramp (2004) explained the difference as follows: “The word ‘story’ is more appropriate when speaking in a familiar, personal or conversational way. The word ‘narrative’ calls to mind a particular genre with formal characteristics... A story is always a narrative, but narrative structure is not limited to story” (p. 106). “The difference,” according to Riley and Hawe (2005), “relates to where the primary data ends and where the analysis of that data begins” (p. 227); so that, as explained above, “the [narrative] researcher’s role is to interpret the stories in order to analyze the underlying narrative that the storytellers may not be able to give voice to themselves” (p. 227). Thus, as Gubrium and Holstein (2008) so eloquently articulated: “The difference between sharing stories, on the one hand, and noticing, cataloguing, and analyzing the corpus of narratives for similarities and differences on the other, is a leap in imagination, highlighting narrativity as something separate and distinct from stories themselves” (p. 241). In other words, narrativity is the domain of the researcher. As Stanley (2010) explained: “[T]he term narrative for me makes most sense as a way of thinking about what researchers do, as the analysis we [researchers] make. And so, rather than using narrative to signify some presumed characteristic of data, I use narrative inquiry or narrative analysis to characterise my approach, while the analytical product of this, the researcher’s story if you

like, is the meta-narrative” (p. 3) Therefore, according to Riessman and Speedy (2007), stories in popular culture seem to speak for themselves, while stories in narrative research need further excavation and interpretation:

Missing for the narrative scholar is analytic attention to how the facts got assembled *that* way. For whom was *this* story constructed, how was it made, and for what purpose? What cultural discourses does it draw on – take for granted? What does it accomplish? Are there gaps and inconsistencies that might suggest alternative or preferred narratives? (p. 429, italics in original).

By answering these interpretive questions, the narrative researcher turns a story into narrative. Moreover, Watson (2006) pointed out that a narrative, which is something that is constructed or *made-up* (very much like a story), is a quality that can reveal *truths* about the way the narrator interprets the events and choices in their lives and moulds them into a plot. Narrative is a scheme for organising and understanding the relation between objects and events as described by the narrator. In other words, “it is the way in which narrative functions to make sense of events and structure them that is important, rather than whether they conform to some rigid structure” (p. 513). Watson (2006) further argued that not all stories are narratives, for example, stories of personal experiences do not necessarily show all the traditional features of a narrative; implying that it is incumbent upon the narrative researcher to interpret such stories and to mould them into a narrative. In short, an analysis of the stories that individual teachers tell, and the resources that they use to construct these stories, in other words their “narratives”, may tell us something about how they construct their identities as professionals (Watson, 2006, p. 512). As Foster (2006) explained, “narrative specifically refers to the structure, knowledge and skills that are needed by the person in order to construct a story... the participant tells their story and the researcher describes and interprets these through writing of narratives and use of narrative inquiry” (p. 101). Some narrative researchers (e.g., Kaasila, 2007a) hold that a narrative is a story with special qualities: “I consider *narrative* to be a story relating a sequence of events that are significant for the narrator and his or her audience. A *narrative* has internal logic that makes sense to the narrator” (Kaasila, 2007a, p. 374). Polkinghorne (1988) was very specific in confining his use of the term *narrative* to “the kind of organizational scheme expressed in storied form” (p. 13), rather than some generalized, colloquial use of the word. In a later publication he re-emphasised: “*Stories* are narratives that operate as a schematic structuring of temporal events” (Polkinghorne, 1991, p. 138, italics in original).

In summary then, not all narratives are stories; a narrative is a more structured, formal, and analytical version of the ordinary story; “[a] narrative is a story that tells a sequence of events that is significant for the narrator or her or his audience” (Moen, 2006, p. 4). Furthermore, reference to *story* is appropriate in informal, familiar, or conversational speech; while reference to *narrative* is more appropriate in more formal, structured speech; and, *narrative* is inclusive in such a way that “[a] story is always a narrative, but narrative structure is not limited to story” (Kramp, 2004, p. 106). According to Ramsdell (2010), story encompasses the events or actions which the story is about; while narrative encompasses the way these events or actions are related: “Narrative discourse can encompass numerous things, but story almost always includes two primary parts: events and characters” (p. 274).

As pointed out above, some narrative researchers prefer to use story and narrative interchangeably (e.g., Sarbin, 1986; Richmond, 2002; Kramp, 2004). As Kramp (2004) explained: “By using the two interchangeably, or as fits the context, you can capture the experiential quality of ‘telling a story’. At the same time, a particular way of thinking or knowing and a framework for telling – narrative – is revealed” (p. 106). In line with the arguments presented here, this study will use the notion of *story* to refer to a particular subset of the narrative data, namely, units of speech comprised of a beginning, middle, and end (Sfard & Prusak, 2005a); showing sequence and consequence (Riessman, 2005; Riessman & Speedy, 2007); delineating the “who, what, where, and when” (Freidus, 2002, p. 161) of an experience; and lastly, always making a moral point (Larsson & Sjöblom, 2010). The notion of *narrative*, on the other hand, will refer to the researcher’s interpretation of such stories and other narrative data in collaboration with the participants. Oliver (1998) sums this up quite nicely: “[Stories] are only small pieces of what would become a narrative, as a narrative analysis is constructed from multiple stories, interviews, observations, and field notes” (p. 246). In the following subsection the notion of a *narrative plot* will be introduced to explain how such “small pieces” are combined into a coherent whole which is a narrative.

3.4.2 Narrative plot

The narrative plot can be described as “the integration of various events, happenings, and actions of human life into a thematic whole” (Oliver, 1998, p. 253) and is regarded as the centrepiece of narrative analysis that provides meaning to the narrative. As Polkinghorne

(1995) explained: "In the context of narrative inquiry, narrative refers to a discourse form in which events and happenings are configured into a temporal unity by means of a plot" (p. 5). Time is a crucial part of the narrative plot, and hence narrative analysis is bound by a temporal structure that manifests as a beginning, middle, and end of the story (Oliver, 1998); or, as Connelly and Clandinin (1990) held, by past, present, and future events, which can be configured into the beginning, middle, and end of a narrative "to render some explanation otherwise not seen in the data" (Oliver, 1998, p. 254). The term "narrative practice" was coined by Gubrium and Holstein (1998) "to characterize simultaneously the activities of storytelling, the resources used to tell stories, and the auspices under which stories are told" (p. 164).

According to Polkinghorne (1991), narrative is one of the "cognitive organizing processes" (p. 135) that humans use to interpret and give meaning to cues emanating from external perceptual senses, internal bodily sensations, and cognitive memories. This is accomplished by identifying these cues as part of a structure. He wrote: "Narrative is the cognitive process that gives meaning to temporal events by identifying them as parts of a plot. The narrative structure is used to organize events into various kinds of stories" (p. 136). Also referring to narrative form and structure, Gergen and Gergen (1986) suggested: "Perhaps the most essential ingredient of narrative accounting (or storytelling) is its capability to structure events in such a way that they demonstrate, first, a connectedness or coherence, and second, a sense of movement or direction through time" (p. 25). Furthermore, they contended that, in order to succeed as a narrative, such account depends on two related ingredients: firstly, the establishment of a "goal state or valued endpoint" (p. 25); and secondly, the selection and arrangement of events "in such a way that the goal state is rendered more or less probable" (p. 26). Gubrium and Holstein (1998) agreed that, "[a]s texts of experience, stories are not complete prior to their telling but are assembled to meet situated interpretive demands... storytelling is an ongoing (*sic*) process of *composition* rather than the more-or-less coherent reporting of experience. Narration is constructive, a way of fashioning the semblance of meaning and order for experience" (1998, *italics in original*). McAdams (2008) added: "Much like playwrights or novelists, people work on their stories in an effort to construct an integrative and meaningful product" (p. 243). What the above narrative researchers were referring to is what Polkinghorne (1988) later described as

the *narrative plot*; an organizing scheme that identifies the significance and role of individual events in the narrative:

The plot functions to transform a chronicle or listing of events into a schematic whole by highlighting and recognizing the contribution that certain events make to the development and outcome of the story. Without the recognition of significance given by the plot, each event would appear as discontinuous and separate, and its meaning would be limited to its categorical identification or its spatiotemporal location (Polkinghorne, 1988, pp. 18-19).

It is through its ability to structure events into a plot that narrative is able to contribute to the shaping of identity. Polkinghorne (1991) explained that “individuals construct private and personal stories linking diverse events of their lives into unified and understandable wholes. These are stories about the self. They are the basis of personal identity and self-understanding and they provide answers to the questions ‘Who am I?’” (p. 136). The elements of a narrative plot are perhaps best captured by Kvale (1996) who wrote: “A narrative contains a *temporal* sequence, a patterning of happenings. There is a *social* dimension, someone is telling something to someone. And there is *meaning*, a plot giving the story a point and unity” (p. 282). Gubrium and Holstein (1998) explained as follows:

If personal experience provides an endless supply of potentially reportable, storyable items, it is the incorporation of particular items into a coherent account that gives them meaning. Local, broader cultural resources each provide familiar or conventional guidelines for how stories unfold, but they do not determine individual story lines. There is a persistent gap between what is available for conveying a story and how a particular narrative unfolds in practice. Telling one’s experience in the context, say, of a group that shares a relatively crystallized repertoire of story lines present one with a set of discernable plots, offering ways of giving shape and substance to experience in those terms (p. 166).

The reasoning behind the construction of a plot is similar to the reasoning behind the development of a hypothesis, “[b]oth are interactive activities that take place between a conception that might explain or show a connection among the events and the resistance of the events to fit the construction” (Polkinghorne, 1988, p. 19). He explained the notion in more detail in a later publication:

Emplotment is a procedure that configures temporal elements into a whole by ‘grasping them together’ and directing them toward a conclusion or ending. Emplotment transforms a list or sequence of discontinuous events into a unified story with a point or theme. Through the operation of emplotment, particular actions take on meaning as a contribution to the unfolding plot of the story. Without the recognition of significance conferred by being taken up into a plot,

each event would appear as discontinuous, and its meaning would be limited to its categorical identification or its spatiotemporal location (Polkinghorne, 1991, p. 141).

According to Daiute (2011), the whole point of narrative emplotment is to make sense of a complication or '*trouble*':

If narrative is a sense-making process, *trouble* is certainly at the center. Trouble is the seed of plot development; trouble in the narrating situation can guide a narrator to craft different stories for diverse audiences, and trouble in social institutions constraining narrators may give way to stories transgressing societal canons (pp. 329-330).

In the context of everyday narratives, '*trouble*' occurs when the expected circumstances in a story's setting is disrupted (Daiute, 2011). There must be something special or '*troubling*' about a story or else it would not be told. The value of looking for '*trouble*' in narratives of identity can be inferred from Phinney's (2000) comment that: "When an individual life undergoes dramatic change, it can serve as a natural experiment that provides insight into processes that are difficult or impossible to capture by other means [other than narrative]" (p. 30). As Bruner (1999) suggested, '*trouble*' is any disturbance or imbalance between agent, act, goal, means and setting; it is what creates "the engine of the story" (p. 7).

Story typically begins with a steady state of some kind: something canonical, expectable. It heats up when the expectable is violated, thrown into an imbalance of its components. That violation or disruption sets in motion whatever acts can be taken to restore the original canonical state. If those acts fail and that state is not restored, we are compelled to find a new order, a 'turning point.' And when we are done with the telling, the story ends with a coda that makes it possible to get on with ordinary 'forward living' by fixing it 'backward' (Bruner, 1999, p. 7).

Hence Gergen and Gergen's (1986) notion of a "goal state or valued endpoint" (p. 25) cited above can be seen as resolution of the '*trouble*' or a restoration of the imbalance that it caused. An alternative view is held by Conle (2000b) who argued that, despite its pertinence, this view of "trouble as the driving engine for story telling" (p. 190) could possibly be misleading in understanding the inquiry that drives personal narrative theses in education. She explained as follows:

Yes, there is trouble; there is tension, there is a problem and there is a solution sought. But the solution is not the relief needed by someone who is sick or in need of care. The problem, although it may be connected to some sort of unwellness (*sic*), is primarily an impetus for inquiry. In that sense, it is more like a subconscious question mark about something that is emotionally as well as intellectually interesting (Conle, 2000b, p. 190).

She continued that this view of the role of '*trouble*' in narrative inquiry is odd in an academic tradition that has tended to keep emotion and intellect apart; an academic tradition that has, for example, disregarded the emotional dimensions in the life-long quests of great inquirers (p. 190). While her view is worth noting, I am not convinced that it applies to the narratives of individual teachers in this study; where the answer to the question: "What is the story about?" (Mishler, 1986b, p. 236), is likely to point to the teacher experiencing some kind of '*trouble*' that makes the story worth telling. Moreover, as Burns and Pachler (2004) noted, "it is key for teacher narratives to move beyond mere anecdote in order to become meaningful learning tools. Narratives of experience offer challenges to accepted norms or '*given*' assumptions about learning and what is being and should be learnt" (p. 152).

Sarbin (1986), considering *narrative* and *story* to be coterminous, wrote: "The story is held together by recognizable patterns and events called plots. Central to the plot structure are human predicaments and attempted resolutions" (p. 3). Furthermore, he proposed a "narratory principle" based on the assertion that "human beings think, perceive, imagine, and make moral choices according the narrative structures" (p. 8). Hence, as Polkinghorne (1991) explained: "Storytelling and story comprehension are ultimately grounded in the general human capacity to conceptualize – that is, to structure experiential elements into wholes" (p. 142). In addition to the basic explanatory storied plot structure of beginning, middle, and end; Clandinin and Connelly (1990) also noted a temporal structure of past, present, and future. Capitalizing on Carr's (cited in Clandinin and Connelly, 1990) notion of narrative structure being related to three critical dimensions of human experience: significance, value, and intention; they suggested that the past conveys significance, the present conveys value, and the future conveys intention. The explanation being that: "Because collaboration occurs from beginning to end in narrative inquiry, plot outlines are continually revised as consultation takes place over written materials and as further data are collected to develop points of importance in the revised story" (Connelly & Clandinin, 1990, p. 10). This was confirmed by other researchers (e.g., Polkinghorne, 1991; 1988; Mishler, 1986a; 1986b; Riessman, 1997; Gubrium & Holstein, 2012) who suggested that emplotment is negotiated during the construction of the narrative that captures the narrated event. Gubrium and Holstein (1998) warned that we must be sensitive to issues of

narrative collaboration because: “Listeners are not simply narrative depositories or passive receptors. Neither are they discursively homogeneous. They collaborate in both the whats and hows of narrative practice, invoking cultural meanings and expectations and supplying biographical particulars of their own, all in relation to the local auspices of narration” (p. 181). In other words, the audience co-constructs the meaning of the narrative. Polkinghorne (1988) explained how this happens:

Thus, emplotment is not the imposition of a ready-made plot structure on an independent set of events; instead, it is a dialectic process that takes place between the events themselves and a theme which discloses their significance and allows them to be grasped together as parts of one story. In addition, the construction of plots is not a completely rule-governed activity: It can generate unique and novel configurations (pp. 19-20).

In addition, he noted that cultural traditions offer a rich source of plot lines which may be used to configure events into stories; so that, through the intermixing the various elements of a “cultural repertoire of sedimented stories and innovations” (p. 20), the events may be linked and ordered into a plot.

Plot lines used in the construction of self-narratives are not usually created from scratch. Most often they are adaptations of plots from the literary and oral stories produced by one’s culture. Cultures collect narrative productions that distill (*sic*) the historical experiences of their members. These stories provide people with exemplar plots that can be used to configure the events in their own lives. Cultures hold up honored (*sic*) plots for emulation by their members (Polkinghorne, 1991, p. 147).

Hence, as Bruner (2004) pointed out, “one important way of characterizing a culture is by the narrative models it makes available for describing the course of life” (p. 694). Therefore, “[p]lot lines can be used imaginatively as decisions are made about actions in the re-creation of a typical story” (Polkinghorne, 1988, p. 20). For example, when a young boy decides to confess to his father in the hope that he would be forgiven for telling the truth as in some other story where this is actually the case. Another example is what psychotherapists refer to as ‘life-scripts’; that is, one could story one-self as either a winner or a victim, which then could become a self-fulfilling prophesy. What this illustrates is that having a clear plot does not mean that a story is necessarily true. As Phillips (1997) cautioned: “The conditions which the need for a clear plot imposes upon a story are epistemically irrelevant; the plain fact of the matter is that unification of the narrative, having a clear conclusion to which the narrative coherently leads, and so forth, can all be

achieved without the story being true” (p. 105). Often these conditions are imposed by the genre of the narrative with very little epistemological justification; and often the narrative must serve both: the genre and the epistemic standards (Phillips, 1997, p. 105). In addition, there is the danger that the narrative researcher might have such set beliefs about the plot of a particular story that “the subsequent selection of events to include is likely to be ‘plot driven’ not ‘truth driven’ – after all, the demands of the narrative genre become central if one is engaged in constructing a narrative” (Phillips, 1997, p. 105). The relation between the narrative plot and the self-concept is perhaps best summarised by Polkinghorne (1991) who wrote:

Human existence is temporal. We do not come to self-understanding by seeking to know what kind of thing we are. Rather, we come to know ourselves by discerning a plot that unifies the actions and events of our past with future actions and the events we anticipate... Narrative structuring gives sense to events by identifying them as contributing parts of an emplotted drama. Self-concept is a storied concept, and our identity is the drama we are unfolding (p. 149).

Ultimately, the same culturally shaped cognitive and linguistic processes that shape our life stories also shape our personal identities. As Bruner (2004) put it, “In the end, we become the autobiographical narratives by which we ‘tell about’ our lives” (p. 694). However, as Bullough, Jr. and Baughman (1996) cautioned: “Inevitably the stories of self we tell are partial; one cannot possibly tell the whole story, and not only because it is constantly unfolding and we do not know how it will end” (p. 388), but also because our past experiences are far too vast; so that at best, only recall that which seems to be relevant to the present perspective. In other words: “Unity [of a story] is less a matter of discovering or uncovering a self than a reflection of surviving compelling memories for the sake of creating meaning. Where there are no patterns, there is no story, no self” (p. 388). In the following section, the relationship between narrative, identity and context will be explored in more detail.

3.5 Narrative, identity, and context

Narratives are widely recognized as an important resource in the shaping of an identity (Polkinghorne, 1991; Holmes, 2006; Kaasila, 2007b; Watson, 2006; 2007; Sermijn, Devlieger, & Loots, 2008; Spector-Mersel, 2011). “Narrative or story structure”, Polkinghorne (1991)

wrote, “offers an alternative way to conceptualize the self” (p. 135). Moreover, the self-concept or self-identity is shaped by adaptation of plots from the individual’s cultural stock of stories and myths (Polkinghorne, 1991). According to Kaasila (2007b), the process happens as follows:

Narrating is much more than describing events or actions; it also means relating events and actions, organizing them into sequences or plots, and then attaching them to a character. The identity of the character is the identity of the story, not the other way round (Kaasila, 2007b, p. 206).

This process is in line with Sfard and Prusak (2005a; 2005b) who argued that, in order to be identifying, the story must be *significant*, *endorsable*, and *reifiable*.

According to Watson (2007): “If identification is conceived as an ongoing performance accomplished locally in and through our everyday interactions then it is the narratives that emerge in this context that become the focus of interest” (p. 372). Individuals are regarded as having a range of social identities which link them to social groups, and a number of personal identities which are based on more one-to-one relationships with others (Holmes, 2006, p. 167). Individual identity can thus be conceived as a unique complex of interacting aspects of different group and personal identities. Kaasila (2007b) described the relationship between identity, narrative, and context as follows:

Narrative identity is a context-bound concept: we can have many narrative identities, each of which is connected to different contexts or social relationships. The narrator’s relationship to the audience often guides what we tell and how we tell it: we select certain events and aspects of our lives and connect them to others (p. 206).

The notion of narrative context, important as it may be, is often neglected in favour of narrative structure; and this neglect has its drawbacks. As Gubrium (2005), drawing on his own experiences as a narrative ethnographer, pointed out:

I have found that the internal organization of stories, while important to understand in its own right, does not tell us very much about the relation of stories to the worlds in which they circulate... The same story might be appreciated in one setting or at one time and place, but disparaged or ignored in others. The social consequences of narratives are poorly understood without careful consideration of what is at stake in the everyday contexts of storytelling (p. 525).

In addition to developing and maintaining social relationships at work and other business functions, workplace narratives provide an essential means of constructing and negotiating diverse social identities in the workplace (Holmes, 2006, p. 167). Burns and Pachler (2004), for example, wrote “valuable professional learning is based on experience, that learning is

‘situated’ and that it relates to specific contexts of place and time and the social interactions which occur within them” (p. 153). Likewise Clandinin and Connelly (1996) argued that teacher (professional) knowledge of teaching is shaped by the professional knowledge context in which they live and work; it shapes “effective teaching, what teachers know, what knowledge is seen as essential for teaching, and who is warranted to produce knowledge about teaching” (Clandinin & Connelly, 1996, p. 24). All institutions produce possibilities for the narrative construction of job identities for their members through the way they are organized and what is valued (Søreide, 2006). Although institutions provide narrative resources for the construction of desired identities, even shared narrative resources may be understood and used differently by institutional members so that the constructed identities may vary depending on the person and the particular situation so that teachers with the same access to the same narrative resources might construct several and different narrative job identities (Søreide, 2006, p. 529). This however, could be an “indication of an active and constructive relationship with available narrative resources” rather than “as a sign of ambivalence, confusion or inconsistency in the teachers” (Søreide, 2006, p. 540).

Clandinin and Connelly (1996; 1998) adopted the metaphor of a “professional knowledge landscape” to help them capture some of the complexities of the ways in which knowledge is both created and expressed in the teachers’ everyday contexts; complexities which are evident in the ways in which the plot lines of their stories as the researchers and the stories of their subjects are interwoven and lived out.

A landscape metaphor is particularly well-suited to our purpose. It allows us to talk about space, place, and time. Furthermore, it has a sense of expansiveness and the possibility of being filled with diverse people, things and events in different relationships. Understanding professional knowledge as comprising a landscape calls for a notion of professional knowledge as composed of a wide variety of people, places and things (Clandinin & Connelly, 1998, p. 151).

They further pointed out that the teachers’ professional knowledge landscape extends beyond the boundaries of the school to include, for example, staff in university schools of education. The importance of narrative is emphasized in the following words: “We see the landscape as narratively constructed, as having a history with moral, emotional, and aesthetic dimensions. We see it as ‘storied.’ To enter a professional knowledge landscape is

to enter a place of story” (Clandinin & Connelly, 1998, p. 151). In distinguishing between “in-classroom” and “out-of-classroom” places, they explained that these are:

[T]wo narratives with different plot lines, two ways we can tell the story of our work. These two plot lines are not ours alone: they mirror the development of the field of teacher knowledge. The first is a story of teacher knowledge understood, metaphorically, in the context of a storied school landscape. The second is a story of teacher voice as teachers inquire into their practice, make adjustments, and thereby participate as authors of school reform (p. 152).

The second story in the quote is the one that carries the reform agenda. They wrote: “We hope to reflectively interweave these two story lines – the story line of the teacher knowledge in context and the story line of the teacher voice – into yet another story, a story of school reform” (Clandinin & Connelly, 1998, p. 153). The professional identity of the teacher and the professional knowledge landscape shape each other:

[T]he landscape is a kind of archaeological site for epistemological and moral reconstructions. Thus, it is not only that teachers have a professional life on the professional knowledge landscape. The landscape has a life as well. Teachers who live their lives on the professional knowledge landscape shape the landscape over time and the landscape shapes them. (Connelly & Clandinin, 1995, p. 28)

This mutual shaping is theoretically possible, because both the professional identities of the teachers and the professional knowledge landscape are envisioned as storied entities. Lewis (2011) wrote: “Stories are sacred as is the space created through the sharing of stories. When we share our stories, they come to life through the telling, however, the story has a life of its own and that life is given through the spirit of story and the storyteller” (p. 507). I am aware however that this re-shaping process may not be as easy as it appears, because as Savin-Baden and Van Niekerk (2007) pointed out, “[s]tories are difficult to argue with when presented as good practice and therefore they are immediately problematic as representations of life. This is because stories are both connected to, and representative of, identities and thus to criticize a story is often seen as a criticism of identity” (p. 463).

3.5.1 Secret, sacred, and cover stories

Clandinin and Connelly (1996), imagining the professional knowledge landscape to be “positioned at the interface of theory and practice in teachers’ lives” (p. 24), argued that “the professional knowledge landscape inhabited by teachers creates epistemological dilemmas that we understand narratively in terms of secret, sacred, and cover stories” (p.

24). They explained that teachers spend part of their time in classrooms, and part of their time outside of classrooms in other professional, communal places; and that “[t]hese are two fundamentally different places on the landscape: the one behind the classroom door with students and the other in professional places with others. Teachers cross the boundary between those places many times each day” (p. 25). In explaining the epistemological dilemmas of this boundary crossing, they noted that:

The place on the landscape outside of our classrooms is a place filled with knowledge funneled (*sic*) into the school system for the purpose of altering teachers’ and children’s classroom lives... we hear teachers express their knowledge of their out-of-classroom place as a place littered with imposed prescriptions. It is a place filled with other people’s visions of what is right for children. Researchers, policy makers, senior administrators, and others, using various implementation strategies, push research findings, policy statements, plans, improvement schemes, and so on down what we call the conduit into this out-of-classroom place on the professional knowledge landscape (Clandinin & Connelly, 1996, p. 25).

This metaphor of knowledge being ‘funnelled’ via a ‘conduit’ into the schools is an appropriate depiction of how the current post 1994 educational reforms in South Africa is approached. Anderson (1997), described the aforementioned ‘conduit’ as “the mechanism by which information and policies are packaged and transmitted to those on the landscape” (p. 131), also noting that in contrast to the ‘conduit’, the notion of a professional knowledge landscape is best understood narratively, that is, through the stories that teachers live and tell. She explained that: “Much of what flows through the conduit is a ‘rhetoric of conclusions’ – abstract, non-grounded conclusions and policy implications which are torn from their historical contexts” (Anderson, 1997, p. 131). According to Clandinin and Connelly (1996) the “epistemological dilemmas” (p. 24) of this professional knowledge landscape result in three types of stories that teachers tell:

- *Sacred stories*: These are stories based on a non-negotiable, theory-driven view of practice (Clandinin & Connelly, 1996). Anderson (1997) described them as: stories that dominate teacher education programmes and well established schools with long histories and traditions; stories that are passed on from one generation of learners and teachers to the next; stories that are accepted as universal and ‘taken for granted’.

- *Secret stories*: These are stories of practice lived by teachers in the safe sanctuary of their classrooms, free from scrutiny, and are essentially secretive in nature. These lived secret stories are told by teachers to trusted colleagues in other secret places. Seidman (2006) refers to these secret stories as the “inner voice” (p. 63); cautioning that interviewers should be actively listening for these stories, which often need to be uncovered, as they are not easily shared. In secret stories it is not unusual for phrases to start with ‘I mean’, ‘I think’ and ‘I want’ indicating the personal nature of the stories and the teller’s own desires and decisions in making their choices and taking actions (Said, 2012, p.3).
- *Cover stories*: When teachers encounter uncertainty and distress caused by *conflicting stories* which are at odds with the sacred stories of their daily work, they tell cover stories (Anderson, 1997). These are stories in which teachers “portray themselves as experts, [as] certain characters whose teacher stories fit within the acceptable range of the story of school being lived in the school” (Clandinin & Connelly, 1996, p. 25). In cover stories it is usual for phrases to start and end with ‘you know’ indicating the teller’s expectation of a shared understanding (Said, 2012, p.3). Seidman (2006) refers to these cover stories as ‘public voice’, explaining that: “An outer, or public voice, always reflects an awareness of the audience. It is not untrue; it is guarded. It is a voice that participants would use if they were talking to an audience of 300 in an auditorium” (p. 63). In practice, cover stories enable those teachers whose stories are being marginalized by the current dominant stories of the school to continue to practice and to sustain their teacher stories.

Although Kaasila (2007b) did not distinguish between different types of stories, like Clandinin and Connelly (1996) and Seidman (2006) did, his explanation of how narratives are shaped by context is a useful illustration of why these stories differ in the way that they do:

The narrator’s relationship to the audience often guides what we tell and how we tell it: we select certain events and aspects of our lives and connect them to others. For example, teacher trainees’ narrative identities can differ depending on whether they are telling stories to their professor or their friends. Moreover, we often do not want to relate events that give a negative picture of ourselves (Kaasila, 2007b, p. 206).

Connelly and Clandinin’s (1995) metaphor of knowledge being funnelled into schools may lead to “a theory-practice dilemma in teachers’ professional lives in which sacred social

stories of school change are in conflict with the secret stories of classroom life” (p. 27). This presents a moral dilemma for teachers. The result is that some teachers “are overwhelmed by the fragmentation and dilemmas, lose their sense of professional identity, and resign their teaching positions. Others maintain a sense of professional identity and work on” (p. 27). They explained the theory-practice dilemma as follows:

We believe that teachers’ professional lives take shape in and on a landscape of morally oriented professional knowledge. We also believe that this professional knowledge landscape is in intimate interaction with what one might call landscapes of the personal, outside the professional setting. These settings, each understood in terms of personal and social narratives of experience, weave a matrix of storied influence over one another. Teachers’ lives take certain shapes because of their professional knowledge landscape. They draw on their individual biographies, on the particular histories of the professional landscape in which they find themselves, on how they are positioned on the landscape, and on the form of everyday school life that the professional landscape allows. Furthermore, the everyday personal life of the teacher off the professional landscape influences the life on the landscape. Conversely, teachers’ professional life on the landscape influences their personal life off the landscape (Connelly & Clandinin, 1995, p. 27).

Anderson (1997) argued that educational transformation depends on the fostering of much desired “awakenings and transformations” (p. 132) in teachers; and that these depend on the creation of additional safe places on the professional knowledge landscape in the form of knowledge communities. She wrote: “These communities emerge and grow as teachers come together in their professional knowledge landscapes; they cannot be imposed or mandated” (Anderson, 1997, p. 132). I am contending that these ‘knowledge communities’ are similar to Lave and Wenger’s (1991) notion of ‘communities of practice’. As Anderson (1997) explained: “They [knowledge communities] permit ‘negotiated meaning’ of ideas and practices and enable teachers to engage in dialogues about the ‘moral horizons of the landscapes.’ Knowledge communities provide bridges between theory and practice and are ‘seeding grounds’ for competing stories that may lead to meaningful, enduring educational change” (p. 132).

3.5.2 On selecting stories for analysis

Some narrative researchers (Labov & Waletzky, 1967/2003; McAdams, 1993) argue that stories or narratives can fairly easily be isolated from general talk by looking for certain consistent structural features, for example, using Labov and Waletzky’s (1967/2003)

orientation; complication; evaluation, and coda, or, McAdams's (1993) setting; characters; initiating event; attempt (at attaining a goal); consequence; reaction; and denouement. While others (Bamberg, 2006a; 2006b; Georgakopoulou, 2006; 2008; Leggo, 2008) hold that not all stories or narratives show such easily discernable structural features. Leggo (2008) argued that much of the process of story-making defies rules and guidelines; describing the process as “idiosyncratic, always changing, culturally conditioned, [and] creatively organic” (p. 10). He explained as follows:

[T]here are no rules of story-making that cannot be contravened all the time. Effective story-telling often depends on the contravention of conventions. And certainly how stories are told in one cultural community will differ from the ways stories are told in another cultural community. So, writers and readers need an openness to the possibilities of what a story is and can be (Leggo, 2008, p. 11).

If, however, one is searching for stories that shape the professional identities of mathematics teachers, then a good starting point would be to search for “turning points” (Denzin, 1989; Kelchtermans, 1993; McCormack, 2000; Bruner, 2001; Drake, 2006; Mishler, 2006), which is an important feature of all life history narratives. The notion that individual lives are shaped and permanently marked by significant events or turning points or “epiphanies” (Denzin, 1989, p. 22), is deeply entrenched in Western thought (Denzin, 1989; Bruner, 2001). The importance of turning points in narrative studies in general, and its particular relevance in this study, is evident in the way it is defined:

By ‘turning points’ I mean those episodes in which, as if to underline the power of the agent’s intentional states, the narrator attributes a crucial change or stance in the protagonist’s story to a belief, a conviction, a thought. This I see as crucial to the effort to *individualize* a life, to make it clearly and patently something more than a running off of automatic, folk-psychological canonicity (Bruner, 2001, pp. 31-32).

McCormack (2000), for example, described turning points as “significant *moments*” that lead the teller “to tell other stories about what happened before or after these moments” (p. 287). In this study, ‘turning points’ is an important feature of the kinds of narratives that shape the professional identities of mathematics teachers. Kelchtermans (1993) explained: “They [turning points] create a problem or question the normal, routine behaviour. The teacher feels forced to react by reassessing certain ideas or opinions, by changing elements of his professional behaviour, and so on” (p. 446). Bruner (2001) added:

They [turning points] represent a way in which people free themselves in their self-consciousness from their history, their banal destiny, their conventionality. In doing so, they mark off the narrator's consciousness from the protagonist's and begin closing the gap between the two at the same time. Turning points are steps toward narratorial consciousness. Not surprising that, in most autobiographies, they are located at points where the culture in fact gives more degrees of freedom – elbow room for turning points (pp. 32-33).

In other words, turning points are events that interviewees would recall as:

[C]hanging their understanding of their past experiences ... open[ing] up directions of movement that were not anticipated by them and could not be predicted by their previous views of their pasts, leading to a different sense of themselves and to changes that were consequential for how they felt and what they did... Sometimes these turning points lead to restorying of the past and the adoption of a new identity that changes the meaning of past relationships (Mishler, 2006, p. 39).

Crossley (2000), for example, argued that the experience of a traumatic event (like a serious illness) is instrumental in facilitating an appreciation of the way in which human life is routinely narratively configured. Such a traumatic event can be a turning point, especially when it “serves to fundamentally disrupt the routine and orderly sense of existence, throwing into radical doubt our taken-for-granted assumptions about time, identity, meaning and life itself” (Crossley, 2000, p. 542). Thereafter, narratives are used “to restore a sense of order and connection, and thus to re-establish a semblance of meaning in the life of the individual” (Crossley, 2000, p. 542). In the process structures and meanings that otherwise would remain implicit and unrecognized is explicated. Drake's (2006) explanation is more specific to mathematics teaching and learning:

Turning-point stories are those stories in which an individual's very negative early experiences with learning and teaching mathematics have recently been transformed by an experience (the turning point) in which the teacher's understandings about mathematics, learning mathematics, and teaching mathematics changed substantially (p. 589).

The allure of considering narratives of turning points in this study lies in the ‘change’ in the stories and hence in the professional identities of the participants “as they re-interpret their identities as mathematics learners and teachers” (p. 591). I am contending that, the stories that are most likely to shape the professional identities of mathematics teachers are the ones about turning points experienced in their professional careers. Therefore, in one of the interview questions, the participants in this study were specifically asked to reflect on an event that they consider to have been a turning point in their professional careers. As

Denzin (1989) aptly observed, “biographical texts will typically be structured by significant, turning-point moments in a subject’s life” (p. 22). Moreover, Kelchtermans (1993) added the notion of “critical person” (p. 446); explaining that: “Critical persons are referred to by the teachers as having had an important impact on their career” (p. 446).

3.5.3 ‘Big stories’ versus ‘small stories’

What counts as a ‘story’ in narrative research may vary, depending on the methodological field (Savin-Baden & Van Niekerk, 2007), but also cultural and linguistic perspectives or narrative *form* (Bruner, 2004). For example, in some cultures stories have a specific format: beginning, middle, and end, following from dominant Western traditional discourses of what a self-story should look like (Sermijn, Devlieger, & Loots, 2008, p. 3). Other, non-Western cultures may follow a different format, for example: “Some cultures tell stories that are open-ended explorations of thoughts and events combined” (Marlett & Emes, 2010, p. 137) and such stories may be “neither completely coherent nor completely linearly structured around one plot” (Sermijn, Devlieger, & Loots, 2008, p. 3). As Bruner (2004) pointed out: “People anywhere can tell you some intelligible account of their lives. What varies is the cultural and linguistic perspective of narrative form in which it is formulated and expressed. And that too will be found to spring from historical circumstances as these have been incorporated in the culture and language of a people” (p. 695). According to Sermijn, Devlieger and Loots (2008) the so called “untamed stories” (p. 3) of postmodernism stems from the idea that traditional story characteristics are not inherent in the stories themselves, neither in people who tell them, but rather in the sociocultural traditions in which the stories are embedded. They argued that, from a postmodern perspective, “narrative characteristics are not inherent in human nature, [and therefore] a universal definition of the essence of a story is impossible” (p. 4). This “vagueness and lack of boundaries” (p. 4) associated with the postmodern notion of story makes it difficult to identify a story.

The postmodern notion values the acceptance of everything that does not fit in a streamlined story, of the story elements that do not find a place in a traditional story structure. Just like the motif of a patchwork quilt, a postmodern story is characterized not by an embroidered, continuous pattern but by the juxtaposition of more or less disjunctive elements (Sermijn, Devlieger, & Loots, 2008, p. 4).

Bamberg (2006a), for example, distinguished between 'big stories' and 'small stories'. He explained that 'big stories' are typically elicited during interviews for research or therapy purposes, and that these are "stories in which speakers are asked to retrospect on particular life-determining episodes or on their lives as a whole, and tie together events into episodes and episodes into a life story, so that something like 'a life' can come 'to existence'" (p. 64). In contrast, 'small stories' are usually very short, and refers to "stories told in interaction; stories that do not necessarily thematize (*sic*) the speaker, definitely not the whole life, but possibly not even events that the speaker has lived through – and now, retrospectively, reflects upon and recounts" (p. 63). Furthermore, "'small stories' are more the kinds of stories we tell in everyday settings... are most often about very mundane things and everyday occurrences, often even not particularly interesting or tellable (*sic*); stories that seem to pop up, not even recognised as stories and quickly forgotten; nothing permanent or of particular importance" (p. 63); the kind of stories that are largely neglected in narrative research. Leggo (2008), referring to the former as "mundane events" (p. 4), pointed out however that, "the mundane events of our lives are already stories, but they are only invested with significance in the ways they are told" (p. 4). Bamberg (2004) explained in an earlier publication how these 'small stories', "the ones we tell in passing, in our everyday encounters with each other (stories which I [Bamberg] would like to consider the '*real*' stories of our *lived* lives), become secondary to a degree that they appear irrelevant for the biography researcher who is interested (only) in what narrators pick to integrate into their life stories" (p. 356, emphasis in original). To a certain extent then, these small stories are akin to what Savin-Baden and Van Niekerk (2007) referred to as "interruptions of reflection in a storied life" (p. 464). Georgakopoulou (2006) described 'small stories' as "an umbrella-term that covers a gamut of under-represented narrative activities, such as telling of ongoing events, future or hypothetical events, shared (known) events, but also allusions to telling, deferrals from telling, and refusals to tell" (p. 123). The highly interactional features of 'small stories' which "typically involve recent or planned imminent interactions" (p. 10) can be used to distinguish them from 'big stories' in research. Narrative research, especially biographic-narrative research, often celebrates 'big stories' at the expense of everyday 'small stories'; an exclusion which often forfeits the researcher the opportunity to take full advantage of what narrative inquiry really has to offer (Bamberg, 2006a; Georgakopoulou,

2006; 2008). Georgakopoulou (2006) suggested that ‘small stories’ might be the meeting point where narrative inquiry (using narrative as a method – a means to an end) and narrative analysis (prioritizing the ‘how’ in narratives – the narrative being the end in itself) meet. As Sermijn, Devlieger, and Loots (2008) explained, the vision of a narrative self as a postmodern story “is related to the postmodern idea that the self has no stable core but is multiple, multivoiced, discontinuous, and fragmented” (p. 5) adding that “the post modern story notion clearly fits better with daily narrative practice than the traditional story notion” (p. 5) and concluding that, “the postmodern notion creates space for alternative story structures that connect better with the daily narrative practices we come in contact with as researchers” (p. 5). I found the following comment made by Polkinghorne (1991) about the process of narrative structuring particularly useful: “The process of constructing one’s own self-story differs in significant ways from the process by which literary authors construct novels that use imaginative settings, characters, and events” (p. 146). He explained that:

Unlike historians and novelists, we are not configuring events that are already completed or those over which we have imaginative control. We are in the middle of our own stories, and we do not control all the circumstances that affect the outcome of those stories. We do have to revise our plots when events impose themselves in such a way that we cannot complete the story as planned (Polkinghorne, 1991, p. 146).

I found this useful because, as an avid reader myself, I was indeed expecting novel-like narrative structures in my interviews with the teachers; and yet, I found very few of these amongst the collected interview data.

3.6 Two types of narrative inquiry

Bruner’s (1986) two modes of understanding are extended by Polkinghorne (1995) into two primary types of narrative inquiry: *analysis of narratives* and *narrative analysis*, which correspond with the paradigmatic and the narrative modes of understanding respectively. As Griffiths and Macleod (2008) explained, the difference is that in the *analysis of narrative* narratives are the data and the aim is to identify *common* themes and their interrelation, while in *narrative analysis* the aim is to understand the *particular* instance. The differences between the two types of narrative analysis is summarised in Table 2 on the next page:

Table 2: Two types of narrative inquiry (Adapted from: Polkinghorne, 1995, p.21)

Paradigmatic narrative inquiry (analysis of narratives)	Narrative inquiry (narrative analysis)
Collects storied accounts as data	Collects descriptions of events, happenings, and actions as data
Uses an analytic process that identifies aspects of the data as instances of categories	Uses an analytic process that produces storied accounts
Produces knowledge of concepts	Produces knowledge of particular situations

Researchers using paradigmatic *analysis of narratives* collect stories as data, which they then analyse using paradigmatic processes, resulting in “descriptions of themes that hold across the stories or in taxonomies of types of stories, characters, or settings” (Polkinghorne, 1995, p. 12). Two types of paradigmatic research are possible: testing the validity of concepts derived from previous theory by applying them deductively to the data; and deriving the concepts inductively from the data (p. 13). Beyond discovering or describing categories, paradigmatic analysis can also be useful in noting relationships among categories (p. 14). I am contending that, from a qualitative research perspective, paradigmatic *analysis of narratives* is a form of horizontal analysis or “cross-case displays” (Miles & Huberman, 1994); which in turn can be construed as a method of looking for recurring themes across the narratives of the different participants. In other words, “[i]n the analysis of narratives, the desired outcome is generalizations about a particular phenomenon based on the narratives generated by or about that phenomenon” (Elbaz-Luwisch, 1997, p. 76). However, because of the relative small-scale of narrative work, the aspiration is not generalization in the usual ‘research’ sense of the word (p. 76). While acknowledging that the strength of paradigmatic procedures lie in their capacity to generalize across stories; Polkinghorne (1995) also points out a pertinent weakness: “This kind of knowledge, however, is abstract and formal, and by necessity underplays the unique and particular aspects of each story” (p. 15). In order to zoom in on the uniqueness and particularity of each individual story, a complementary form of analysis is therefore necessary.

Researchers using *narrative analysis* collect descriptions of events, happenings, and actions as data and “synthesize or configure them by means of a plot into a story or stories” (Polkinghorne, 1995, p. 12). The data, usually diachronic descriptions of events, are not in

storied form and needs to be composed into a story that “will reveal the uniqueness of the individual case or bounded system and provide an understanding of its idiosyncrasy and particular complexity” (Polkinghorne, 1995, p. 15); making up for the above mentioned weakness of the paradigmatic *analysis of narratives* – the neglect of the uniqueness and particularity of each individual story. Oliver (1998) explained the notions of diachronic descriptions, which provide temporal information about the event and its subsequent outcomes; and, a bounded system, which has a specific context or time frame. The narrative configuration of the final story is done using various plot lines as organizing templates (Polkinghorne, 1995, p. 16). The researcher must, however, include a description of the cultural context because the plot is culturally determined. I am contending that, from a qualitative research perspective, *narrative analysis* is a form of vertical analysis or “within-case displays” (Miles & Huberman, 1994) in which the narratives of individual participants are analysed separately, concentrating on internal coherence and consistency (Kelchtermans, 1993). In other words, “in narrative analysis the desired outcome is *not* a generalization *but* a narrative which renders clear the meanings inherent in or generated by a particular subject” (Elbaz-Luwisch, 1997, p. 76, *my emphasis*).

In summary, as Polkinghorne (1995) holds, “analysis of narratives moves from stories to common elements, and narrative analysis moves from elements to stories” (p. 12), as is the case with Bruner’s (1986) two modes of understanding. However, Polkinghorne (1995) cautioned that the two types of narrative inquiry are different cognitive forms that should be judged using different criteria of validation and trustworthiness.

3.7 Why narrative inquiry is relevant in this study

There is increasing recognition that in order to understand teaching, we need to know it as teachers know it; and that these unique insights are only accessible through narrative accounts that carry the teacher’s own voice (Doyle, 1997; Kelchtermans, 1997; Phinney, 2000; Smith, 2000; Foster, 2006; Chapman, 2008; Beauchamp & Thomas, 2009). As Doyle (1997) contended, “teaching can only be known through story” (pp. 89-99). Through narrative inquiry participants are afforded an opportunity to tell their own stories; and, to ‘give voice’ to their personal experiences and the meanings drawn from these (Foster, 2006).

The idea that story is a *portal to experience* means that every experience is encountered in the context of a web of historical meaning and significance. We call this web of meaning and significance 'story'. Thus narrative inquiry for school-based research refers, at bottom, to a particular concept of experience as the phenomenon under study (Xu & Connelly, 2010, p. 352).

Moreover, by allowing research participants to express themselves in their own words, researchers are able to more closely capture individuals' own subjective experiences and interpretations (Graebner, Martin, & Roundy, 2012). Narrative approaches in education has the potential to restore the teacher's judgement of the situation through a process which constitutes much more than mere rational and technical decisions about teaching strategies and curriculum content; it includes, for example, moral values; a concept of power to influence; inter-personal relations; and, feelings (Kelchtermans, 1997, pp. 125-126).

Central in this deliberation and judgement is the careful perception and interpretation of the particularities of the situation against the backdrop of more general goals, including knowledge, opinions, norms or values. This interplay of perception, deliberation, interpretation and committed action – that are so typical of teaching – can be effectively captured in narrative form (Kelchtermans, 1997, p. 126).

In short, the argument here is that participation in collaborative narrative inquiry can be an empowering exercise for all those involved (Etherington & Bridges, 2011), especially in view of a more holistic approach to the teaching profession. Daiute and Lightfoot (2004, pp. xi-xiii) listed four reasons for the appeal of narrative research methods in the social sciences:

- Firstly, narrative analysis is appealing because its interpretive tools are designed to examine phenomena, issues, and peoples' lives holistically. It seeks complex patterns and descriptions of identity, knowledge, and social relations from specific cultural points of view.
- Secondly, narrative discourse and metaphor are excellent contexts for examining social histories that influence identity and development. Often metaphors are needed to capture the richness of experience in a language as they "expand the meanings contained in literal language to those that more closely indicate experienced meanings" (Polkinghorne, 2005, p. 139). As a social process, narrating is, in short, a discourse process embodying the people, places, events, motivations and moralities of life and, as such, narrative in its various forms is ideal for developmental inquiry.

- Thirdly, narrative analysis generates unique insights into the range of multiple, intersecting forces that order and illuminate relations between self and society. Literary theory makes use of concepts such as plots and subplots ('multiple intersecting story lines') and of devices such as metaphor ('literal and figurative meanings') and narrative theory extends this analysis of complexity in terms of the multiple ways of referencing in narrating.
- Lastly, narrative analysis permits the incursion of value and evaluation into the research process. Narrative discourse interweaves two phases of meaning when describing past events: the physical world, and an evaluative phase – the evaluative language in narratives contains messages from the narrator explaining why the story is being told. This evaluative phase of narrating contains a wealth of meaning for the narrative researcher (Daiute & Lightfoot, 2004, p. xiii).

Together with the arguments above, these four reasons make narrative inquiry particularly appealing as the research methodology of choice in education, and in particular in research into the narratives that shape the professional identities of teachers. Polkinghorne (1991), for example, held that "the story of a person's self is central in providing meaning and identity to individuals" (p. 146). Similarly, Cortazzi (1993) argued that we can only know what is inside the teacher's head through the teacher's voice, and that "[this] may emerge at its strongest in teachers' narrative accounts" (p. 11). In order to know more about teachers' professional identities, we would need access to this 'inside' information; and, the analysis of teachers' narratives could be an innovative methodology to do so. It allows us to study questions of teachers' culture, experience, and beliefs; all of which can be subsumed under the notion of identity. Through a narrative approach deeply hidden assumptions and other information that people do not consciously know about themselves can be accessed (Bell, 2002). As Cortazzi (1993) explained:

In exploring the nature of teachers' knowledge, then, we need to take account of how much of it is expressed in stories – for good reasons, given the context-bound nature of classroom experience and the event-structured nature of teachers' knowledge. Teachers' narrative express their knowledge of classroom practice and some of this knowledge could not, we can conclude, be expressed in any other way. All of this suggests that studying teachers' stories could be a productive way of finding out more about teachers' knowledge (Cortazzi, 1993, p. 10).

The link between narrative and identity was reiterated by Clandinin and Huber (2002) as follows: “[N]arrative understandings of knowledge and context are linked to identity. For us, identity is a storied life composition, a story to live by” (p. 161) In other words, human life has a narrative structure (Crossley, 2000). Of course, as Polkinghorne (1991) suggested, “It is only by use of narrative conceptualization that we can produce out of our separate life events the meaningful whole that we are” (p. 137). Adding that: “It is the narratively structured unity of my life as a whole that provides me with a personal identity and displays the answer to ‘Who am I?’ My self-story gives a unified context in which it becomes clear how I am living my life and what is the nature of my individual existence, character, and identity” (Polkinghorne, 1991, p. 143). This implies that our identities are shaped by our narratives.

The challenge for narrative researchers, therefore, is to gain access to participants’ identities “through [their] narrative[s] by stimulating recollections but without being directive in doing so” (Eaton & O Reilly, 2009a, p. 229). Goodson (2001) proposed life history, arguing that, like other biographical and narrative approaches, it has a great deal to offer and should thus be employed in identity research. Dhunpath (2000) would agree:

I want to suggest boldly, therefore, that the life history approach is probably the only authentic means of understanding how motives and practices reflect the intimate intersection of institutional and individual experience in the postmodern world (p. 544).

Goodson and Numan (2002) later added that “life history studies of teaching aid the production of a wider range of teacher-centered (*sic*) professional knowledge... life history studies, by their nature, demonstrate that understanding teacher agency is a vital part of educational research and one that we ignore at our peril” (p. 276). Poletti (2000), for example, used “life history methodology” to investigate Brazilian teachers’ perceptions of their own development and of the changes that occurred in their thought and/or practice in the context of curriculum reform in Mathematics Education. He described his research methodology as “a retrospective analysis of past experiences” during which “[t]he research participants and the researcher reflect on critical points or incidents that might have influenced the participants’ thought and/or practice”, contending that, “[t]he greatest strength of the life history approach is related to its penetration of the subjective reality of

the individual, and beyond this, it can give meaning to the notion of process” (Poletti, 2000, p. 767).

According to Kelchtermans (1993), it is important to be aware that “the identification of critical incidents, persons, and phases as such is done retrospectively. Only afterwards does the teacher clearly realise the scope of the experience and attributes a significant meaning” (p. 447). He added that the notions of *critical incident*, *person* and *phase* “can be referred to as *theoretical concepts*, referring to events, persons, or periods that are perceived by the teacher as having a specific and clear impact on the development of his professional behaviour, his professional self, and subjective theory” (p. 447). In other words, narrative research is about the retrospective meanings that people make of their experiences; and, it takes into account that such meanings may be multiple and are context dependent (Etherington & Bridges, 2011).

Furthermore, as Riessman (2006) maintained, narrative research refers to a family of approaches to diverse kinds of texts, all of which have in common a storied form. What qualifies a particular text as “narrative” is the properties of sequence and consequence; that is, the way in which “events are selected, organized, connected and evaluated as meaningful for a particular audience” (p. 186). Hence it could be argued that storytelling is a way of interpreting the world and the teller’s experience of it; and, that narrative are storied ways of knowing and communicating (Riessman, 2006). Connelly and Clandinin (1990) summed it up aptly when they pointed out that “people by nature lead storied lives and tell stories of those lives, whereas narrative researchers describe such lives, collect and tell stories of them, and write narratives of experience” (p. 2).

3.8 Narrative Inquiry – some cautions

The purpose of this section is to critically examine some of the limitations and potential hazards of using narrative inquiry as a research method to probe into teachers’ life stories. Doyle (1997) cautioned that, “if we are stuck with story in the study of teaching, we must understand its power as a source of provisional models teachers can use to comprehend teaching situations/episodes and invent locally effective interventions. Such models are a far cry from the prescriptions and central directives imagined traditionally for research on teaching” (p. 99). Conle (2000a), for example, cautioned about the danger of “hardened

stories” in narrative inquiry; explaining that such “narratives that become context-free, portable, and ready to be used anywhere and anytime for illustrative purposes” (p. 57) may kill the spirit of inquiry in the following ways: firstly, by becoming ‘frozen’ and entrapping the teller into an unchanging story, thereby perpetuating and reinforcing stereotypes of people; and secondly, by giving canonical status to such stories “and make them typical cases in relation to which all other experiences can only hope to be ‘good examples of’” (p. 57), as in the use of ‘case studies’ in teacher education. (2000a) also pointed out that the narrator, who obviously knows the story better than the listener, can use this power to manipulate the listener. Furthermore, the narrator can also use this power to “drown the agency of other characters in the story” (p. 58) and to purge alternative interpretations. Finally, she cautioned, “the incorporation of theory into the narrative can over-power an experiential narrative unless the theory in turn becomes a part of the story” (p. 58). She maintained, however, that all these dangers can be avoided by bearing in mind the temporal quality of narrative inquiry; and, by not ignoring the dialectical relationship between the inquirer and the object of inquiry.

Riessman (1997), in turn, cautioned against what she calls the “tyranny of narrative” (p. 157); noting that with the popularization of the notion of ‘narrative’, there is a real danger of it becoming the “new hegemony” (p. 158) of the social sciences. This prompted the following explanatory questions:

How can we open up the concept so that a diversity of styles of telling about consequential events can be honoured, but at the same time avoid the pitfall of banalizing the concept – treating all talk as narrative? Can we develop meaningful and useful typologies of narrative [other] than counter restrictive definitions, but avoid reifying narrative form? Given the increasing trend toward the use of storytelling as an evaluative device in educational and clinical settings, what is to forestall the tendency to label those who narrate ‘differently’ as ‘deficient’? (Riessman, 1997, pp. 157-158).

This is the dilemma that I was faced with after the first round of interviews when I realized that very few of the stories that the teacher participants were telling me fitted the canonical structural features I expected as espoused in the literature, for example, McAdams (1993) and Labov and Waletzky (1967/2003). Do I discard this ‘additional’ information because it does not fit the canonical structural features of stories, or, do I use it? Apparently my dilemma is not unique in narrative research.

Narrative analysis is increasingly being used as research tool and yet the tool itself has been inadequately characterized in education. We must know what narratives are, how they work in the mind and how they function in the kind of social interactions involved in research interviews if we are to use them adequately for research purposes (Cortazzi, 1993, p. 24).

In the end, following the advice of Bamberg (2006a; 2006b), I abandoned my exclusive quest for 'big stories' and decided to use every bit of useful data, including the 'small stories', whether it fitted the expected canonical structural features of stories or not.

To add to the above complication, Cortazzi (1993) further cautioned "[t]he teller is not the only person telling the tale. The listener also shapes the story. Questions, too, determine the direction and emphasis of the narrative. Even interviewer silence can have its meanings" (p. 21). This quote prompted the following questions in my mind: Were the structural features (or lack thereof) of the stories that some of the teacher participants were telling me indirectly shaped by the questions that I was asking? That was unlikely, because I was using the same interview format with all the participants, asking the same basic open-ended initial questions of every subject and then following up with further prompting. A partial answer is offered by Cortazzi (1993) who explained that the interviewer might have pre-conceived notions of what a biography is supposed to be like; for example, in the Western cultural paradigm of the 'Great Man' tradition "the story of a life is one of individual linear progress, a story of public achievement by a lone hero isolated from important social contexts" (p. 21). In other cultural traditions, "[o]ther peoples may not emphasize the individual at all; the social collective, the story of the group, may be what matters" (p. 21). From this perspective, it is to be expected that there would be structural differences in the stories told by the participating teachers, given the cultural diversity of the sample. Wierzbicka (2010), for example, arguing from a perspective that 'story' as an English cultural keyword, a key interpretive tool of modern Anglo culture, and linked to a family of semantic concepts which have no equivalents in other languages, wrote:

Since *story* is a very common, everyday word in English it can seem natural to speakers of English to formulate their thoughts and even their theories with the help of this word. It can also seem natural to use this word in a variety of contexts as a metaphor which doesn't require any explanations. In fact, however, *story* can be a slippery analytical tool. The impression that it is linked with a concept which is simple, neutral and self-explanatory, and that it allows us to identify a universal of human cognition, is deceptive.... other languages may not have words which would imply the coherence, the neat self-contained

nature of a story, with a beginning and an end, the human interest, the possibility of re-telling (and so a certain stability). Yet all these features of the English concept of *story* appear to add to the appeal of the narrative worldview in contemporary Anglophone literature and scholarship (Wierzbicka, 2010, pp. 175-176).

If Wierzbicka's (2010) claim is taken seriously, then it would make sense in a sample so culturally and linguistically diverse, that the impact in this diversity would be reflected, not only in the content of the stories, but also in the way the stories are told.

Another potential problem is the issue of stories left untold when, for example, "Participants construct stories that support their interpretation of themselves, excluding experiences and events that undermine the identities they currently claim" (Bell, 2002, p. 209). Feldman, Sköldbberg, Brown, and Horner (2004) pointed out that: "Through the events the narrative includes, excludes, and emphasizes, the storyteller not only illustrates his or her version of the action but also provides an interpretation or evaluative commentary on the subject" (p. 148). They showed that narrative analysis can be a useful tool for mining stories and recovering meaning that is otherwise "neglected, thrown out, or labelled as missing... [and/or] unstated but implied missed, discounted, or difficult to articulate to others" (p. 168).

3.9 Chapter Summary

This chapter, in addition to providing a detailed exposition¹⁵ of narrative inquiry and locating narrative research in the constructivist/interpretive research paradigm, illuminated some of the key theoretical underpinnings of this study. For example, the notion of a *narrative plot* was clarified. It also distinguished between the *paradigmatic* and *narrative* modes of knowing; between *narrative* and *story*; between *secret*, *sacred*, and *cover* stories; between *big* stories and *small* stories; and, between *analysis of narratives* and *narrative analysis*. Finally, it also illuminated some of the limitations of narrative research. For example, the dangers of context-free stories gaining canonical status. In the next chapter the actual implementation of narrative inquiry as a research method will be discussed.

¹⁵ This detailed exposition of narrative inquiry is deemed necessary because, apart from being the preferred research methodology in this study, it is a relatively novel methodological approach in Mathematics Education; and therefore, it could be argued that such a detailed exposé would be of interest to the anticipated target audience for this thesis – Mathematics Education researchers.

Chapter 4: Research Methodology

4.1 Introduction

This chapter reports on the actual research process, commencing with the researcher's own story which, because of its potential tainting effects on the research lenses, must be told as well: "The human factor is the great strength and the fundamental weakness of qualitative inquiry and analysis – a scientific two-edged sword. Thus, *analysts have an obligation to monitor and report their own analytical procedures and processes as fully and truthfully as possible*" (Patton, 2002, p. 276, emphasis in original). Therefore, it is incumbent on the researcher to analyse and report, alongside the actual findings, on the analytical processes that were followed. This is the aim of this chapter. The researcher's story is followed by details of the sampling and selection processes; data collection, analysis, and presentation strategies; and lastly, ethical considerations.

4.2 Own research story

Much like other researchers before me, like Richmond (2002) and Kramp (2004), I also entered the field of narrative research without the benefit of a compass to guide me, metaphorically speaking. Therefore, I can empathize with newcomers to the field. As Richmond (2002) noted: "Perhaps if I had been formally trained as a narrative researcher, the framework and structure would have been less complicated" (p. 1). The idea of formal training for narrative researchers is not new, for example, Conastas (1998) suggested that: "We cannot afford to leave the development of such skills to chance... those who are committed to narrative inquiry should engage in a course of study that facilitates the development of self-reflection... [and] provide individuals with the tools, documentary procedures, and evaluative practices needed to support the personal nature and social complexities of narrative inquiry" (p.31). Because I was never privy to such formal training, I resorted to more reading, writing, and thinking about methodological issues related to narrative research. I found that through the habit of regular writing, especially, it is easier to organize one's thoughts and to keep track of new things learnt (Fonger, 2011). Most of my reflections on narrative as a research method have been documented in the two previous chapters dealing mostly with the theoretical underpinnings of the methodology. What I aim

to achieve in this chapter is to recount, in addition to my own research story, a blend of pragmatic and theoretical issues related to the actual methodology used in this specific study. I do so in the sincere hope that it might be of assistance to other researchers engaged in similar narrative studies.

I am also presenting my own research story as a personal justification (Clandinin & Huber, 2010) for undertaking the inquiry. My story will include accounts of my personal interest in narratives; my own education; a module which I lectured in which my own narratives played a significant role; the emotions I experienced during the study; my descent into a state of methodological agnosticism; the significant narratives that derived from an academic module which I taught; and finally, the resolution that worked for me in this particular study. The latter maps out how the actual narrative methodology came together in this study.

4.2.1 Personal interest in stories

Ever since childhood I have always been surrounded by stories. This may not be particularly special: “We are all brought up surrounded by stories; they flow through us and ratify us from birth; telling us who we are and where we belong, what is right and what is wrong” (Bolton, 2006, p. 205). My parents were both primary school teachers; so there was never a shortage of stories in our home, either orally told or read to us. There was also no shortage of story books and other reading materials. As children we were regularly exposed to both bible stories and fairy tales, most of which we knew by heart. However, there were also many teaching stories; as my parents would recount their daily experiences of teaching at a rural farm school about twelve to fifteen kilometres from the village where I grew up. To me, these were the special stories; the ones that would play a major role in shaping my professional identity as a teacher. Many of these teaching stories were told and re-told, because that is “how humans make meaning of experience by endlessly telling and retelling stories about themselves” (Connelly & Clandinin, 1990, p. 14). Reflecting upon my early experiences with teaching stories, for example, I now realize the profound influence these stories must have had on my decision later in life to become a teacher. Amongst the many stories of hardship, personal sacrifice, and perseverance, there were also many motivating stories of the personal fulfilment of making a difference in the lives of others, which I wanted to experience as well. Moreover, upon reflection on my own professional life as a

teacher, I am beginning to realize how these stories continue to shape my professional identity. For example, when faced with a difficult situation in my professional career, I would almost instinctively try to recall a story of a similar situation that might provide feasible cues about how to proceed. In retrospect, all of this strongly resonates with the autobiographical remarks of Jean-Paul Sartre (cited in Bruner, 2004, p. 699) who wrote, “a man is always a teller of stories, he lives surrounded by his own stories and those of other people, he sees everything that happens to him *in terms of* these stories and he tries to live his life as if he were recounting it”. Therefore, like so many other narrative researchers (e.g., Richmond, 2002; Jia, 2009), I am also trying to make sense of my world through stories.

4.2.2 Own Education

All the exposure to teaching stories influenced my eventual career choice. Career options were still limited in the early nineteen eighties, but that did not bother me, because teaching has always been my first choice. Fortunately, I obtained a bursary to study teaching at a university and was able to complete a Bachelor of Science degree with majors in Mathematics and Physics, and a Higher Diploma in Education. I started my teaching career as a fully qualified high school Mathematics and Science teacher in 1988. Qualified Mathematics and Science teachers were scarce in those days, and I found myself teaching mostly senior grades from the first year onwards, even though I was only a novice teacher (post level one) at the time. I remained at this post level for nine consecutive years, and in that time managed to complete both a Bachelors degree in Education and a Masters degree in Mathematics Education through part time studies. During this time we experienced the onset of the new Democracy in 1994 and the beginning of radical transformations of South African schools which continues to this day. In 1996 the schools were ‘rationalized’ on the basis of learner-teacher ratios, and many teachers, including myself, were declared redundant and forced to leave the schooling system. I still wanted to be associated with the teaching profession and was fortunate to secure a position in the newly established field of Academic Development at a prominent South African university. For the following four years my job was to tutor all the first year mathematics students in the Bridging and Extended degree programmes. At the time, however, this type of work was not considered to be ‘proper’ academic work and I was appointed in a temporary, administrative position. Four years later I accepted a position as Head of Academic Development at a Technikon where,

ironically, my work was purely administrative, but I was appointed in a full-time, academic post. When the Technikons were merged with Universities to form Comprehensive Institutions in 2007 as part of a national drive to restructure the South African Higher Education landscape, I joined the Education Faculty of the newly merged comprehensive institution where I am currently teaching in both pre- and in-service teacher education programmes.

Throughout my teaching career, however, I have always been convinced that there must be more to teaching mathematics than just purely content knowledge. For example, I have a fair amount of mathematical content knowledge, sufficient to tutor any first year university modules in mathematics; and yet, like so many fellow mathematics teachers my successes in the classroom, judged purely by throughput rates, can only be described as marginal at best. The point I am making here is that mathematical content knowledge is necessary, but certainly not the only factor that determines success in the teaching of mathematics in the classroom.

4.2.3 A teaching experience in which I used my own stories

In this section I would like to share a fairly recent teaching experience that involved the use of my personal stories as exemplars in the classroom. This happened when I was coerced into teaching a semester module in Educational Thought¹⁶ for two consecutive years (2010 – 2011). This is a compulsory module for all second year pre-service education students in the four-year B.Ed-degree in the Faculty of Education of the university where I am teaching. There are at least two reasons why this is a significant story: Firstly, I qualified as a mathematics educator and, subsequently, knew very little (by my own standards) about educational philosophy as an academic discipline. Therefore, I compensated by using stories of my own experiences as a high school mathematics and science teacher to illustrate some of the philosophical points and arguments. And secondly, the students who were taking the module lacked teaching experience and were therefore ill equipped to come up with meaningful teaching stories of their own in the small group discussions. Hence, I had to step in and supplement with my own stories; only to find out that many of my stories were, in the opinion of the students, ‘outdated’. I had taught my last lesson as a high school teacher

¹⁶ This module deals primarily with Philosophy of Education

in 1996, roughly in the same year that many of them had started school for the first time, approximately fourteen years earlier. What is significant about this is that this was also right at the beginning of the transition from the previous apartheid schooling system to the new Democracy. Since the schools had undergone so many radical changes in the years following my exodus from the school classroom, my current students could not really relate to many of the stories I could tell of my days as a high school teacher, especially not the ones with political undertones. Unfortunately, these 'political' stories were the ones most appropriate for the small group discussions on curricular topics such as racism, stereotyping, sexism, and so forth. The schools that my students experienced as learners differed vastly from the schools that I had experienced as a high school teacher. Sensing this, I felt that I only had marginal success in my Educational Philosophy classes (by my own standards again) in drawing on my own experiences and presenting these to my students in storied form. Although I can fully appreciate the students' point of view, it is still difficult for me to accept that the stories that had shaped me into the teacher that I am today can be obsolete in the eyes of my own students. Yet I am not alone in experiencing this; others (e.g., Savin-Baden & Van Niekerk, 2007) reported that similar experiences with their students had been the stimulus for their engagement into full research projects. Although I cannot claim that this research project was stimulated by the purported obsolescence of my personal teaching stories in the eyes of my Educational Philosophy students, it illustrates how the stories of my own pre-1996 experiences tainted the lenses through which I viewed the teaching landscape ahead of these students. Significantly, all of the research participants in this project started their teaching careers before, or around the same time as I did; and, despite of all the transformations, they have remained high school teachers ever since. Their stories of teaching in a constantly transforming school system would be much richer than mine. What the story with the philosophy students illustrates is the need to remain ever conscious of the potential tainting effect of my own stories on the research lenses.

4.2.4 The emotions involved

Connolly (2007, p. 452) argued that qualitative researchers need to be free to confess, without being judged by peers, their own emotional reactions to the narratives they gather; for example, when they experience role conflicts, ethical dilemmas, emotional and compassionate reactions.

Niggling at the back of their minds, these qualitative researchers are often haunted by the notion of clinical distance between researcher and subject that is inherent in the quantitative paradigm. When these qualitative researchers experience role conflicts, ethical dilemmas, and emotional compassion during the course of their qualitative inquiry, they question if they are maintaining enough objectivity in their research efforts. Cognitively, they understand the differences between the two research paradigms, but they still wonder if their feelings are legitimate and appropriate, even within the qualitative paradigm (Connolly, 2007, pp. 452-453).

As a researcher one is constantly questioning whether one is acting appropriately, given the degree of emotional investment and the intimate nature of the relationships that are established with the participants. And yet, as a narrative inquirer, one should be aware that in research of this nature roles are stretched as knowledge is co-created and stories are co-authored (Connolly, 2007). In this study, many of the participants' stories strongly resonated with the researcher's own experiences. Some of the stories were very emotional and I am humbled by the trust with which the participants shared their personal stories with me. However, I must confess that as much as my own story tainted the lenses through which I examined the participants' stories, their stories also tainted the lenses through which I am examining my own stories. In the end, not only their professional identities were shaped by their stories; but also mine.

4.2.5 Methodological agnosticism

After the Higher Degrees Committee of the University had accepted my PhD proposal in which I had suggested Hiles and Čermák's (2007; 2008) model of Narrative Oriented Inquiry (NOI) as my methodological framework, I naively thought that all that remained would be to collect the participants' stories and to analyse them by applying the model step-by-step as suggested by the proponents of the model (Hiles, 2007; Hiles & Čermák, 2007; 2008; Hiles, Čermák, & Chrz, 2009) themselves. Soon after the first round of interviews, however, I realized that very few of the stories that the teachers were sharing with me fitted the structural features of narratives; that is, abstract, setting, complication, evaluation, result, and coda (e.g., McAdams, 1993; Labov & Waletzky, 1967/2003) that I had expected. The narrative analysis part of the model that hinged on these structural features of narratives was clearly inadequate for capturing the rich source of data at my disposal. I was about to discover that: "Quite unlike its pristine and logical presentation in journal articles... real

research is often confusing, messy, intensely frustrating, and fundamentally nonlinear” (Marshall & Rossman, 1999, p. 21). And so I resorted to more reading, following Bowen’s (2005) suggestion to “read extensively and then read some more” (p. 210). However, much like Cole (1994), I soon discovered that more reading can lead to even more confusion; especially since narrative inquiry is relatively new in Mathematics Education, unlike in other academic disciplines where it is already well established as a research methodology. Needless to say, I found myself ‘uprooted’ and in a state of “methodological agnosticism” (Trahar, 2009, p. 2); which in retrospect, was not necessarily a bad experience, but nonetheless terrifying at the time. In my data there were stories that showed the desired narrative structure (e.g., McAdams, 1993; Labov & Waletzky, 1967/2003), but I was painfully aware that religiously sticking to this canon would necessarily exclude a lot of the very rich “small stories” (Bamberg, 2006a; 2006b; Georgakopoulou, 2006; 2008; Bamberg & Georgakopoulou, 2008) which also emerged during the interviews. However, as far as I can remember, almost all of the stories of teaching told by my parents, both of them primary school teachers, resembled the classical narrative structure (e.g., McAdams, 1993; Labov & Waletzky, 1967/2003). As a result, I entered the research field expecting the teachers to tell stories that would, in their narrative structure at least, resemble the stories of teaching that I was most familiar with. When my expectations were not met, therefore, I was tempted to blame the problem on cultural differences. However, this is what Kieran, Forman, and Sfard (2001/2002) cautioned against when they wrote: “venturing into unfamiliar cultural settings to look for phenomena defined according to one’s own cultural heritage is an inherently problematic, ultimately misguided, endeavour” (p. 3). They were referring to experimental studies where culturally foreign mathematical problems were imported into the classroom; but their caution also applied to my feeble attempts to impose my own notions of narrative structure on the participating teachers as well. Further reading revealed that the issue was more complex than simply a matter of cultural differences; it was more a matter of ‘small stories’ versus ‘big stories’ (Bamberg, 2006a; 2006b; Georgakopoulou, 2006; 2008; Bamberg & Georgakopoulou, 2008). The notion of ‘big stories’ is used here to distinguish the narratives that comply with classical narrative structure (e.g., McAdams, 1993; Labov & Waletzky, 1967/2003) from those that do not; the latter being the ‘small stories’.

The positive part about having been in a state of ‘methodological agnosticism’ at the time is that it enabled me to remain open to explore the ‘small stories’ that would otherwise have fallen through the cracks as mere ‘noise’ if I had stuck to the aforementioned canon of narrative structure. As Marshall and Rossman (1999) pointed out: “In qualitative inquiry, the proposal should reserve some flexibility in research questions and design because these are likely to change during the research process” (p. 23). However, much like Leggo (2004), it has also been my experience that:

The challenge in narrative research is that our understanding, interpretations, responses, thoughts, even our actions, are constructed and constrained by the discursive patterns and frames that society permits and authorizes, on the one hand, and excludes and prohibits, on the other... Hence, the business of meaning-making in narrative inquiry is always necessarily complicated by the vast array of possibilities for making sense out of inchoate experience, on the one hand, and the discursive traditions that constrain meaning-making on the other (Leggo, 2004, p. 107).

The above description of a lack of story structure was not the only challenge that I encountered in analysing the narratives. Some of the other methodological challenges mentioned here might not be new for experienced qualitative researchers as they had been around for a long time (Miles, 1979), like the labour intensiveness of collecting and analysing data; the data overload, with my unedited transcripts alone exceeding 170 pages; and, most frustratingly, the lack of well formulated methods for analysis of the narratives, unlike the clear conventions at the disposal of quantitative researchers. As Kieran, Forman and Sfard (2001/2002) aptly observed: “Unlike in the former, positivist era, we now have to craft our ways of analyzing data each time anew, appropriately to the questions we are asking, and in accord with the data we were able to collect” (p. 8). For me, as a Mathematics and Physics graduate, this required a major paradigm shift.

4.2.6 The importance of telling the researcher’s own story

It is important in qualitative research, especially in narrative inquiry, for the researcher’s own story to be told alongside the stories of the participants; because, often, the research interest is driven by a strong autobiographical element (Marshall & Rossman, 1999). According to Tierney (1995), those times when the use of the pronoun ‘I’ in qualitative texts was discouraged; when the use of passive voice was encouraged; when, “[i]n our desire to ape the natural sciences and appear rigorous, we sought to eschew any form of personal

relationship to our research subjects” (p. 381) are now long gone. He holds that this is the result of a once misplaced faith, based on an epistemological and methodological misunderstanding, in the existence of an independently existing real world and not realizing “that humans construct their own worlds through the manipulation of symbols and language” (p.381). As Polkinghorne (2007) reminded us:

The philosophical hermeneutic position holds [that] one cannot transcend one’s own historical and situated embeddedness; thus, textual interpretations are always perspectival. Narrative researchers engaging in interpretation will make different claims about their understanding of a text depending on which position they take. They need to let readers know which approach informs their interpretive claims (pp. 13-14).

The philosophical hermeneutic position is that the interpreter’s own prejudices influence the interpretation of a text (Polkinghorne, 2007). In other words: “the moral and ethical stance of the researcher is believed to influence the co-construction process, just as the moral and ethical stance of the reader [of a narrative account]... will influence the co-construction of its meaning” (Hunter, 2010, p. 45). Therefore, as Conostas (1998) cautioned: “Educational researchers interested in writing narrative accounts must understand the way their own experiences, backgrounds, biases, and subjective views influence the research process”(p.31). Shields (2005) makes the same point, albeit in a more philosophical way:

Perhaps it goes without saying that we are born into a story already in progress, but the implications for each of us is profound in terms of examining the roots of our beliefs about the world, and the way our thinking and actions are enacted in our lives... We therefore see through a lens established before we know we are looking, and we carry the epistemological stance of our families and the culture we know into our lives as a basis for living. Essentially, we begin life with an acquired theory or perspective, one we only come to consider critically as we reach a stage in life where we begin to emerge as the selves we are, separate yet connected to others in the world (p. 180).

For McNiff (2007), an action researcher, it is important that research stories must explicate how the values of the researchers have been transformed into research practices:

Telling a research story is an integral part of research practice. A story does not appear out of nowhere. It is written by a researcher who brings his or her own values to the writing process. Consequently, the story can be understood as the articulation of the values of the writer, which communicates these values through its content and form (p. 319).

According to Tierney (1995) this amounts to writing from inside the research situation rather than from outside: “We construct texts that highlight how we developed our

research questions, which, in turn, frame the respondents' answers. We become actors in our own dramas rather than a disengaged director of a play" (p.382).

For me, an aspirant narrative inquirer, the importance of sharing my own research story in this thesis lies in explicating how my own personal values might have impacted on my interpretation of the teachers' narratives. Casey (1995-1996), for example, made the following comment on how a researcher's personal dispositions about the notion of identity could influence subsequent narrative research into identity as a phenomenon:

Whether implicit or elaborated, every study of narrative is based on a particular understanding of the speaker's self [identity]. At present, definite features of narrative studies differ widely depending on their authors' deeply held beliefs about the nature of self (p. 213).

Casey (1995-1996) used the notions of 'self' and 'identity' interchangeably as is often done in the literature of teacher education (Day, Kington, Stobart, & Sammons, 2006). She concluded that: "There are more than sufficient reasons for contemporary narrative researchers to reflect on the origins and implications of their own predilections concerning the self [identity]" (Casey, 1995-1996, p. 213). As Patton (2002) reminded us: "Social constructivists' findings are explicitly informed by attention to praxis and reflexivity, that is, understanding how one's own experiences and background affect what one understands and how one acts in the world, including acts of inquiry" (pp. 267-269).

According to Bamberg (2006a) the critical debates in narrative research about the role and status of the researcher in the data gathering and interpretation process can be split into two approaches: the *detached perspective*, "where the interviewer disappears and the interviewees talk to themselves" (p. 74); and the *co-production perspective*, which sees "the data gathering process as a co-production of narratives between participant and researcher, and the analysis and interpretive procedures as heavily grounded in communally shared practices and interpretive repertoires and judgements" (pp. 64-65). Arguing from a *detached perspective*, Marshall and Rossman (1999), for example, held that: "The qualitative researcher's challenge is to demonstrate that this personal interest will not bias the study" (p. 28). I am arguing here that, especially in narrative inquiry, this level of objectivity is not possible; and hence I would like to reiterate my position with regard to my own research story here. I view my role and status as a researcher in this project from a *co-production perspective*; that is, I am aligning myself with researchers like Leggo (2008), who noted that:

When we read or hear or view a story, we always enter into a co-production with the text and the author in order to help produce meaning. In fact, what is interesting is the way that our reading is always motivated, facilitated, and constrained by our personal experiences and ideology, as well as the cultural expectations and ideologies that shape our sense of identity and our sense of the world... We always bring our cultural, social, economic, political, and spiritual views and experiences to bear on every reading of verbal and visual texts. And we are always informed and shaped by the views and experiences of others, too. So, interpretation needs to be entered into with care and openness and critique (p. 8).

Hence, as Connolly (2007) pointed out, in qualitative inquiry, especially in narrative inquiry, design issues related to the researcher's stance and standpoint need to be considered at the outset. Arguing that a "layering of two narratives – that of the narrator and that of the listener or researcher" (p. 453) should become an ethical norm in the reporting of narrative inquiry, she wrote:

Making the researcher's stance explicit and understanding the researcher's social location, personal experiences, and subjectivity will help the reader to understand where the voice of the researcher exists in the narrative. After all, it is the researcher who inserts, edits out, or overlooks certain features of the narrative.... reporting narratives should more commonly include a report of an autoethnographic (*sic*) nature where the researcher provides an account of his or her own voice, stance, assumptions, and analytic lens so that the reader is abundantly clear on whose story is whose (Connolly, 2007, p. 453).

The cardinal importance of including the stories of both the researcher and the participants in narrative inquiry was echoed by Foster (2006) who wrote:

In narrative inquiry, the stories the researcher tells of their experiences may also be combined with those of participants... It can be a powerful method of bringing together the stories of the 'self' and the 'other' so that both may come to understand themselves differently (p. 105).

Just to reiterate, the argument I am forwarding here, is that it is important to tell the researcher's story so that any underlying subjectivities might be revealed as these impact on the interpretation of the narratives of the research participants. LeCompte (2000), for example, cautioned about the potential effects of *tacit* and *formative* theory, explaining that: "These are sources of selectivity (and bias) because they create something analogous to a filter that admits relevant data and screens out what does not seem interesting – even if, with hindsight, it could be useful" (p. 146). She explained that tacit theories are informal and "guide daily behavior, explain the past, and predict what will happen next" (p. 146); for example, carrying an umbrella on cloudy days in anticipation that it might rain. Formative

theories “are more formal, and found in research” (p. 146), however, they “also guide behavior, create explanations, and predict the future” (p. 146). Both *tacit* and *formative* theories are potential sources of bias during data collection, analysis, and interpretation, therefore “researchers must make both tacit and formative theory clear and then delineate their role in data collection” (LeCompte, 2000, p. 147). As Guba and Lincoln (2005) defining reflexivity as “the process of reflecting critically on the self as researcher” (p. 210) reminded us:

Reflexivity – as well as the poststructural (*sic*) and postmodern sensibilities concerning quality in qualitative research – demands that we interrogate each of our selves regarding the ways in which research efforts are shaped and staged around binaries, contradictions, and paradoxes that form our own lives. We must question our selves, too, regarding how these binaries and paradoxes shape not only the identities called forth in the field and later in the discovery processes of writing, but also our interactions with respondents, in who we become to them in the process of *becoming* ourselves (p. 210).

Thus it is important, for the sake of reflexivity at least, for narrative researchers to tell their own research stories. As Huberman and Miles (1994) suggested, “It is healthy medicine for researchers to make their preferences clear. To know how researchers construe the shape of the social world and how they mean to give us a credible account of it is to know just who we have on the other side of the table” (p. 429). For all the above reasons, I am including my own research story in the next section; outlining my education and teaching experiences, and hopefully enabling the readers to discover, for themselves, the tacit theories embedded in my own research story. Less tacit, however, would be the formative theories based largely on the sociocultural perspectives of Lave and Wenger (1991), Sfard and Prusak (2005a) and Wenger (1998); all of which have been discussed in the chapter outlining the theoretical framework for the study (see Chapter 2). One of the dilemmas faced by narrative scholars committed to narrative inquiry is that, “despite the espoused goal of encouraging other voices to be heard, the loudest voice is that of the author... and its resolution is at the heart of all qualitative research” (Hatch & Wisniewski, 1995, p. 131). As Richardson (2001) quite fittingly pointed out: “In the social sciences, try as writers do to suppress their humanity, thankfully it keeps erupting in their choice of metaphors, topics, and discourses” (p. 34).

4.3 Sample and selection of participants

This particular study is a narrative inquiry into the narratives that shape mathematics teachers' professional identities; specifically the narratives of teachers that have been affected by the post-apartheid efforts to reform the identity and role of the South African schooling system (Samuel & Stephens, 2000; Vithal & Volmink, 2005; Parker, 2006). A sample of seven mathematics teachers (hereafter referred to as the participants), six of whom teach mathematics in the Further Education and Training Phase (FET) and one who teaches mathematics in the Intermediate Phase (IP), were "purposively sampled" (Smit & Fritz, 2008, p. 94) from schools in the Eastern Cape Province to partake in this study. The IP teacher and one of the FET teachers teach in a combined school; that is, a school where all three phases of the South African schooling system (Foundation; Intermediate; and Further Education and Training phases) are taught. Three of the participants were sampled from the Grahamstown Education District, specifically from two of the schools that participate in the Mathematics Teacher Enrichment Programme (MTEP) of the Rhodes University; and the other four teachers were sampled from the Port Elizabeth Education District, from schools with more or less comparable socio-historical and demographic profiles as those in the Grahamstown Education District. Both the Grahamstown Education District sample and the Port Elizabeth Education District sample included at least one previous Model C school that had since the onset of the New Democracy undergone a complete demographic transformation in terms of its management, staff, and learner complement; and at least one typical township school on the outer fringes of the township in what can be considered a semi-rural area. In the Port Elizabeth Education District the sample of four schools also included two schools which are situated roughly in the middle of established townships, one a traditional 'coloured' township and the other a traditional 'black' township. Only teachers who have been teaching since 1994 and before were invited to participate in the study. In other words, only teachers who have been teaching for long enough to have experienced the radical changes in the South African schooling system since 1994 (Vithal & Volmink, 2005). The purpose of sampling participants in this way was to probe for narratives that shape the professional identities of mathematics teachers in times of radical educational transformations such as the ones we are experiencing in post-apartheid South Africa. In the Grahamstown Education District participating teachers were identified by virtue of their

involvement with the MTEP programme of the Rhodes University; while in the Port Elizabeth District, two of the four participating teachers were identified by virtue of their involvement in the outreach programmes of the Nelson Mandela Metropolitan University (NMMU); the other two teachers were identified by word-of-mouth, firstly by identifying the schools, and then by asking which of the teachers there had taught mathematics for at least eighteen years or more (see Table 3 below). The schools in the Port Elizabeth Education district were identified by comparing them with the selected schools in the Grahamstown Education District.

Table 3: Demographic profile of the participants

Participants	Age¹⁷ (in years)	Ethnicity/gender	First Language	Teaching experience (in years)	School district	School type
P1	50	Black male	Xhosa	23	Port Elizabeth	Urban, township
P2	66	White female	Afrikaans	45	Alexandria	Rural, ex-Model C
P3	48	Coloured female	English	26	Port Elizabeth	Urban, township
P4	41	Black female	Xhosa	20	Port Elizabeth	Semi-rural, township
P5	57	Coloured male	Afrikaans	27	Alexandria	Rural, ex-Model C
P6	48	Black female	Xhosa	20	Alexandria	Rural township
P7	56	White male	English	32	Port Elizabeth	Urban, ex-Model C

I hoped that by purposively selecting the participants in this way I would be able to obtain significant accounts of the teachers' experiences of such radical changes in the schooling system and how it influenced their professional identities.

Four interviews were conducted with each of the teachers in the sample (see Appendix D). As Hong (2010) observed, a single interview may not be enough to fully understand the professional identity of a participant. All ethical processes as required by the

¹⁷ Age at the time of the final interview.

Higher Degrees Committee of the Rhodes University were observed during and after the data collection processes. Pseudonyms were used throughout to protect the anonymity and confidentiality of the participants.

4.4 Data Collection

The purpose of data collection, in qualitative research, is to provide evidence for the experience under investigation (Polkinghorne, 2005); which in this case, is the shaping of the participating teachers' professional identities. According to Polkinghorne (2005): "People have access to much of their own experiences, but their experiences are not directly available to public view. Thus, the data gathered for study of experience need to consist of first-person or self-reports of participants' own experiences" (p. 138). Therefore, the data in this study of narratives that shape their professional identities on the seven participants consist of such first-person reports of the participants' own identity- shaping life experiences – professional and other relevant experiences. In collecting the data I have made use of a methodology known as narrative inquiry (Clandinin & Connelly, 2000; Daiute & Lightfoot, 2004; Kramp, 2004) which is based on the work of narrative researchers (e.g., Mishler, 1986b; 2006; Polkinghorne, 1988; Cortazzi, 1993; Riessman, 2006; Søreide, 2006; Krzywacki & Hannula, 2010) who has done extensive work with narratives in diverse fields and settings. Narrative inquiry is described by Clandinin and Connelly (2000) as "a way of understanding experience" through "stories lived and told" (p. 20). According to Moen (2006), the literature on narrative research is underpinned by three claims: firstly, that human beings organize their experiences of the world into narratives; secondly, narrative researchers maintain that the stories that are told depend on the individual's past and present experiences, values, the audience, and also when and where the stories are being told; and thirdly, multivoicedness that occurs in the narratives. As Moen (2006) explained, "narratives connect the individual and her or his social context, and therefore a multitude of voices are present within an individual's stories" (p. 5).

In this study narrative inquiry was used to collect the narratives that shaped and continues to shape professional identities of seven participants who have been faced with the radical transformation of the South African schooling system since the onset of the New Democracy in 1994. As will be discussed, different strategies can be used to identify the

specific narratives that shape the professional identities of mathematics teachers. A typical strategy, often used in narrative inquiry, is to search for “turning points” (Mishler, 2006) or “critical incidents” (Smith, 2001). These two notions, which are very similar, make up an important feature of all life history narratives. Turning points are events that interviewees would recall as

[C]hanging their understanding of their past experiences... open[ing] up directions of movement that were not anticipated by them and could not be predicted by their previous views of their pasts, leading to a different sense of themselves and to changes that were consequential for how they felt and what they did... Sometimes these turning points lead to restorying of the past and the adoption of a new identity that changes the meaning of past relationships (Mishler, 2006, p. 39).

Very similar to the above, a critical incident is described by Smith (2001) as “an experience which, as defined by the respondent, results in a change of professional behavior” (p. 112). These notions are so similar that they can be used interchangeably. However, for the sake of consistency I will use the notion of *turning points*. In this study I have made extensive use of turning points to help me to identify the sought after narratives that shape the professional identities of the sample of mathematics teachers; in a sense following Kelchtermans (1993) who, in his narrative-biographical exploration of teachers’ professional identities, made the point that turning points can be “very useful as heuristic tools in exploring the career stories” (p. 446). In his analysis Smith also included “critical persons” (p. 446) who, according to the teachers, have had a significant impact on their careers. Narrative inquiry, however, also requires the use of theoretical perspectives as a means of gaining further understanding and insights (Clandinin & Connelly, 2000). This project which, as has already been mentioned, is situated in a sociocultural framework (Lerman, 2000; 2006; Cobb, 2006; Goos, 2008), the underpinning theoretical perspective being that of *identity* (Sfard & Prusak, 2005; Lave & Wenger, 1991; Wenger, 1998), *communities of practice* (Wenger, 1998), and *legitimate peripheral participation* (Lave & Wenger, 1991). These constructs are the theoretical lenses used to view the narratives of the seven participating teachers. At this point I wish to point out that, although I have drawn on “constant comparative analysis” (Glaser & Strauss, 1967; Boeije, 2002) as it proved to be useful in the initial thematic analysis of the narrative data; the existence of the prior theoretical framework, as suggested

above, precludes any explicit or implicit suggestions of this being a full scale “grounded theory” (Glaser & Strauss, 1967) approach.

4.4.1 Using interviews to collect data

A number of scholars (Mishler, 1986b; Riessman, 1997; Lieblich, Tuval-Mashiach, & Zilber, 1998; Seidman, 2006; Kaasila, 2007a; Eaton & O Reilly, 2009a; Krzywacki & Hannula, 2010; Gubrium & Holstein, 2012) have suggested that data on teacher identity can be collected via interviews during which informants share their conceptualized understandings, such as knowledge, beliefs, attitudes, and goals with an interviewer. For the sake of completeness it should be mentioned here that this is not the only way in which narrative data may be collected; narratives can be presented in different formats: video recordings, pictures, field notes, written texts or drawings (e.g., Berger, 1997). In this study, however, the interest is in narratives in the format of identity-shaping stories that teachers tell of their own experiences, and therefore it made sense to use interviews to collect the sought after narratives. As Crossley (2000) argued, “human life carries within it a narrative structure to the extent that the individual, at the level of tacit, phenomenological experience, is constantly projecting backwards and forwards in a manner that maintains a sense of coherence, unity, meaningfulness and identity” (p. 542). Interviews allow the participant to “move through time by reconstructing the past, interpreting the present, and predicting the future” (Kear, 2012, p. 34). This is aligned with Day, Kington, Stobart and Sammons’s (2006) suggestion that: “Teachers will define themselves not only through their past and current identities as defined by personal and social histories and current roles but through their beliefs and values about the kind of teacher they hope to be in the inevitably changing political, social, institutional and personal circumstances” (p. 610). However, unlike in most quantitative research, in this study there is no hypothesis to prove; instead, I have a research goal: To uncover the narratives that shape the professional identities of the seven participants who participated in the study. Therefore, I used semi-structured, in-depth interviews that were centred around: issues found in the literature; my own pre-conceived notions, prejudices and biases; and also following up on any serendipitous issues that emerged during the interviews.

According to Mishler (1986b), the analysis of narratives collected in view of learning something about personal identities and cultural values is underpinned by two important

assumptions: firstly, it does not matter what the story is about, it is always a form of self-presentation during which “a particular personal-social identity is being claimed” (p. 243); and secondly, everything that is said during the interview serves “to express, confirm, and validate this claimed identity” (p. 243). He explained as follows: “The first assumption directs us to the content of the identity, to the ways it is expressed through various particulars of the account, and to the ways it represents cultural themes and values. The second supports our search for identity-relevant material throughout the account” (Mishler, 1986b, p. 243). Thus, an identity-shaping narrative not only lays certain claims to certain identities, it also serves to confirm these claims.

It is also necessary to distinguish, as Gubrium and Holstein (2012) did, between two perspectives of subjectivity in the interview process: On the one hand, there is the more traditional ‘passive subjectivity’ perspective; that is, “[R]espondents are envisioned as being vessels of answers to whom interviewers direct their questions. Respondents are seen as repositories of facts, reflections, opinions, and other traces of experience... The subjects [respondents] themselves are not engaged in the production of knowledge” (p. 32). On the other hand, there is the more modern ‘active subjectivity’ perspective, which, in contrast to the previous one, recognizes the active agency of both of the interview participants, that is, both the interviewer and the respondents are involved in the co-production of knowledge (e.g., Chase, 2005; Moen, 2006). Chase (2005), for example, argued for transforming the interviewer-interviewee relationship into one of narrator and listener:

[T]he stories people tell constitute the empirical material that interviewers need if they are to understand how people create meanings out of events in their lives. To think of an interviewee as a narrator is to make a conceptual shift away from the idea that interviewees have answers to researchers’ questions and toward the idea that interviewees are narrators with stories to tell and voices of their own (p. 660).

This corresponds with Gubrium and Holstein’s (2012) view of a shift from ‘passive subjectivity’ to ‘active subjectivity’, that is, as a “transformation of how researchers conceive of respondent and the interview roles, the nature of interview information, and the relationship of the information to society” (p. 28). In their own words:

[I]nterview researchers are increasingly appreciating the narrative agency of the subjects behind the participants, of both respondents and interviewers. Interviews have been reconceptualised as formal occasions on which animated subjects collaboratively assemble accounts of experience... [casting] participants

as constructive practitioners of the enterprise, who work together to discern and designate the recognizable and orderly features of the experience under consideration... This transforms the subject behind the respondent from a repository of information or wellspring of emotions into an animated, productive source of narrative knowledge... [and] the active subject behind the interviewer is a necessary counterpart, a working narrative partner, of the active subject behind the respondent (Gubrium & Holstein, 2012, p. 33).

This study takes an 'active subjectivity' perspective of the interviewing process, following the lead of eminent scholars in the field. Mishler (1986a), for example, argued that meaning is jointly constructed during the interview by interviewer and respondent; and, that "adequate understanding of interviews depends on recognizing how respondents frame answers in terms of their reciprocal understanding as meanings emerge during the course of an interview" (p. 52). Moreover, as Mishler (1986b) pointed out, narratives are context-sensitive; for example, their form and content are responsive to, and significantly influenced by asymmetric power relationships in the interview situation. For example, Nespor and Barylske (1991), arguing that teacher knowledge is jointly constructed by teachers and researchers through their representational practices, held that "representation [is] not just a matter of epistemology or method, but a matter of power. To represent others is to reduce them and to constitute relations of power that favor (*sic*) the representers over the represented" (p. 806). As Mishler (1986b) suggested the following solution: "If we wish to hear respondents' stories then we must invite them into our work as collaborators, sharing with them, so that together we try to understand what their stories are about" (p. 249). Hence it is not uncommon for the interview to turn into a form of conversation as the interviewer develops a participatory relationship with the participant (Clandinin & Connelly, 2000). Some of the key elements of such a collaborative dialogic relationship between researcher and participants, as Moen (2006) pointed out, include: a caring situation; non-judgmental attitude; equality; and own voice. The latter, especially is important because "teachers have traditionally experienced that they do not have their own voice in the field of educational research and might find it difficult to feel empowered to tell their stories" (p. 6). The aim of interviewing the teachers is to stimulate them to reflect back on their career experiences and to tell their career stories (Kelchtermans, 1993). Furthermore, as Riessman (1997) explained: "Personal narratives, in all their diversity, offer social scientists a window into personal experience, specifically human agency in the face of life events. Individuals

craft their tales collaboratively with listeners – two human agents make sense of personal experience in interaction” (p. 157). This ‘active subjectivity’ perspective (Gubrium & Holstein, 2012) was pre-empted in Daugbjerg’s (2010) claim that: “Researchers affect the participants. Their questions start reflection and development among participants. The narrative emerges in the dialogue between participant and researcher; it does not exist prior to this dialogue” (p. 5). It is important, therefore, that the researcher clarifies details of the story line with the participant during the interview so that conflicts, solutions and tensions can be formulated by the participant as they arise (Daugbjerg, 2010, p. 5), rather than speculating about the meaning of these in the absence of the participant during interpretation. There will always be a measure of interpretive speculation, no doubt, but these could and should be minimized through “member checks” (Guba, 1981; Creswell & Miller, 2000); that is, by sharing full transcripts of all the interviews with the teacher participants after each interview in order to obtain their approval, and for purposes of further clarification where this was deemed necessary. This became a standard procedure before any of the transcriptions were even considered for inclusion in this study. In doing so, I have complied with two of Maxwell’s (1992) five types of validity in qualitative research, that is: descriptive validity – checking with the participants the factual accuracy of the narrative transcripts; and interpretive validity – checking my interpretations of the participants narratives by asking them to elaborate on the meanings of their narratives. The way in which I have dealt with the rest of Maxwell’s (1992) five types of validity, that is, theoretical and evaluative validity, as well as generalizability will be discussed in section 4.6 of this chapter. As Creswell and Miller (2000) explained, the processes of validity and credibility are upheld via the process of member checking in the following way:

With member checking, the validity procedure shifts from the researchers to the participants in the study... It consists of taking data and interpretations back to participants in the study so that they can confirm the credibility of the information and narrative account... researchers may have participants view the raw data (e.g., transcriptions or observational field notes) and comment on their accuracy. Throughout this process, the researchers ask participants if the themes or categories make sense, whether they are developed with sufficient evidence, and whether the overall account is realistic and accurate. In turn the researchers incorporate participants’ comments into the final narrative (p. 127).

Riley and Hawe (2005) cautioned, however, that the result of such “in-depth engagement with and understanding of the participant’s experience” (p. 234) during narrative analysis

could lead to “a blurring of interpretive boundaries between analyst and research participant” (p. 234). As a counter measure, they suggested that: “researchers must interrogate the dynamic created between the researcher and ‘the researched’ and devise accountability mechanisms. In this way the researchers’ location and representation within the study is a key component of both data collection and analysis” (p. 234). I envisaged that, in this study, the above mentioned concern with blurred interpretive boundaries would be addressed via the process of “member checks” (Guba, 1981; Creswell & Miller, 2000); bearing in mind, of course, that ‘member checking’ is not the solution to all interpretive problems. Determining the ‘point of a story’, for example, is an investigative problem; and is unlikely to be stated explicitly in the narrator’s own words; instead, it requires inference and interpretation on the part of the researcher (Mishler, 1986b). However, as Kvale (2006) cautioned: “There may be emotional barriers for the interviewees to accept critical interpretations of what they have told the interviewer, as well as limitations of the subjects’ competence to address specific theoretical interpretations” (p. 485) Clandinin and Connelly (1989) explained that human beings live storied lives:

One of the basic human forms of experience of the world is as a story... the storied quality of experience is both unconsciously restoried in life, and consciously restoried, retold and relived through a process of reflection... the rudiments of method are born in the phenomenon of narrative (p. 2).

The goal of the interviews is to make teachers reflect on their conceptions and experiences of being a teacher; to jointly reconstruct the meaning of their experiences as they conceive it at the particular moment in time. Reflecting on the role of the researcher, Kaasila (2007a) maintained that: “The researcher constructs the mathematical biography of another person together with that person. In particular, the researcher’s task is to explicate how the person’s earlier experiences have influenced his or her past and present mathematical identity” (p. 374). In practice, it is the researcher who makes the final call on what to report and which interpretations to present in the final dissertation. As Kvale (2006) concluded, “a research interview is not an open and dominance free dialogue between egalitarian partners, but a specific hierarchical and instrumental form of conversation, where the interviewer sets the stage and scripts in accord with his or her research interests” (p. 485).

Biography plays an important role in determining and explaining teacher's work in the classrooms and the formation of their professional identities (Kelchtermans, 1993; Jephcote & Salisbury, 2009).

[T]eachers' professional behaviour is largely determined by and has to be understood from their experiences throughout the career. Their professional development can only be understood properly if it is conceived of as a result in a life-long process of learning and development (Kelchtermans, 1993, p. 443).

Lieblich, Tuval-Mashiach and Zilber (1998) explained their choice of the life story as a means for the study of identity as follows:

It was our choice and intention to explore this world [identity] by listening to the voices of people telling their life stories, knowing that people create stories out of the building blocks of their life histories and culture, and at the same time, that these stories construct their lives, provide them with meanings and goals, and then tie them to their culture (p. 168).

Others, for example, Stanley and Billig (2004) also linked identity to stories: "Identity claims can be part of narrative stories, for in making claims about the self speakers will often tell stories. The discursive position warns against treating identity as an internal state... That means that the topic of identity should be studied by examining what people are doing when they make claims about their own and others' identity" (p. 160). Kaasila (2007a), for example, holds that: "People often develop their sense of identity by seeing themselves as protagonists in different stories" (p. 374).

Having made a case for interviews as a research methodology to study identity, it should be noted that identity is dynamic and develops over time; and therefore, according to Krzywacki and Hannula (2010), teacher identity and its associated processes can be studied more reliably in longitudinal examinations where the aim and challenge is to make the ongoing processes of identity development visible (for example, the interplay between individual and social understandings, as well as ideal and present images of identity). The interviews would have to explore a number of broad areas that might constitute possible resources for identity construction: membership of communities of practice; classroom events; "micro-politics" of the school; national/regional imperatives; notions of self efficacy; and notions of learning/pedagogy. Taking a cue from Watson (2006), the aim of the interview questions in this research will be to trigger narrative using a mix of formal and informal language and vocabulary aimed at prompting the interviewees to talk about the issues that they find significant. Shaw (2010), for example, suggested that one could invite

respondents to make meaning of their previous workplace or life experience as learning by asking them to identify both positive and negative learning events followed by a process of comparing and contrasting the events in terms of how they were alike or different. Through skilfully conducted interviews the interviewer should be able to gain access to the narratives covering the interviewee's life as a learner and as a teacher, a method which is in line with current research where narratives has emerged as the tool of preference for accessing identity (Clandinin & Connelly, 1989).

From an ethnographic point of view the interview is a major technique for learning about participants' subjective views; thus the questions are usually open-ended, cover a wide range of topics, and takes time to complete. Interviews can be helpful in informing the researcher about activities beyond his or her immediate experiences, such as relevant historical events or events occurring in other places (Eisenhart, 1988, p. 105). Structured interviews may begin with open-ended questions and then the answers from the original open ended questions are used to structure more focused questions. However, as Hatch and Wisniewski (1995) pointed out, no matter how open-ended the questions, questionnaires always have limitations and incongruities; for example, implicit content and theoretical structure.

4.4.2 The narrative interview guide

As part of their Narrative Oriented Inquiry (NOI) model, Hiles and Čermák (2007; 2008) suggested that the researcher(s) should use a narrative interview guide (NIG), which is based on the research question(s), to guide the actual narrative interviews. The NOI model explicitly strives towards transparency in collection and interpretation of narrative data, and therefore always starts with the research question; which in turn guides the setting up of a NIG; followed by the actual narrative interview, which is usually audio recorded and transcribed (Hiles & Čermák, 2007). Although the NOI model was not followed to the letter, some aspects of it proved to be quite useful, particularly the use of a NIG during interviews. It provided some structure to the interviews (Bowen, 2005), even though the latter were mostly treated as conversations during which the participants were encouraged to share detailed information and comments with the interviewer. Nevertheless, the idea behind a NIG, for me, was to arrive at the interviews with a set of predetermined 'seed' questions which could be used to gather data in a systematic way, especially because the study has

more than one participant, rather than asking ‘blind’ questions and potentially missing out on important data in doing so. More structure makes it easier to organize and analyse the interview data (Bowen, 2005). The NIG is based on an existing, and well established, life story interview protocol (McAdams, 1993; Drake, Spillane, & Hufferd-Ackles, 2001; Drake, 2006) which was adopted from psychology and adapted to prompt mathematics teachers to recall their previous experiences of both learning and teaching mathematics, and to do so in storied form (see Appendix A). Hence, the NIG questions prompted the teachers to describe several key events in their overall mathematics story, including childhood, adolescence and tertiary experiences, as well as any high points, low (nadir) points, and turning points in their experiences, either as a learner or as a teacher of mathematics. High points or low points were defined as events that were associated with extremely positive or negative emotions, while turning points were defined to be events that led to “substantial change” (Drake, 2006, p. 584) in their understanding of mathematics and the learning and teaching thereof. The interview questions were kept open-ended as far as possible. For each participant these questions were spread over at least four semi-structured interviews that were conducted over the course of a about two years (See Appendix D) from February 2012 to November 2013.

As a research tool a NIG has the additional benefit that it doubles up as “a rough [albeit non-binding] working frame” which is necessary to counter the risk of collecting “an incoherent, bulky, irrelevant, meaningless set of observations... which no one can (or even wants to) make sense of” (Miles, 1979, p. 591). I started off in the initial interviews with a set of seed questions which included, but was not restricted to, the NIG questions. These included the following set of seed questions:

- How did you become a Maths teacher?
- Have you changed as a Maths teacher over the years?
- Are there any outstanding moments in your career that you will always remember?
- Are there any interesting things that happened in your career?
- Are there any exceptional learners that you have taught that had an impact on you as a teacher?
- How have you experienced the changes in the curriculum?
- Did you ever feel this was not the job for you?

- How has discipline changed over the years?
- What motivates you to come to school every day?

These seed questions were often supplemented with further probing questions which were derived from participants' responses, and found to be useful tools for digging deeper into the experiences described by the participants (Kear, 2012). During further probing I tried, as far as possible, to re-use the participants' own words in the questions in an attempt "to maintain coherence with the participants' descriptions of their experiences, and to clarify and check if I was understanding what they wanted to convey" (Etherington & Bridges, 2011, p. 13). In this way I hoped to elicit how the participants accomplish individual meanings of professional identity as they were addressing personal challenges related to teaching and learning in the context of talk about classroom practices and challenges; and, in doing so, implicitly engaged questions of teacher identity (Cohen, 2010). The questions listed above were asked of all participants during the first interview and generated some interesting narratives which were followed up during the second interview as part of the "member checks" (Guba, 1981; Creswell & Miller, 2000). In a sense then, from the second interview onwards, "[e]very interview or observation was preceded by and based on an interpretive analysis of the data already collected" (Kelchtermans, 1993, p. 445). As Polkinghorne (2005) rightfully pointed out, a single interview with a participant is not enough "to obtain interview data of sufficient quality to produce worthwhile findings" (p. 142). Moreover, the descriptions offered in the first interview are often restrained: "They reflect concerns of the participant about the acceptableness of the answers, a testing of what they want to reveal, or the surface of a remembered experience... without explorations into the depth and breadth of experience" (Polkinghorne, 2005, p. 142).

Following on my experiences during the first round of interviews, I decided to use a formal NIG from the second interview onwards. With the dangers of being too structured in mind, I tried to keep an open mind and to use the NIG as seed questions only; that is, not to manipulate the participants to respond to the NIG (Seidman, 2006) if it becomes clear that certain questions do not have the desired effect. It had to be borne in mind that people differ, and that what might seem to be important experiences for me (given my own background as a mathematics learner and teacher), might not necessarily be all that

important to the mathematics teachers being interviewed. This open-minded approach is corroborated by Siedman (2006), for example, who also cautioned that:

Interviewers must try to avoid imposing their own interests on the experience of the participants. Interviewers working with an interview guide must allow for the possibility that what may interest them or other participants may be of little interest to the person being interviewed. Interview guides can be useful but must be used with caution (p. 77).

I must admit, however, that it takes conscious effort to resist the temptation to manipulate the interview participants into responding to the NIG as if it was just another open-ended questionnaire. It does help to be mindful of the fact that this is just a 'guide' and not a canon to be followed to the letter. After all:

In-depth interviewing... is not designed to test hypotheses, gather answers to questions, or corroborate opinions. Rather, it is designed to ask participants to reconstruct their experience and to explore their meaning. The questions most used in an in-depth interview follow from what the participant has said (Seidman, 2006, p. 76).

In describing the relationships with participants in her own work, Trahar (2009), for example, commented: "In narrative inquiry, the relationships between researcher and participants remain open and 'agnostic'. I could not 'know' the stories that would be meaningful for research participants and so rather than ask a series of questions, I invited participants to tell stories that were meaningful for them and I shared the resonances that those stories had for me" (p. 4). This comment resonates quite well with my own approach in the interviews.

Often the participants indicated that they needed more time to think about some of the questions – perhaps an indication that the question was alluding to: (a) experiences that they do not consider important enough to tell; (b) experiences that are important, but which the participants would prefer to keep to themselves, the so called "secret stories" (Clandinin & Connelly, 1996), or (c), experiences that may have faded from memory over the years. Elbaz-Luwisch (1997) cautioned: "The development of a collaborative relationship takes time, and coming to a mutually illuminating rendition of a teacher's story can be a long process whose outcome is uncertain" (p. 79). However, learning from this experience during the first interviews, I decided to give the NIG to the participants in advance of the actual interview (from the second interview onwards) in the hope of capturing more detailed responses to the NIG questions by giving them time to think about the questions in

advance. Freidus (2002), for example, explained how, when they discovered that some of the topics relevant to their research questions were unlikely to come up in initial unstructured interviews, they decided to switch to guided interviews; reporting that “posing the questions in advance enriched the conversation *provided that* the questions related to the teachers’ interests and concerns” (p. 165, emphasis in original). By giving the NIG to the participants during the second interview, I hoped to stimulate, in advance, their thinking about narratives that may have shaped their professional identities, some of which, over the years, might have slipped out of memory. Writing about her own experiences, Gheorghiu (2011), for example, noted: “I found it very hard to recollect things that had not crossed my mind in years and to record very pleasant or really painful moments in my life” (p. 36). Her comment covering both points (a) and (b) above neatly illustrates why some of the participants may have asked for time to think about some of the questions.

4.4.3 Interview conditions

It is important to pay attention to interview conditions, because the narrative data is influenced by the interview situation itself (Folkestad, 2008). As McCormak (2000) pointed out: “Stories are not told in a vacuum – they are simultaneously situated within a particular context (situation) and within a wider cultural context. The context of situation is the immediate social situation of the storyteller and the listener” (p. 287). Thus, in narrative inquiry, the context is the interview. What is important in the research interview is the personal context – the autobiographical context of the storyteller, and the interactional context – the interactional aspects of the relationship between the interview participants (Constas, 1998; McCormak, 2000), that is, between the interviewer and the interviewee(s). “Narratives are collaborative productions”, and therefore, “each researcher must possess the social skills and reflective abilities needed to understand the way he/she contributes to, represents, and possibly distorts the narrative account of another person’s experiences” (Constas, 1998, p.31). Goodson (1991), for example, warned that if a collaborative research mode and an egalitarian relationship between researcher and participating teacher is desired (as it is in narrative research); then a focus on the teacher’s practices is best avoided as an entry point, as this is often the area of most anxiety, insecurity, and vulnerability for the teacher. As an alternative entry point, he suggested a focus on the teachers’ work in the context of their life as more strategic, valuable, and less vulnerable. He explained that:

“Talking about his/her own life the teacher is, in this specific sense, in a less immediately exposed situation; and the ‘exposure’ can be more carefully, consciously and personally controlled” (p. 43). As Connelly and Clandinin (1990) pointed out, narrative inquiry, by its very nature, is a collaborative effort:

Narrative inquiry... is a process of collaboration involving mutual storytelling and restorytelling (*sic*) as the research proceeds. In the process of beginning to live the shared story of narrative inquiry, the researcher needs to be aware of constructing a relationship in which both voices are heard (p. 4).

However, irrespective of our noblest intentions, as Carter and Doyle (1995) concluded, “the structure of the research setting places the teacher under scrutiny and, thus, implicitly locates the investigator in a powerful but sheltered position with respect to the content of the study. Exercising power from a subordinate position [for the teacher] may not be inviting or possible” (p. 171). Nevertheless, for narrative researchers and teacher educators, alike, striving towards a collaborative and egalitarian research mode remain “quite compelling with respect to its promise for building a rich understanding of teaching events and enhancing teachers’ capacity to manage the substance and conduct of their own work” (Carter & Doyle, 1995, p. 67) Therefore, I remained ever mindful of the issues of power and data control throughout this research project.

Narratives may be gathered and represented in a variety of ways, and therefore, there is an onus on the researcher to articulate, as transparently as possible, how the data was collected and analysed (Trahar, 2009). For example, Pavlenko (2008) cautioned that when narratives are collected only in one language, often in the language most convenient for the analysis, problems may arise: “Elicitation in the participant’s weaker language involves the possibility that some information may get misrepresented or left out. Elicitation in the participant’s dominant language may necessitate the use of a translator, which might also compromise the integrity of the narrative” (p. 319).

De Fina and Georgakopoulou (2008) explained as follows: “Viewing narratives as more or less self-contained texts that can be abstracted from their original context of occurrence thus misses the fact that both the telling of a story, and the ways in which it is told, are shaped by previous talk and action” (p. 381). In other words, a narrative is constructed in the telling; and the role of the interviewer may affect the stories as clarification or elaboration is sought (Richmond, 2002). But the stories, in turn, may also affect the

interviewer, as Strauss and Corbin (1994) pointed out, “in all modes of qualitative research the interplay between researcher and the actors studied – if the research is intensive – is likely to result in some degree of reciprocal shaping” (p. 280). Furthermore, Kvale (1996) observed that: “The interviewer does not merely collect statements like gathering small stones on a beach. His or her questions lead to aspects of a topic the subject will address and his or her active listening and following up on the answers codetermines the course of the conversation” (p. 281). The real challenge, however, lies in the interpretation of the stories. Polkinghorne (1996) explained that “the identity stories gathered as data for narrative research are not mirror reflections of people’s experientially functioning identity stories” (p. 366) and therefore, in order to bridge the gap between the presented interview story and the lived identity story, the researcher needs to infer from the told story to the lived story. Therefore, as Trahar (2009) agreed, the interview process is seldom simple and straight forward:

Those who use interviews as a research method are often cautioned to articulate and render transparent the supposed power imbalance between interviewer and interviewee, but the power in any interview shifts constantly. Research participants will often find ways to tell the stories they want to tell rather than or perhaps as well as those that they think the listener wants to hear. In addition, the researcher herself may well be bringing her own agenda to the interview. She may want to be seen in particular ways, want or need the participant to hear something of her experiences and opinions (p. 4).

The unfolding narrative is contextualized by both the purposes of the interviewer in terms of the research question, and the purposes of the research participant in terms of self-presentation (Richmond, 2002). There is always the possibility, of course, that the participants may “tell you just what they think you want to hear” (Richmond, 2002, p. 7). Thus, the stories told in an interview “are shaped by the questions and responses of the person to whom they are told... [and therefore are] no longer the exclusive product of the teller alone” (Polkinghorne, 1996, p. 366). Riley and Hawe (2005), for example, cautioned about the importance of creating and sustaining the ‘right’ conditions for the interviews, otherwise the participants “may tell us only part of their story, what they think we want to hear or indeed nothing at all” (p. 228). In other words, the story varies according to the situation in which it is told; and, it is highly dependent on the interviewer and his or her position and social presence or entitlements, as well as the way the participants want their stories to be perceived (Gheorghiu, 2011). The trick to collecting narratives through

intensive interviews, according Chase (2005), is to know “how to treat the interviewee as a narrator, both during interviews and while interpreting them” (p. 652). An important factor is the respect between participant and researcher: “Respect for one another in educational research helps to generate and test new, legitimate and valuable knowledge” (Mpungose, 2010, p. 531). Respect, according to Mpungose, means maintaining a “close healthy relationship” with the subjects and treating them as the experts on the research subject “by allowing them a strong role in determining how the interview proceeded” (p. 531).

Gubrium and Holstein (2012) conceived of the interview process in the following way: “The aim is to derive as objectively as possible the respondent’s *own* opinions on the subject matter, opinions that will readily be offered up and elaborated on by the respondent when circumstances are conducive to doing so and the proper solicitations extended” (p. 29, italics in original). A useful questioning technique, suggested by Greenhalgh, Russel and Swinglehurst (2005), is for the researcher to invite the participants to “Tell me what happened?” (p. 444), and then to allow them to speak uninterruptedly until the story ends; using prompts sparingly and only to sustain the flow of the story.

Riley and Hawe (2005) made a number of suggestions for what they consider to be the ‘right’ conditions for the elicitation of the sought after narratives. I want to single out two that are of particular importance in this research project: *empathy* for the challenges faced by the teachers; and, *trust* within the research relationship – trust that confidentiality would be maintained and that their stories would be represented accurately. The ability to connect empathetically with the respondents in an interview is considered to be an essential interviewing skill, not only in terms of the success of the interview, but also in terms of the interpretive process; but too much empathy can also be a potential source of biases:

Without empathy, analysis is still possible, but is likely to be sterile, prone to essentialism, and lacking insight. On the other hand, researchers who too closely identify with their interviewees can lose the professional detachment and questioning stance that is also necessary for critical research (Godfrey, 2004, p. 60).

This does not mean, however, that the ability to analyse a respondent’s words is entirely reliant on an emotional connection being made; neither that the intensity of the emotion is directly proportional the success of the interpretation (Godfrey, 2004, p. 64). Neither does it mean, however, that the emotional dimension can be discounted completely in the analysis

of the narratives. Greenhalgh, Russel and Swinglehurst (2005), for example, suggested that it is important for the researcher to “acknowledge and engage with this emotional dimension – thus turning sympathy, joy, revulsion, and even ‘mixed emotions’ into research data” (p. 445). There is, however, another potential bias that comes with the premium placed on empathetic relationships in interpretive analysis; that is, it may influence the selection of interview participants by favouring those with whom the interviewers feel they can enter into a collaborative relationship; and, excluding those with whom they feel uncomfortable in terms of their own moral dispositions (Godfrey, 2004). Because of the rather ‘neutral’ stance of this study in terms of the nexus of ethical, moral, and social-legal issues used as exemplars by Godfrey (2004) in making the point, I am convinced that emotional bias in the selection of the respondents, as he had envisaged it, can be discounted in this study.

Apart from issues of confidentiality and accuracy of representation, *trust* is important “to elicit narratives free of any accounting for what was right and what was wrong with their [the participants’] life” (Bamberg, 2006a, pp. 73-74). People are more likely to discuss their personal sense-making with those whom they trust (Geijssels & Meijers, 2005).

Being interviewed, narrating one’s life story and opening up one’s classroom by telling stories about one’s practice are challenging activities to take part in, and will be successful for both parties only if undertaken in an atmosphere of cooperation and trust (Elbaz-Luwisch, 1997, p. 80).

Hence, *trust* is an essential prerequisite for successful interviewing while collecting narrative data. However, in my methodological approach to the interviews, I would like to replace Riley and Hawe’s (2005) notion of *trust* with the notion of *sincerity*; and in doing so, argue that there is a difference between the notions of *sincerity* and *trust* in terms of their respective loci of control – *sincerity* lies within the locus of control of the interviewer, while *trust* lies within the locus of control of the interviewee. Hence I am suggesting here that, as noted above, *trust* as proposed by Riley and Hawe (2005), be replaced with *sincerity*; as the latter does in fact lie within the locus of control of the interviewer whereas the former does not. I am not arguing that trust should be abandoned completely; rather that *sincerity* of the interviewer will engender *trust* in the participant. This argument is supported by Freidus’s (2002) reflection that: “As teachers began to see that we were sincere in our stance of wanting to know what they knew, they began to be more and more willing to tell us their

stories and show us who they were as professionals” (p. 169). In this particular example, the sincerity of the interviewers has engendered trust in the interviewees with highly desirable outcomes for the research.

Narrative inquiry is about more than asking questions and eliciting stories, it is also important that the researcher is positioned in such a way that the stories can be analysed effectively (Savin-Baden & Van Niekerk, 2007, p. 463). The most important skill in interviewing, however, is active listening. Seidman (2006) suggested that interviewers should be actively listening on at least three levels: Firstly, to “what the participant is saying” (p. 63); that is, listening to the fabula or content. Secondly, listening to the “inner voice” instead of the “public voice” (p. 63). I am suggesting here that the notions of “inner voice” and “public voice” can be equated to what Clandinin and Connelly (1996) referred to as “secret stories” and “cover stories” respectively. Thirdly, listening “while remaining aware of the process as well as the substance” (p. 63). That is, remaining conscious of the time and progress during the interview; sensitivity to the participant’s energy levels and any other nonverbal cues that might be offered; and, “staying alert for cues about how to move the forward as necessary” (p. 64).

The interviews were conducted in a location of each participant’s preference. These included, for example, a departmental office in the school, a teacher’s classroom (when learners are not there) and the school library. In line with the notion of “*informed consent*” (Corbin & Morse, 2003, p. 348), all the ethical principles that would guide the study and protect the interests of the participants, in terms of the risks and benefits of participation, were discussed and clarified with the participants before any interviews were conducted. Thereafter, each interview was audio-taped, with the participant’s consent, and transcribed in verbatim.

4.4.4 Concluding the interviews

Several researchers, like Bell (2002) and Corbin and Morse (2003), noted how difficult it is to disengage from the participants at the end of the research project, because of the close relationships that develop between researcher and participants. Corbin and Morse (2003) cautioned: “Most important is delivering what one promises and pacing the withdrawal from the research relationship in accordance with participants’ readiness” (p. 347). For example, the participants were promised full transcripts of at least the first three interviews

to check for accuracy of representation – the last interview was reserved for “member checks” and therefore not included. I have diligently delivered on this promise, making sure that each participant received a full transcript of the previous interview before conducting a new interview.

4.4.5 Transcription of the interviews

Hunter (2010) concluded her reflections on analysing and representing narrative data with the following comment: “Representing and interpreting another’s voice is not a simple task and needs to be done with respect and humility” (p. 50). Representation starts with the transcription, because this is how spoken language is transformed into text. In transcribing and interpreting interviews I heeded Watson’s (2006) caution that: “Speech and writing are related but are not equivalent and there is no simple and transparent way in which to render speech into writing” (p. 513). This is the point where narrative researchers are faced with the important question of transcription detail; that is, what to include and how to arrange the text, all of which have an impact on how the text will be understood (Pavlenko, 2008; Larsson & Sjöblom, 2010). Kvale (1996) cautioned, however, that interviews should not be conceived of as transcripts, “interviews are living conversations” (p. 280). Furthermore, “transcripts should not be the subject matter of an interview study... but rather as tools, the means for interpreting what was said during the interview” (p. 280). De Fina and Georgakopoulou (2008) warned that transcription is not a transparent process; that it involves choices that have strong implications for data analysis. The choice of transcription conventions, for example, is a key consideration (See Appendix E). As Pavlenko (2008) duly noted, “while punctuation makes transcripts easier to read, it is not a faithful representation of the data – this addition may negatively affect subsequent analysis” (p. 314). Moreover, as Atkinson (2001) noted, the final forms of life stories may vary from “mostly the researcher’s own description of what was said, done, or intimated... [to] a 100 percent first-person narrative in the words of the person interviewed” (p. 123). According to Polkinghorne (1996):

This felt meaning of identity stories cannot be translated transparently into language. In their telling or writing, the experienced meaning of an identity story undergoes a transformation. There are significant differences between the identity story as it is lived and the story as it is told (p. 365).

As Goodson (2001) fittingly added: “Such [life] stories are, in their nature, already removed from experiences – they are lives interpreted and made textual. They represent a partial, selective commentary on lived experience” (p. 138). Furthermore, he added that this gives rise to two interpretive layers: “The rendering of a lived experience into a life story is one interpretive layer, but the move to life history adds a second layer and further interpretation” (p. 139). Sandelowski (1991) pointed out, however, that the amount of detail in the transcription of a speech event is based on the researcher’s (often implicit) theory of language, speech, and social interaction. She illustrated by means of the following example:

[V]erbatim transcripts with strict notations of such features of talk as pauses, repetitions, false starts and asides are necessary for many kinds of narrative analysis based on the assumption of language as a structure, but not for constant comparison in the service of generating grounded theory or for content analyses in the service of instrument development where language is assumed to be a transparent vehicle for communicating information (Sandelowski, 1991, p. 163).

Initially in this project, and especially during the transcription phase, the amount of detail that I should present in the transcripts has been a constant concern. This continued until about midway through the project when I started to realize how the assumptions of the project and analytic purposes of the transcripts would influence the amount of transcription detail. For example, a thematic analysis where language is treated as “a direct and unambiguous route to meaning” (Riessman, 2005, p. 2) would require less narrative detail than a structural analysis where language is treated as “an object for close investigation – over and beyond its referential content” (Riessman, 2005, p. 3). Guba and Lincoln (2005), for example, whilst reflecting on how the meaning of ‘voice’ has changed for researchers over time, noted that:

As researchers became more conscious of the abstracted realities their texts created, they became simultaneously more conscious of having readers ‘hear’ their informants – permitting readers to hear the exact words (and, occasionally, the paralinguistic cues, the lapses, pauses, stops, starts, reformulations) of the informants (p. 209).

However, despite innovative practices like these to provide more authentic, spontaneous, or realistic voice data, the epistemological and methodological limits of ‘voice’ still prevails (Mazzei & Jackson, 2012). Mazzei and Jackson (2012) conceded that: “Letting readers ‘hear’ participant voices and representing their ‘exact words’ as if they are transparent is a move

that fails to consider how as researchers we are *always already* shaping those ‘exact words’ through the unequal power relationships present and by our own exploitative research agendas and timelines” (p. 746, their emphasis). Nespor and Barylske (1991) articulated the following concerns:

The transcripts that we, as researchers, make of those narratives are a different kind of mobilization, one that we can use in at least two very different ways. One way would be to take the selves and beliefs produced in the accounts as mobile traces of real entities – ‘pedagogical content knowledge’ or ‘personal practical knowledge’ or whatever – that we can collect in our research institutes (thus binding into a network, with ourselves at the center (*sic*), teachers distant from us in time and space). This would allow us to say authoritative things about teaching and teachers. The alternative... is to focus on how the accounts were produced, to refuse to reduce them to entities that allow the combination of speakers, and thus to make problematic the political act of knowledge-making (Nespor & Barylske, 1991, p. 809).

Maintaining that there is power in the representation practices of researchers, Nespor and Barylske (1991) pointed out that: “representation [is] not just a matter of epistemology or method, but a matter of power. To represent others is to reduce them and to constitute relations of power that favour (*sic*) the representers over the represented” (p. 806). Transparency in decision-making processes related to participant ‘voice’ would include an examination of “whose interests are served by particular reinscriptions and whose are further marginalized” (Mazzei & Jackson, 2012, p. 746). Furthermore, it should be borne in mind that “no single method of transcription is adequate to every analytic task and that any transcription is necessarily incomplete” (Sandelowski, 1991, p. 163). Anna Sfard (2001b) also cautioned against any claims of exclusivity or completeness:

[T]he only viable possibility for the researcher is to provide a *convincing interpretation* of the observed phenomena, as opposed to their definite explanation. The interpretation should try to be as compelling, cogent, and trustworthy as possible, but it will nevertheless always remain subject to questioning and modifications ... tentativeness is the endemic property of interpretation, and coexistence of alternative (or complementary) interpretations is part and parcel of the interpretive framework (p. 32).

A possible way out of this dilemma is to ask the interviewees to verify the transcriptions as true reflections of what actually transpired during the interviews. As mentioned before, in this study, the interview transcript was returned to each participant after an interview for verification that it is indeed a verbatim reflection of what transpired during the actual interview. Adjustments were made to it where necessary, but taking care not to change the

original story as recorded in the audio files. Spillane (2000), for example, shared his field notes with his interviewee, “using the occasions as another opportunity to get her to talk about her teaching and for data triangulation” (p. 309). Although data triangulation is not a necessity in this study, given the assumptions of the constructivist research paradigm; the integration of data analysis with data collection in this manner has had another potential benefit: the two processes could inform each other. In other words, as working hypotheses emerge from the analyses one can always go back and test them by asking new questions (Spillane, 2000).

Finally, Stanley and Billing’s (2004) advice that “if the story is told within the context of an interview, then it is important to acknowledge this social context by transcribing and analysing what the interviewer says along with what the interviewee says” (p. 164) needs to be taken seriously. This is important, because what the interviewer says is as much part of the social context as everything else that might have an influence on the storied response of the interviewer.

4.5 Data analysis

Despite its growing prominence in the research literature, the methods of narrative analysis are either still developing, or not well understood (Ollerenshaw & Creswell, 2002). Although several narrative studies show common characteristics, no consensus has been reached in the literature on a procedure for narrative analysis. One of these common characteristics of most narrative inquiries, for example, is the focus on personal experiences through the stories told by the participants. This focus on experience draws strongly on the philosophies of John Dewey, who held that an individual’s experience is a lens for understanding the individual as a person (Ollerenshaw & Creswell, 2002). In narrative inquiry the story is viewed as a portal to the experiences of an individual. Moreover, it offers glimpses into the meaning the individual makes of such experiences. Therefore, narrative inquiry is about much more than simply collecting and uncritically celebrating narratives without systematic analysis (Atkinson & Delamont, 2006). Narrative inquiry needs to go beyond the collection of stories; it needs to undertake analyses of the inherent epiphanies (turning points) and metaphors inherent in the stories (Savin-Baden & Van Niekerk, 2007, p. 464).

According to Miles and Huberman (Miles & Huberman, 1984b; 1994; Huberman & Miles, 1994) qualitative data analysis typically consists of three concurrent flows of activity: data reduction; data display; and conclusion-drawing and verification. Data reduction, they argued, is an on-going process that occurs continuously throughout the life-span of any qualitative study; it can profitably occur before, during, or after data collection. Before data collection, for example, “the potential universe of data is reduced in an anticipatory way as the researcher chooses a conceptual framework, research questions, cases, and instruments” (Huberman & Miles, 1994, p. 429). After data collection, for example, Emden (1998) suggested that full length stories be reduced to “core stories” (p. 35) by deleting all words that detract from the key idea of each sentence or group of sentences in order to aid the narrative analysis process. Data reduction is that part of the analysis “that sharpens, sorts, focuses, discards, and organizes data in such a way that final conclusions can be drawn and verified” (Miles & Huberman, 1984b, p. 24). Data display, on the other hand, is defined as “an organized assembly of information that permits conclusion-drawing and action-taking” (Miles & Huberman, 1984b, p. 24). Not only does it assist with better understanding of the data, it also facilitates further analysis and action-taking based on that understanding. As Huberman and Miles (1994) explained: “The researcher typically needs to see a reduced set of data as a basis for thinking about its meanings” (p. 429). Finally, conclusion-drawing and verification “involves drawing meaning from displayed, reduced data – noting regularities, patterns, explanations, causal flows, propositions” (Miles & Huberman, 1984b, p. 24). Here Polkinghorne (2005) reminds us that, “the evidence itself is not the marks on the paper but the meanings represented in these texts... the evidence is the ideas and thoughts that have been expressed by the participants” (p. 138). However, as Mello (2002) cautioned narrative analysis can be challenging: “Organizing, analysing, and discovering theoretical meanings from storied data can be challenging due to the nature of narrative because, like qualitative inquiry itself, it is iterative and evolutionary” (p. 233).

In the analysis of the interview transcripts, however, I took an interpretive approach, which “allows researchers to treat social action and human activity as *text*... [and human action] as a collection of symbols expressing layers of meaning” (Berg, 2001, p. 239, italics in original). This approach allows for the transcription of interviews and observational data into written texts which can then be analyzed (Berg, 2001). The transcription process,

however, is part of the interpretation of the data. This is where important representation decisions need to be made with regard to form, ordering, style of presentation, what to include and what to exclude (Larsson & Sjöblom, 2010). Hence, it is not uncommon in qualitative research for the analysis process to begin while data is still being collected (Glaser & Strauss, 1967; Strauss & Corbin, 1994; Folkestad, 2008); especially in qualitative content analysis where the early involvement in data analysis facilitates the back and forth movement between concept development and data collection (Zhang & Wildemuth, 2009). For example, as I was transcribing the interviews, new questions would come up which were then incorporated into subsequent interviews as ‘questions of clarification’; so that, in the end, data gathering and analysis fused into “a single harmonious and organic process” (Etherington & Bridges, 2011, p. 13).

In acknowledgement of the influence of my own undeniable theoretical orientation as a researcher on the interpretation of the data (Berg, 2001), however, I need to remind the reader that I am aligning myself with the constructivist paradigm (Guba, 1990; Guba & Lincoln, 1994; Ponterotto, 2005) which is firmly rooted in a relativist ontology; transactional and subjectivist epistemology; and, hermeneutical and dialectical methodology. These are the theoretical lenses through which I am viewing the data.

Like many other novice narrative researchers (e.g., Schiellerup, 2008; Maple & Edwards, 2010), I was initially overwhelmed by the sheer amount of data which, apparently, is not an uncommon phenomenon in narrative inquiry. Polkinghorne (2005), for example, pointed out that: “The final text produced for a particular qualitative study may be quite massive... hundreds of pages of language data” (p. 144). Hence, qualitative researchers, according to Patton (2002), are faced with a particular problem: “The challenge of qualitative analysis lies in making sense of massive amounts of data... reducing the volume of raw information, sifting trivia from significance, identifying significant patterns and constructing a framework for communicating the essence of what the data reveal” (p. 276). Herein lies the interpretation problem for the narrative researcher, as Larsson and Sjöblom (2010) pointed out, “using a narrative method and obtaining a large amount of thick descriptions of storied data may also be a great challenge to the researcher because it may lead to difficulties as to how to make sense of it all” (p. 278). On top of that, “[n]arrative analysis... is among the least understood and theorized means of data analysis in the field”

(Pavlenko, 2008, p. 311). I was faced with an interpretive dilemma. About midway through the third round of interviews, for example, I noticed that the transcripts already exceeded 170 pages (in 1½ line spacing) of what appeared to be very rich narrative data. Although far from a thousand pages of transcript, I was nevertheless beckoned by what Kvale (1996) called "*The 1,000-page question*", that is, "How shall I find a method to analyze the 1,000 pages of interview transcripts I have collected?" (p. 275). My concern at the time was with 'massaging' this overwhelming amount of data into a PhD thesis that would comply with university requirements and offer new insights into the narratives that shape teacher professional identities; while at the same time, honouring the experiences of the participating teachers that have so generously and unselfishly shared their personal stories with me. Other narrative researchers report similar dilemmas. Kenyon and Randall (1999), for example, cited studies in narrative gerontology where the researchers also struggled not to lose the voices of research participants in what they refer to as the "data versus stories" (p. 2) tension. The researcher's dilemma is perhaps best captured by Patton (2002) who wrote: "The challenge is that there are not and cannot be formulas for determining significance. No ways exist of perfectly replicating the researcher's analytical thought processes. No straightforward tests can be applied for reliability and validity" (p. 276). I resorted to reading and re-reading the transcripts, over and over again, checking for possible meanings. This process of reading and re-reading continued until, much like other narrative researchers (e.g., Cole, 1994; Schultz & Ravitch, 2013), I intuitively noticed patterns (themes) emerging across the interviews of the different participants. It turned out that, when the data overload is severe, pattern finding can be a very productive analysis strategy (Miles & Huberman, 1984a).

The human mind finds patterns so quickly and easily that it needs no how-to advice. Patterns just 'happen,' almost too quickly. The important thing, rather, is to be able to (a) see real added evidence of the same pattern; [and] (b) remain open to disconfirming evidence when it appears (Miles & Huberman, 1984a, p. 216).

Miles and Huberman (1984a) refer to this process of patterning as "clustering," describing it as "the process of using and/or forming categories, and the iterative sorting of things – events, actors, processes, settings, sites – into those categories" (p. 219); asserting that it is a useful tactic to use "[when] we are trying to understand a phenomenon better by *grouping*, than *conceptualizing* objects that have similar

patterns or characteristics” (p. 219, italics in original). Lasky (2005) described a similar process: capturing common themes across individuals and data sets, as well as comments unique to individual participants.

I then categorised the narratives according to these themes, but still they were too many, and so I started a process of reducing the number of categories by lumping those that, at least thematically, seemed to belong together into the same category. I later discovered that this process of analysis which I followed, purely intuitively at the time, is known as the “general inductive approach” (Thomas, 2003). It is mostly used in qualitative data analysis to identify patterns in the data by means of thematic codes (Bowen, 2005). According to Thomas (2003, p. 1), the purposes for using an inductive approach are: firstly, to condense extensive and varied raw text data into a brief summary format; secondly, to establish clear links between the research objectives and the summary findings derived from the raw data; and thirdly, to develop a model or theory about the underlying structure of experiences or processes which are evident in the raw data. According to Thomas (2003, pp. 3-4) the underlying assumptions of the general inductive approach are:

1. Data analysis is determined by both the research objectives (deductive) and multiple readings and interpretations of the raw data (inductive).
2. The primary mode of analysis is the development of categories from the raw data into a model or framework that captures key themes and processes judged to be important by the researcher.
3. The research findings result from multiple interpretations made from the raw data by the researchers who code the data. Inevitably, the findings are shaped by the assumptions and experiences of the researchers conducting the research and carrying out the data analyses. In order for the findings to be useable, the researcher (data analyst) must make decisions about what is more important and less important in the data.
4. Different researchers are likely to produce findings which are not identical and which have non-overlapping components.
5. The trustworthiness of findings can be assessed by a range of techniques, for example, consistency checks – having another coder take the category descriptions and find the text which belongs in those categories; or, stakeholder checks – giving

people with specific interest in the research opportunities to comment on the categories or interpretations made; and so forth.

Unlike with deductive data analysis, where the key themes are often obscured, reframed, or rendered invisible by preconceived notions of data collection and data analysis procedures, “[t]he primary purpose of the inductive approach is to allow research findings to emerge from the frequent, dominant or significant themes inherent in raw data, without the restraints imposed by structured methodologies” (Thomas, 2003, p. 2). Miles and Huberman (1984a) described this inductive approach as “bottom up – from the field to the concepts” (p. 229); explaining that there are four steps in the process: (a) establishing the discrete findings; (b) relating the findings; (c) naming the pattern; and (d) identifying a corresponding construct. They added, however, that a “top down” or deductive approach, that is, “from a conceptual framework to the collection of information testing its validity” (p. 229), is also perfectly legitimate and often desirable as “[c]oncepts without corresponding facts are hollow, just as facts without concepts are, literally, meaningless” (Miles & Huberman, 1984a, pp. 229-230). In reality, however, many researchers use a blend of inductive and deductive approaches; for example, beginning the research with no specific constructs or theories in mind, only to realize during the data analysis that some definitions or frameworks can actually be drawn from the existing literature (Patton, 2002; Graebner, Martin, & Roundy, 2012). In this study, however, I began with the constructs of *identity* (Lave & Wenger, 1991; Wenger, 1998; Sfard & Prusak, 2005), *communities of practice* (Wenger, 1998), and *legitimate peripheral participation* (Lave & Wenger, 1991), even before gathering the data; with the intention of using these as theoretical lenses to view the narratives of the seven participating teachers. Therefore, I took note of Graebner, *et al.*’s (2012) advice that researchers should avoid using “inductive” as a blanket label in such “blended” analytical approaches and “to be more precise regarding *how* and *when* constructs and relationships emerge during the research process” (p. 281, my emphasis). In practice, however, the extent to which a qualitative approach is either inductive or deductive varies along a continuum, because “human reasoning is sufficiently complex and flexible [so] that it is possible to research predetermined questions and test hypotheses about certain aspects... while being quite open and naturalistic in pursuing other aspects” (Patton, 2002, p. 274).

I realized, however, that relying on intuition as a base for the selection of themes in the data would have implications for the credibility of the study. As Miles and Huberman (1984a) explained: “Patterns need to be subjected to skepticism (*sic*) – one’s own or that of others – and to conceptual and empirical test... before they represent useful knowledge” (p. 216). The first step towards credibility, it seemed, was to establish explicit “criteria of selection”; which, according to Berg (2001), “must be sufficiently exhaustive to account for each variation of message content and must be rigidly and consistently applied so that other researchers or readers, looking at the same messages, would obtain the same or comparable results” (pp. 240-241). Such verification could then double-up as a credibility test for the analysis technique. The selection criteria, however, depended on establishing a suitable unit of analysis. Noting that there are no absolute rules for qualitative data analysis, Patton (2002) advised narrative researchers to: “Do your best with your full intellect to fairly represent the data and communicate what the data reveal, given the purpose of the study” (p. 276). The quandary at this point, however, was to define an appropriate unit of analysis.

4.5.1 Unit of Analysis

One of the quandaries of qualitative analysis, as Chenail (2012) rightfully pointed out, is the selection of “a piece of data that constitutes a meaningful unit to analyse” (p. 266). In narrative analysis, this quandary relates to the researcher’s approach: either as a *story analyst*; or as a *storyteller*. As Smith and Sparks (2006) explained: “*Story analysts* seemingly hold the premise that stories are social facts and thus data for systematic, rigorous, principled analysis... they perform an analysis *of* narratives” (p. 185, italics in original). Moreover, in this approach, stories are treated as “data” and the aim of the analysis is to arrive at “themes that hold across stories or delineate types of stories” (p. 185). The *story analyst* would “explore certain features of the story (e.g., content or structure), and carefully engage in abstract theorization about the story” (p. 185), from whatever disciplinary perspective, and “engages in thinking *about* stories” (p. 185, italics in original). For *storytellers*, in contrast, the end result of narrative analysis is a story itself; that is, their interest is in the dialogical relationship between the researcher and the research participants who use their own stories to interpret their worlds (p. 185). Hence *storytellers* engage with the story “from within” (p. 185) rather than from outside. According to Smith and Sparks (2006), “the goal and responsibility [of storytellers] is to evoke and bear witness

to a situation the researcher has been in or studied, inviting the reader into a relationship, enticing people to think and feel *with* the story being told as opposed to thinking *about* it” (p. 185, italics in original). My own perspective, however, is that these two narrative research approaches are not necessarily mutually exclusive; hence I will approach this study both as a *story analyst* and as a *storyteller*, alternating between these two roles as the analysis dictates. For example, I will take a *story analyst* approach when focusing, horizontally, on identifying themes in the narratives of the seven participants in the sample; and I will take a *storytelling* approach when focussing, vertically, on how these narratives shape the professional identities of each of the seven participants.

This study imposes two selection criteria on narrative as the unit of analysis: firstly, the narrative must be in story form; and secondly, the narrative must somehow shape the professional identity of the participating mathematics teacher. It is argued here that the unit of analysis needs to be a story: firstly, because this is in line with Sfard and Prusak’s (2005a; 2005b) operational definition of identity as “stories about persons” (2005a, p. 14); secondly, because from a narrative analysis perspective, the story as a whole, rather than segments of text, should be the focus (Greenhalgh, Russel, & Swinglehurst, 2005); and thirdly, because it is in line with the argument made so far that all stories are narratives, but not all narratives are stories. This approach is in line with Kramp’s (2004) argument for story to be the basic unit of analysis in narrative inquiry: “Through narrative inquiry you [the researcher] gain access to the personal experiences of the storyteller who frames, articulates and reveals life as experienced in a narrative structure we call story” (p. 105). Furthermore, it also argued that the unit of analysis must be identity-shaping; as the title of this thesis suggests, the interest is in *narratives that shape the professional identities of mathematics teachers*. Therefore it follows that, in order to count as a unit of analysis, a story must comply with Sfard and Prusak’s (2005a; 2005b) operational definition of identity; that is, the story must be *reifiable, significant, and endorsable*.

According to Larsson and Sjöblom (2010), narratives can be defined as “large sections of talk that are produced in interviews and include the interaction between the teller and the interviewer... [that is] often characterized by detailed transcripts of interviews” (p. 274) as is often the case in psychology and sociology. However, without pre-specified structure, such a large section of transcribed interview talk is too unwieldy to serve as an appropriate

unit of analysis for this study. Therefore, as argued above, story is suggested as an appropriate unit of analysis. The question however, is: How is the notion of story defined for the purposes of this study? The reader is referred back to Chapter 3, Section 2.4 where it has been argued that “story is a sub-set of narrative” (Feldman, Sköldberg, Brown, & Horner, 2004, p. 149); as well as Chapter 3, Section 2.1.2 where it has been argued, from a structuralist point of view, that even though lacking a proper definition, a narrative still has to have certain essential characteristics; some kind of structure, through which it can be identified (Riessman, 2005; Riessman & Speedy, 2007). Therefore, whatever applies to narratives in the following comments necessarily also applies to stories. For example, a narrative must include a meaningful and coherent course of action with a beginning, middle, and end (Sfard & Prusak, 2005a); it must show sequence and consequence (Riessman, 2005; Riessman & Speedy, 2007); in other words, it must address the “who, what, where, and when” (Freidus, 2002, p. 161); and finally, there is “always the making of a moral point in the telling of the story” (Larsson & Sjöblom, 2010, p. 274). However, while focussing on stories (or narratives) that have these essential ingredients, I have consciously attempted not to discount the so-called “small stories” (Bamberg, 2006a; Georgakopoulou, 2006; 2008), which often defy such structural features, while searching for the deeper meanings of the identified narratives. Such small stories, which may include, for example, descriptions, argumentations, augmentations, and theorizing (McCormak, 2000) can be useful in the further illumination of the meanings of the identity shaping narratives.

By taking story as the basic unit of analysis, it would seem that single words or single lines of text in the transcript are excluded as potential units of analysis, which is in line with the first selection criterion for a unit of analysis in this study as imposed above. Moreover, it addresses the additional concern raised by Chenail (2012) that using lines of text as units of analysis could easily mislead researchers to over- and under-size the units that they have to analyse. The alternative, Chenail argued, is that researchers should rather “focus on portions of the data that have potential as qualitatively meaningful undivided units to analyse (*sic*)” (p. 266). However, as Berg (2001) pointed out, about a decade before that: “The categories [units of analysis] that emerge in the course of developing these [selection] criteria should reflect all relevant aspects of the messages and retain, as much as possible, the exact wording used in the statements” (p. 241). I therefore maintain that, as a basic unit

of analysis, stories have the potential to do just that – to constitute such meaningful, undivided units of analysis. However, this does not mean that back and forth shifts between words, lines, and meaningful, undivided units of analysis such as stories are not possible; or even desirable, as long as these shifts in analytical perspective are documented in the research report for the sake of transparency (Chenail, 2012). My argument, therefore, is not that single words or lines of text be the units of analysis *per se*; rather, that meaning can be supplemented by drawing on words and lines where necessary, without eroding the primacy of the story as the basic unit of analysis.

4.5.2 Lieblich, Tuval-Mashiach and Zilber's model

Lieblich, Tuval-Mashiach and Zilber (1998) produced a two-dimensional classification model in terms of which narrative analytical approaches can be described as *holistic-content*, *holistic-form*, *categorical-content*, or *categorical-form*. The model consists of two main, independent dimensions, namely, the holistic-categorical dimension and the content-form dimension; each of which can, in turn, be split into two sub-dimensions or perspectives. The *holistic-categorical* dimension refers to a unit of analysis, which can either be a complete text or narrative as a whole, or simply, an utterance or section abstracted from the whole. From a *holistic* perspective, the life story of a person is taken as a whole, and sections of it are interpreted in the context of other parts of the narrative. This perspective is preferred when the whole person, that is, his or her development into being the current person, is the object of interest. In contrast, in the *categorical* perspective, the original whole story is dissected, and sections or single words belonging to a defined category are collected from a single story or from several stories of different narrators. This perspective is preferred when a problem or phenomenon shared by a group of people is the object of interest. The *content-form* dimension refers to the traditional dichotomy made in the literary reading of texts between the content of a story and its form. A *content-oriented* perspective would focus on explicating the *what*, *why*, and *who* of an event from the viewpoint of the narrator. Another type of content-oriented perspective might focus on implicit content by probing for the meaning of a story, or a section of it; the traits or motives of the narrator; or the symbolism behind certain images used by the narrator. In contrast, *form-oriented* perspectives often ignore the content of a story, preferring to focus on the structure of the plot; the sequencing of events in relation to a time axis; complexity and coherence; the

feelings evoked by the story; the style of narrative; the choice of metaphors or words; and so forth. Content is often more obvious and easier to grasp than the form of a life story. As Lieblich *et al.* (1998) cautioned, “the form of a life story... seems to manifest deeper layers of the narrator’s identity. In other words, as the formal aspects of a story are harder to influence or manipulate than its contents, form analysis may be advantageous for some purposes” (p. 13). As Figure 4 below illustrates, the two main dimensions of *holistic-categorical* and *content-form*, when split into their respective sub-dimensions, may be intersected to form a matrix of four cells; visually representing the four modes of reading and analysing narrative.

	CONTENT	FORM
HOLISTIC	HOLISTIC-CONTENT	HOLISTIC-FORM
CATEGORICAL	CATEGORICAL-CONTENT	CATEGORICAL-FORM

Figure 4: A model for the classification and organization of types of narrative analysis (Adapted from Lieblich *et al.*, 1998, p.13)

Each one of the shaded ‘cells’ of the matrix shown in Figure 4 represents a particular mode of narrative analysis; which can be used singularly or in any combination (Hiles & Čermák, 2007). My research question leans towards a combination of the holistic-content (individual teachers’ professional identities) mode and categorical-content (narratives that shape professional identities) mode of analysis; hence these two modes will form the basis of my narrative analysis.

4.5.2.1 Holistic-content

The holistic-content mode of analysis takes into account the complete life story of an individual and focuses on its content. *Fabula* is emphasized, but not at the expense of *sjuzet* (Hiles & Čermák, 2007). The meaning of separate sections of the story is analysed in terms of content that emerges from the rest of the narrative, or in the context of the story as a whole. By exploring and establishing links and associations among themes within the complete story this mode of analysis aims to identify the core narrative, that is, “a theme that is vivid, permeating the entire text, and is meaningful” (Hiles & Čermák, 2008, p. 157).

This mode of analysis is useful in exploring the teachers' stories for personalized notions of professional identities.

4.5.2.2 Holistic-form

The holistic-form mode of analysis takes into account the complete life story and focuses on its form rather than its content. The focus is on the plot rather than on the fine detail of the *sjuzet* (Hiles & Čermák, 2007) searching for classic typologies, such as romance; comedy; tragedy; or satire. Through this process of 'plot analysis' it focuses on the plot or structure of the complete life story, searching for a climax or turning points that may illuminate its entire development. Plot analysis allows for the identification of three basic life-course-patterns: progression; regression; and steady. (Hiles & Čermák, 2008, p. 157). Examples of this mode of analysis include studies in psychotherapy.

4.5.2.3 Categorical-content

The categorical-content mode of analysis focuses on the content of narratives as it is manifested in separate parts of the story, irrespective of the context of the complete story. Topic categories are defined; separate utterances of pieces of text are extracted, classified, and hoarded into these pre-determined categories. As Hiles and Čermák (2008) explained, "This approach to narrative analysis involves breaking the text down into relatively self-contained areas of content, and submitting each to thematic analysis" (p. 158). The narratives that teachers share about their professional identities would be prime examples of such 'self-contained areas of content' for analysis via this mode. Lieblich *et al.* (1998, pp. 112-114) split the whole process into four stages:

1. formulation of a research question which enables the selection of a subtext that becomes the focus of analysis;
2. definition of the subcategories/themes running through the text, these might either emerge from the text in a grounded-theory manner, or may be predefined by theory;
3. the units of analysis, i.e., utterances, phrases, episodes can then be assigned to these categories; and
4. conclusions can then be drawn from the results.

As Hiles and Čermák (2008) explained, "the process involves concentrating on regularities in the text, and identifying meaning-bearing utterances pertinent to the original research question. Units of analysis are then assigned to these subcategories" (p. 158). Although

coding and quantitative treatment of the narrative is not uncommon in this approach (Lieblich, Tuval-Mashiach, & Zilber, 1998, p. 13) no quantitative measures were used in this study, because the research question does not require it.

A potential weakness of this categorical-content mode of analysis, as Riessman (1997) cautioned, is that there is always the risk of losing some meanings:

Crucial meanings are lost if the form of telling is ignored, and the text is fragmented and decontextualized into symptom counts and lists. There is reciprocity between form and meaning: The way individuals craft their tales, including the narrative genres they select, carry crucial interpretive understandings. Methods that allow for the examination of narrative form – and diverse ways of telling – counter tendencies (all too frequent in social science research) to objectify the subject (p. 157).

This weakness is especially acute when the analysis is based on a single interview with a respondent. In this study there will be follow-up interviews with the same respondents to tease out more details and in greater depth, so the loss of meaning through lack of attention to form should be minimized. In addition, as mentioned before, my research question leans towards a combination of the holistic-content mode and categorical-content mode of analysis; with the former taking care of any potential loss of form and meaning in the latter.

4.5.2.4 Categorical-form

The categorical-form mode of analysis focuses on formal aspects of separate sections or categories of a life story; including “discrete stylistic or linguistic characteristics of defined units of the narrative” (Lieblich, Tuval-Mashiach, & Zilber, p. 13), for example, the metaphors used; frequency of passive versus active utterances; and the like. This is a process which, according to Hiles and Čermák (2008), “begins by choosing a category or subtext for analysis, and then carefully exploring the linguistic features and plot devices that offer emphasis and style in re-telling the story” (p. 159). In other words, a careful analysis of the *sjuzet* is required (Hiles & Čermák, 2007). This approach lends itself towards quantitative treatment as the stylistic or linguistic characteristics may be coded and counted. Examples include studies of verbal behaviours procured from sources such as speeches, diplomatic communication, interviews, and magazine editorials.

As Lieblich et al. (1998) pointed out, each one of these four modes of analysis is more amenable to certain types of research questions, requires different kinds of narrative texts, and appropriateness depends on sample sizes.

4.5.3 Categories of analysis

In analysing the data, I drew on two categories of Lieblich, Tuval-Mashiach, and Zilber's (1998) model as discussed in the previous section, namely, the holistic-content and the categorical-content categories. From a *holistic* perspective, the life story of a person is taken as a whole, and sections of it are interpreted in the context of other parts of the narrative. This perspective is preferred when the whole person, that is, their development into being the current person that they are, is the object of interest. In contrast, from a *categorical* perspective, the original whole story is dissected, and sections or single words belonging to a defined category are collected from a single story or from several stories of different narrators. This perspective is preferred when a problem or phenomenon shared by a group of people is the object of interest. A *content-oriented* perspective focuses on explicating the what, why, and who of an event from the viewpoint of the teller. It might also focus on implicit content by probing for the meaning of a story, or a section of it; the traits or motives of the narrator; or, the symbolism behind certain images used by the narrator. In contrast, *form-oriented* perspectives often ignore the content of a story, preferring to focus on the structure of the plot; the sequencing of events in relation to a time axis; complexity and coherence; the feelings evoked by the story; the style of narrative; or the choice of metaphors or words. Content is often more obvious and easier to grasp than the form of a life story. Moreover, this study of the narratives that shape the professional identities of mathematics teachers shows a natural inclination towards a content-oriented perspective. According to Elo and Kyngäs (2008):

Content analysis allows the researcher to test theoretical issues to enhance understanding of the data. Through content analysis, it is possible to distil words into fewer content-related categories... The aim is to attain a condensed and broad description of the phenomenon, and the outcome of the analysis is concepts or categories describing the phenomenon (p. 108).

The assumption is that words and phrases, when classified into the same categories, mean the same thing (Cavanagh, 1997, cited in Elo & Kyngäs, 2008). As mentioned before, the

process of analysis which I intuitively followed closely resembled the procedures of the “general inductive approach” which Thomas (2003, p. 5) summarized as follows:

1. Preparation of the data files (“data cleaning”) – formatting of the raw data into a common file format with regards to font size; margins; line spacing; etc.
2. Close reading of the text – familiarizing myself with the content and gaining an understanding of the themes and details in the text.
3. Creation of categories – identifying and defining categories or themes.
4. Dealing with overlapping coding and uncoded text – for example, when one single segment of text is coded into more than one category; or, when a considerable amount of the text may not be assigned to any category because its relevance to the research objectives are questionable.
5. Continuing revision and refinement of the category system – searching within each category for subtopics, contradictory points of view, and new insights; combining or linking categories with similar meanings under a super ordinate category.

In the analysis I tried to steer clear of ending up with more than eight categories, heeding Thomas’s (2003) caution that: “Inductive coding which finishes up with more than about eight major themes can be seen as incomplete. In this case some of the categories may need combining or the coder has not made the hard decisions about which themes or categories are most important” (p. 5).

The interpretive analysis was done in two phases: Firstly, horizontal analysis (Kelchtermans, 1993; Hunter, 2010), or “cross-case displays” (Miles & Huberman, 1994), which draws on aspects of “constant comparative analysis” (Glaser & Strauss, 1967), for example, to look for common patterns; but also remarkable differences (Kelchtermans, 1993) or recurring themes across the narratives of the different participants. Secondly, vertical analysis (Kelchtermans, 1993; Hunter, 2010), or *within-case* analysis (Miles & Huberman, 1994) in which the narratives of individual participants are analysed separately, concentrating on internal coherence and consistency (Kelchtermans, 1993). During vertical analysis, “a chain of interpretive transformations of the data during the collection process [results in] a synthesis text [which is] fed back to the respondent for communicative validation during the final interview” (Kelchtermans, 1993, p. 445). This clearly suggests that vertical analysis (Kelchtermans, 1993; Hunter, 2010) derives its validity from ‘member

checking' (Guba, 1981; Creswell & Miller, 2000) which will be dealt with in more detail in section 4.6.3 of this chapter. The horizontal analysis and vertical analysis, as explained here, correspond with the respective categorical-content and the holistic content categories of the Lieblich *et al.*'s (1998) model. However, in terms of the participants' professional identities, "[t]he distinction between the categories is conceptual and analytical in character, because they reveal different aspects of a phenomenon that in reality always manifests itself as a meaningful whole. This explains why in one and the same event or experience several different categories of professional interests can be at stake simultaneously" (Kelchtermans & Ballet, 2002, p. 109). In other words, the distinctions between categories are artificially imposed for analytical purposes only.

4.5.3.1 Horizontal analysis

The interpretive framework used in Chapter 5 is based on a *horizontal analysis* (Kelchtermans, 1993; Hunter, 2010) or "*cross-case*" (Miles & Huberman, 1994) *analysis* of the narratives, borrowing a blend of techniques taken from, amongst others, the "general inductive approach" (Thomas, 2003) and "constant comparative analysis" (Glaser & Strauss, 1967) to explore the identity-shaping narratives of the seven participants for common patterns or recurring themes, but also for remarkable differences (Kelchtermans, 1993). From a *categorical* perspective, an original whole story is dissected; topic categories are defined; and separate utterances in the transcript are extracted, classified, and hoarded into these pre-determined topic categories (Lieblich, Tuval-Mashiach, & Zilber, 1998). Such topic categories can be collected from a single story, or, from several stories of different narrators. In this chapter, however, the focus will be on topic categories collected from the narratives of the seven different participants rather than on the life story of a single participant. This approach is particularly useful when a phenomenon shared by a group of people is the object of interest. From a *content* perspective, the focus is on the content of the narratives as manifested in separate parts of the story; irrespective of the context of the complete story (Lieblich, Tuval-Mashiach, & Zilber, 1998).

Freidus (2002) warned against any prior commitments to categories which the researcher might have been sensitized to via the literature study during data collection, but this concern has been alleviated to a certain degree by keeping the questions asked during the interviews open-ended. For example, following the NIG, I would ask for stories signalling

‘turning points’ in the participants’ professional identities, rather than suggesting what these might be by probing for specific categories of stories. However, sometimes the specific context of an interview dictated otherwise; for example, when questions of clarification are necessary to probe deeper into the meaning of previous comments about the role of family, a previous teacher, or an exceptional learner might have played in shaping their professional identities. In cases where, through their responses (like, “I’ll have to think about it”), it seems obvious that participants either have no stories to share in a particular content category, or are not willing to share such stories, no further questioning would be pursued. This is based on the argument that any stories that might exist in such a content category are not considered “significant” enough or “endorsable” (Sfard & Prusak, 2005a; 2005b) by the participant, and therefore not worth telling.

The distinction between form (*sjuzet*) and content (*fabula*) is crucial in understanding the role that narrative plays in the construction of identity (Hiles, 2007; Hiles & Čermák, 2008; Hiles, Čermák, & Chrz, 2009; Hiles, Čermák, & Chrz, 2010). In the following quote, Riessman (1997) cautioned against the omnipresent risk of losing some meaning when form (*sjuzet*) is ignored in favour of content (*fabula*) in narrative analysis:

Crucial meanings are lost if the form of telling is ignored, and the text is fragmented and decontextualized into symptom counts and lists. There is reciprocity between form and meaning: The way individuals craft their tales, including the narrative genres they select, carry crucial interpretive understandings. Methods that allow for the examination of narrative form – and diverse ways of telling – counter tendencies (all too frequent in social science research) to objectify the subject (Riessman, 1997, p. 157).

Although this risk, as Riessman (1997) pointed out above, is more prevalent in quantitative treatment of narrative data; it clearly remains a treat, even in this study in which the narrative data is subjected to qualitative treatment – especially in this chapter – since the approach is based on the *categorical-content dimension* (Lieblich, Tuval-Mashiach, & Zilber, 1998) in which the focus is on content (*fabula*) rather than form (*sjuzet*). The risk of losing meaning is further amplified when the analysis is based on a single interview with each participant. In this study, however, three follow-up interviews were conducted with each participant in order to tease out more details in greater depth. Through the follow-up process the loss of meaning through lack of attention to form is somewhat minimized although, admittedly, not completely. Furthermore, some of the risk of losing meaning due

to an overemphasis on content (*fabula*) at the expense of form (*sjuzet*) in the *categorical-content* mode of analysis in this chapter is alleviated by the *holistic-content* mode of analysis in Chapter 6, where the *holistic* dimension includes attention to form.

4.5.3.2 Vertical analysis

The interpretive framework used in Chapter 6 is based on a *vertical analysis* (Kelchtermans, 1993; Hunter, 2010) or “*within-case*” (Miles & Huberman, 1994) *analysis* of the narratives of the participants; and, a *restorying* (Ollerenshaw & Creswell, 2002) of the narratives of each individual participant into a “*core narrative*” (Hiles & Čermák, 2008, p. 157). A *vertical analysis* demands that interpretive and meaningful connections be made between the selected identity-shaping stories and other supporting narrative data, for example, the “small stories” (Bamberg, 2006a; Georgakopoulou, 2006; 2008); arguments; descriptions; and, explanations that are scattered throughout the collected interviews. There are at least two reasons for cross-referencing narrative data in this way: Firstly, in order to appreciate *how* the selected stories shape individual professional identities, they cannot be considered in isolation. An interpretation of *how* the identity-shaping takes place necessitates a holistic view that connects the selected stories with other pieces of narrative data; combining all of these into a meaningful theme or a “*core narrative*” (Hiles & Čermák, 2008, p. 157). The supporting narrative data, for example, may provide the necessary context for a meaningful interpretation to be made. Secondly, professional identities are not static; they are continuously shaped and re-shaped as new connections between narrative data are being made, often retrospectively. This process is on-going; therefore, the participants may not even be conscious of some of the connections between the selected identity-shaping stories and other supporting narrative data during the interviews¹⁸. Therefore, it is incumbent on the researcher to make connections explicit, and to include any supporting narrative data which the participants themselves may have missed. Failure to do so would mean that important pieces of the identity-shaping narrative puzzle might be lost. However, it is important to note that, through the act of making such narrative connections on behalf of the participants, the researcher is neither suggesting nor claiming that he knows more about the narratives than the participants themselves. If anything, it merely suggests that

¹⁸ These connections may already have been made, subconsciously, by the participants.

the researcher has taken on the role of interpreter of the narrative understandings as expressed by the participants (Feldman, Sköldberg, Brown, & Horner, 2004).

4.6 Data presentation – ensuring credibility

According to Lincoln and Cannella (2004), too much energy is spent in qualitative methods “for the purpose of demonstrating conceptually, theoretically, and politically that qualitative research is no less rigorous than more conventional research” (p. 181). I am arguing that this is necessary, especially when the qualitative methods are relatively new in a discipline. With narrative inquiry being relatively new in Mathematics Education, it is therefore incumbent on narrative researchers in the field to demonstrate the credibility of their studies. In other words, there is a need to demonstrate the trustworthiness, verisimilitude, and plausibility of their research findings (Tracy, 2010). It seems that the dilemma of demonstrating credibility, which was summarised by Miles (1979) many years ago, is still the same:

The most serious and central difficulty in the use of qualitative data is that methods of analysis are not well formulated. For quantitative data, there are clear conventions the researcher can use. But the analyst faced with a bank of qualitative data has very few guidelines for protection against self-delusion, let alone the presentation of ‘unreliable’ or ‘invalid’ conclusions to scientific or policy-making audiences. How can we be sure that an ‘earthy,’ ‘undeniable,’ ‘serendipitous,’ finding is not, in fact, *wrong*? (p. 590).

These words sum up the dilemma I faced while surveying the literature for such “guidelines” and explain why I was initially drawn to Hiles and Čermák’s (2007; 2008) model of Narrative Oriented Inquiry (NOI); that is, before I discovered that the model would not do full justice to the data that I was collecting. The positive part in the Miles (1979) quote above is that there seems to be ‘guidelines’ available to the qualitative researcher, however “few” these might be.

According to Zhang and Wildemuth (2009) support for the validity and reliability of inferences in qualitative content analysis involves systematic and transparent procedures for data processing; in other words, “making the whole process open to critical inspection by others” (Kelchtermans & Ballet, 2002, p. 109). This does not mean, however, that the typologies developed for experimental and quantitative research should be adapted or applied, as “[a]ny account of validity in qualitative research, in order to be productive,

should begin with an understanding of how qualitative researchers actually think about validity” (Maxwell, 1992, p. 282). Thus:

Validity is not an inherent property of a particular method, but pertains to the data, accounts, or conclusions reached by using that method in a particular context for a particular purpose. To speak of the validity of a method is simply a shorthand way of referring to the validity of the data or accounts derived from that method (Maxwell, 1992, p. 284).

Moreover, Creswell and Miller (2000) suggested that the researcher’s choice of validity procedures is governed by two perspectives: firstly, the particular lens the researcher chooses to validate the study; and secondly, the researcher’s paradigm assumptions. They explained as follows: “qualitative researchers use a lens not based on scores, instruments, or research designs but a lens established using the views of people who conduct, participate in, or read and review a study” (Creswell & Miller, 2000, p. 125). Furthermore, they distinguished between three paradigm assumptions that influence researchers’ choice of validity procedures.

Narrative inquiry, as argued before¹⁹, is seated in the constructivist paradigm with its “pluralistic, interpretive, open-ended, and contextualized (e.g., sensitive to place and situation) perspectives toward reality” (Creswell & Miller, 2000, pp. 125-126). As indicated in the constructivist paradigm column in the Table 4 below, the validity procedures in narrative inquiry will include disconfirming evidence (from the lens of the researcher), and

Table 4: Validity procedures within qualitative lens and paradigm assumptions (Adapted from: Creswell & Miller, 2000, p.126)

Paradigm assumption/lens	Post-positivist or Systematic Paradigm	Constructivist Paradigm	Critical Paradigm
Lens of the researcher	Triangulation	Disconfirming evidence	Researcher reflexivity
Lens of the Study Participants	Member checking	Prolonged engagement in the field (<i>member checking</i>)	Collaboration
Lens of People External to the Study (Reviewers, Readers)	The audit trail	Thick, rich description	Peer debriefing

¹⁹ See Chapter 3, section 3.3.

thick, rich descriptions (from the lens of external reviewers and readers). In this study, however, 'prolonged engagement in the field' (see Table 4 on the previous page) will be supplemented with 'member checking' (indicated in italics) for reasons that will be discussed in section 4.6.3 of this chapter.

As Hunter (2010) pointed out: "Representing and interpreting another's voice is not a simple task and needs to be done with respect and humility" (p. 50).

The goal is to identify important themes or categories within a body of content, and to provide a rich description of the social reality created by those themes/categories as they are lived out in a particular setting.... [so that the results] can support the development of new theories and models, as well as validating existing theories and providing thick descriptions of particular settings or phenomena (Zhang & Wildemuth, 2009, p. 11).

Ultimately, the final product is a meta-story in which what was told had been edited and reshaped, and of which the reader will be making further individual interpretations, so that whatever is presented is open to several different constructions and interpretations (Larsson & Sjöblom, 2010). As Polkinghorne (2005) concluded: "The trustworthiness of the data depends on the integrity and honesty of the research. Their production process needs to be transparent to the reviewers and to those who would use the findings in their practices" (p. 144). Considering all, it seems that Lincoln and Cannella (2004) may be justified in arguing that, in comparison with conventional research methods: "qualitative research may be even more rigorous simply because it makes its premises, biases, predilections, and assumptions clear upfront, whereas the values that undergird a more conventional piece of research may not be stated at all" (p. 181). The following sub-sections will further elaborate on efforts that were made in this study to ensure credibility.

4.6.1 Disconfirming evidence

Disconfirming evidence is part and parcel of the process of "thematic analysis" (Riessman, 2005; 2006; Riley & Hawe, 2005) and also of the "categorical perspective" (Lieblich, Tuval-Mashiach, & Zilber, 1998). It is the process of establishing preliminary themes or categories and then searching through the data for confirming or disconfirming evidence of these themes (Creswell & Miller, 2000). The process of disconfirming evidence which, according to Creswell and Miller (2000), falls within the constructivist paradigm and relies on examining all of the multiple perspectives on a theme or category. In practice, however, the process of

disconfirming evidence can be difficult because of the proclivity of researchers to search for confirming rather than disconfirming evidence; also bearing in mind that “the disconfirming evidence should not outweigh the confirming evidence” (Creswell & Miller, 2000, p. 127). Thus, the natural tendency it seems is to forge a relationship between data analysis and presentation on the one hand, and the literature review on the other. However, as Cole (1994) pointed out, researchers may miss out on “an opportunity to discover the serendipitous or unexpected” (p. 3) by focussing only on what is already known through the literature. She distinguished between the *expected* – data that is confirmed in the literature review – and the *unexpected* – data that departs from the literature review – arguing that both should be included in the research report for the sake of robustness. A point with which Creswell and Miller (2000) would agree: “As evidence for the validity of a narrative account, however, this search for disconfirming evidence provides further support of the account’s credibility because reality, according to constructivists, is multiple and complex” (p. 127). In addition, serendipitous surprises are significant in terms of recognizing novel and as yet unpublished ideas (Love, 1994).

4.6.2 Prolonged engagement in the field

In narrative inquiry, the purpose of prolonged engagement in the field would be to build trust with the participants, “to establish rapport, so that participants are comfortable disclosing information” (Creswell & Miller, 2000, p. 128). Moreover, as Creswell and Miller (2000) pointed out, “constructivists recognize that the longer they stay in the field, the more the pluralistic perspectives will be heard from participants and the better the understanding of the context of participant views” (p. 128). While building trust with the participants did not seem to be a major obstacle in this study, judging by the quality of the narratives that were collected, often in the first interview; it should still be mentioned, however, that I engaged with most of the participants over almost two years while collecting these narratives (see Appendix D). We usually communicated either telephonically or via SMS or email to set-up or confirm appointments. Hence, the potential impact of prolonged engagement in the field in establishing trust cannot be discounted in this study. In addition, it should be mentioned that some of the most significant narratives were often elicited during follow-up questions of clarification during subsequent interviews.

4.6.3 Member checks

Another technique to establish credibility is through “member checks” (Guba, 1981; Creswell & Miller, 2000). This process entails returning the transcribed interviews to all participants for verification after all personal identifiers have been deleted. Usually this means that the participants’ responses must be presented in verbatim in order to paint a true picture of the participants’ voices (Gasman & Palmer, 2008). Thomas and Beauchamp (2011), for example, “attempted to overcome the difficulty of speaking for others” by “using the participants’ own words as much as possible” (p. 765). As Trahar (2009) cautioned, however, one should remain mindful that “narrative inquirers may be seduced into a belief that in order to re-present faithfully another’s story, the story needs to be simply reproduced – whether textually or visually. But this reproduction will only ever be as the researcher heard it – even if the text is given to the narrator for member-checking or even if the event is filmed” (p. 6). In order to get past this dilemma, the researcher may have to ascertain the tacit knowledge involved in the participant’s story. Tracy (2010), for example, cautioned that: “Hidden assumptions and meanings guide individuals’ actions whether or not participants explicitly say so. However, the significant role of tacit knowledge transcends the immediate surface of speech, texts, or discursive materials” (p. 843). Along similar lines, I am maintaining that member checks afford the researcher another opportunity to explore for tacit knowledge, that is, “issues that are assumed, implicit, have become part of the participants’ common sense” (p. 843).

The term member checks as it is used in this context is contested by Tracy (2010) who suggested that the term “member *reflections*” is more appropriate than the term “member *checks*”; arguing that “the labels of member *checks*, *validation*, and *verification* suggest a single true reality” (p. 844, italics in original) which, in turn, is irreconcilable with the ontology of relativism (multiple realities) as espoused by the constructivist paradigm (Guba & Lincoln, 1994). Her argument, based on meaningful coherence, is this:

[I]f the researcher espouses that knowledge is socially constructed, then it would not make sense for them to use member *checks*, in the realist sense, to ascertain the truth of findings. Instead, to be meaningfully coherent, a social constructionist framework would employ *member reflections* – a practice that does not aim toward accuracy of a single truth, but rather provides space for additional data, reflection, and complexity (Tracy, 2010, p. 848, italics in original).

In short, she argues that there is a better coherence between social constructionism and member reflections than between social constructionism and member checking. This argument is useful in the sense that it sharpens the focus on the intended meaning of the term member checking as it is used in this study. Therefore, I need to make it clear that the term *member checks*, as it is used in this study, does exactly the opposite of what Tracy (2010) suggests. Rather than suggesting a “single true reality” it acknowledges the existence of multiple realities; and therefore affords both the researcher and the participant the opportunity to gain insight into each other’s realities. Therefore, in my understanding, member checks are about more than simply checking the faithfulness or audio-to-text compliance of interview transcripts. It is, and here I agree with Tracy (2010), about “seeking input during the processes of analyzing data and producing the research report... sharing and dialoguing with participants about the study’s findings, and providing opportunities for questions, critique, feedback, affirmation, and even collaboration” (p. 844). Moreover, it is also about “testing the overall report or case study with source groups before casting it into final form. These checks are like those already described, but are carried out after completion of the study rather than during it” (Guba, 1981, p. 86). Thus, in the words of LeCompte (2000):

Just as researchers should solicit input from local participants to make sure that they have properly identified and classified items, they also must seek input once they have achieved a more or less coherent structural analysis. Key people in the research site can assess whether or not the relationships and patterns displayed are ones they also recognize as valid. If they are not, the research results will be neither intelligible nor useful (pp. 152-154).

The aim of all these practices is to demonstrate a correspondence between the researcher’s findings and the participants’ understandings (Tracy, 2010). Usually this requires the participant to comment on a short summary of the findings and to evaluate the accuracy of the causal network that encapsulates the higher-inference findings (Miles & Huberman, 1984a). According to Strauss and Corbin (1994) researchers have an obligation: “We owe it to our ‘subjects’ to tell them verbally or in print what we have learned, and to give clear indications of why we have interpreted them as we have” (p. 281). However, as Miles and Huberman (1984a) cautioned, both the *timing* and the *formatting* of the feedback must be taken into account. Timing of the feedback is important because feedback of the findings during the course of the study may change participants’ behaviours or perspectives.

According to Miles and Huberman (1984a, p. 242) there are good reasons for withholding the findings until after the final analysis: Firstly, the researcher knows more and better, that is, findings are less tentative, there are more supporting evidence, findings can be illustrated. Secondly, the researcher is able to get feedback at a higher level of inference, that is, feedback on main factors, causal relationships, and interpretive conclusions. And lastly, the feedback process, at this point, is less haphazard. Findings can be laid out clearly and systematically, and can be presented to the participant for careful scrutiny and comment. Formatting of the feedback is important, because if the participants do not understand it, or are unable to relate it to local experience and feedback, or do something with it, the whole exercise becomes futile. Therefore, Miles and Huberman (1984a) suggested formatting the write-ups into “site-comprehensible” language that the participants can relate to. Other narrative researchers (e.g., Aronson, 1994; Clandinin & Huber, 2010; Daugbjerg, 2010) also suggested that it might be necessary to collect further narratives during supplementary interviews conducted after the collected material had been analyzed in order to gain an even richer understanding. According to Aronson (1994), for example, it is necessary to obtain feedback from the participants in a thematic analysis as soon as patterns start to emerge; this feedback is then incorporated into the thematic analysis. Furthermore, with the emphasis in narrative inquiry on the co-construction of meaning, Etherington and Bridges (2011) suggest that the transcripts must be returned to the participants to highlight what they consider to be the most important stories.

Member checking has an additional benefit. It allows the researcher, in collaboration with the participant, to place the life stories of the participant within an appropriate cultural and historical context; which according to Malm (2001), turns a *life story* into a *life history*. She explained as follows: “In view of the data already collected and the nature of the final discussion [‘aimed at a deeper interpretation and understanding of the data at hand’], each teacher’s *life story* could now be expanded upon and understood within a broader and relevant context, i.e., as a professional *life history*” (Malm, 2001, p. 6, italics in original). Furthermore, she continued, “Life *histories* are important because if we look at life *stories* we miss the significance of context. Narratives reveal, as well as help, construct experiences. In this way collaborative research enhances subject and theory advancement due to the fact that the views of the participants are considered through critical comments, interpretations

and in-depth analysis” (p. 7, italics in original). In a similar argument that emerged at about the same time, Goodson (2001) also highlighted the crucial distinction between *life stories* or *narratives* and *life histories* in terms of the colonizing power of “contextual commentary on issues of time and space” (p. 139). He explained that, while “life stories remain uncoupled from the conditions of their social construction” (p. 139), life histories do not. However, he also cautioned about the colonizing powers of contextual commentary, “even poststructuralist accounts often end up moving life stories to life histories, and they confront issues surrounding the changing contexts of time and space” (p. 139). Adding that: “Moving from life story to life history involves a move to account for historical context – a dangerous move, for it offers the researcher considerable colonizing power to locate the life history, with all its inevitable selections, shifts, and silences” (p. 139).

As final technique to ensure credibility, I used peer debriefing or “stakeholder checks” (Thomas, 2003, p. 7). What it entails is to provide opportunities for peers, those who are well versed in qualitative research and show specific interest in the research, to comment on the categories or interpretations. So far the emerging findings of this study were presented at the following academic gatherings:

- The “Research & Teaching in Conversation” mini conference at the Rhodes University in Grahamstown on the 4th August 2012; a joint initiative of the Eastern Cape Chapter of the Southern African Association for Research in Mathematics, Science, and Technology Education (SAARMSTE) and the Association of Mathematics Education of South Africa (AMESA).
- The annual SAARMSTE conference at the University of the Western Cape in Bellville, 14 - 17 January 2013.
- The “Research & Teaching in Conversation” post graduate colloquium at the Rhodes University in Grahamstown on the 14th September 2013, sponsored by SAARMSTE.
- The 5th Interdisciplinary Post Graduate Conference 2013 entitled “A dialogue for the next generation of researchers” at the Rhodes University in Grahamstown, 23-25 September 2013.

The feedback received from peers on these occasions was useful in forcing me to re-think my interpretations and in deepening my insights into the narratives that shape the professional identities of mathematics teachers.

4.6.4 Thick description

Another strategy used to ensure credibility is to provide a “thick description” (Ryle, 1967/1971; Geertz, 1973; Davis, 1991; Creswell & Miller, 2000; Ponterotto, 2006) so that others who might be interested in the study can draw their own conclusions from the available data (Gasman & Palmer, 2008; Tracy, 2010). As Firestone (1993) explained: “Factors unimportant to the researcher may be critical to the reader. They are more likely to show up in designs stressing the careful depiction of the setting studied” (p. 22). The setting, which according to Oliver (1998), “is where the narrative, or the action, takes place” (p. 251), consists of three harmoniously existing elements: the physical environment, sociocultural features, and temporal location. Apart from details of where the interview took place (e.g., in the library or in an empty classroom), the physical environment includes, relationships between the participants and the researcher; and, artefacts of the environment (both present and absent). Sociocultural features, according to Oliver (1998), include “the values, beliefs, and social rules of the characters and their environments” (p. 251); moreover, “they will provide a deeper level of meaning to the story as the plot unfolds” (p. 252). The temporal location of the setting helps to explain the prevalent rituals, customs, traditions, and modes of interaction at the time of the interview or experience (p. 252). A thick description involves providing as much detail about the data collection process as possible. Moreover, a thick description provides the necessary context for understanding meanings (Thompson, 2001). Additionally, it offers the interested reader an opportunity to vicariously experience the whole data collection process with the researcher.

The purpose of a thick description is that it creates verisimilitude, statements that produce for the readers the feeling that they have experienced, or could experience, the events being described in a study. Thus, credibility is established through the lens of readers who read a narrative account and are transported into a setting or situation (Creswell & Miller, 2000, pp. 128-129).

In order for this to happen, however, there needs to be full public disclosure of all the research processes (Anfara, Brown, & Mangione, 2002). As Tracy (2010) noted: “To illustrate data’s complexity, researchers are advised to *show* meaning that they provide through

enough detail that readers may come to their own conclusion about the scene. This is contrasted with the author *telling* the reader what to think” (p. 843, italics in the original). Geertz’s (1973) observation that, in anthropology, interpretations of research data is “really our own constructions of other people’s constructions of what they and their compatriots are up to” (p. 9) also holds for interpretations of narrative research data. Thus, in narrative writing, much like in anthropological writing, a “thick description” is necessary to enable an interested reader to ascertain the credibility of the author’s interpretations. Furthermore, as Creswell and Miller (2000), suggested: “To use this procedure [thick description] for establishing credibility... researchers employ a constructivist perspective to contextualize the people or sites studied” (p. 129).

For Ryle (1967/1971), the philosopher who originally coined the term “thick” description, the process involves, on the one hand, ascribing present and future intentionality to one’s behaviour; and on the other hand, understanding and absorbing the context of a situation or behaviour. Ponterotto (2006), for example, suggested that “thick description involves more than amassing great detail: It speaks to context and meaning as well as interpreting participant intentions in their behaviours and actions” (p. 541). The intention, however, is not to negate the importance of great detail; hence he added:

It is the qualitative researcher’s task to thickly describe social action, so that thick interpretations of the actions can be made, presented in written form, and made available to a wide audience of readers. Without ‘thick description’, ‘thick interpretation’ is not possible. Without ‘thick interpretation’, written reports of research will lack credibility and resonance with the research community... It is the thick interpretive work of researchers that brings readers to an understanding of the social actions being reported upon (Ponterotto, 2006, p. 542).

The importance of thick description is underscored by Davis (1991) in the following comments: Firstly, “without it we can only get out of a case what we put into it” (p. 14); secondly, “we need thick description to allow cases to remain open to different interpretations over time... The thicker the case, the more contextual the response” (p. 15); and finally, “*life* isn’t as simple as thinly described cases would have us believe” (p. 15).

Ponterotto (2006, pp. 542-543) distilled the following five essential components of “thick description” from the literature:

1. “Thick description” involves accurately describing and interpreting social actions within the appropriate context in which the social action took place.

2. "Thick description" captures the thoughts, emotions, and web of social interaction among observed participants in their operating context.
3. A central feature to interpreting social actions entails assigning motivations and intentions for said social actions.
4. The context for, and the specifics of, the social action are so well described that the reader experiences a sense of verisimilitude as they read the researcher's account.
5. "Thick description" of social actions promotes "thick interpretation" of these actions, which lead to "thick meaning" of the findings.

As Ponterotto (2006) further explained, a proper "thick description" covers the research sample; the research setting and procedures; the results; and, the discussion. A "thick description" of a research sample, "would entail describing fully the participants of the study without compromising anonymity. A thickly described sample facilitates the reader's ability to visualize the sample including relevant demographic and psychological characteristics" (Ponterotto, 2006, p. 546). A "thick description" of the research setting and procedures "provides a context for understanding the study's results... Factors such as the location of the interviews, the length and recording procedures for the interviews, and the interviewer's and interviewee's reactions to the interviews all provide a sense of verisimilitude to the reader, and makes understanding (and critiquing) the author's interpretation... more accessible" (Ponterotto, 2006, p. 546). A "thick description" of the results "presents adequate 'voice' of participants; that is, long quotes from participants or excerpts of interviewer-interview dialogue" (Ponterotto, 2006, p. 547). A "thick description" of the 'discussion section' "successfully merges the participants' lived experiences with the researcher's interpretations of these experiences, thus creating thick meaning for the reader as well as for the participants and researcher. The reader is, thus, able to digest the essential elements of the findings and is able to discern whether she or he would have come to the same interpretive conclusions as the report's author" (Ponterotto, 2006, p. 547). Not only does the amount of vivid detail help the readers understand that the research account is credible; it also enables the readers to ascertain the applicability of the findings to other settings or similar contexts (Creswell & Miller, 2000). In conclusion, as Bruner (1991) aptly reminded us: "Narratives, then, are a version of reality whose applicability is governed by convention and 'narrative necessity' rather than by empirical verification and logical

requiredness (*sic*), although ironically we have no compunction about calling stories true of false” (pp. 4-5).

4.6.5 Transparency

In narrative inquiry transparency is about being explicit, clear, and open about the methods, procedures, and assumptions being made; so that other researchers may replicate the *procedures* (Hiles & Čermák, 2007; 2008; Hiles, Čermák, & Chrz, 2009; 2010). Merrill (2007), for example, pointed out that “all researchers either deliberately or indirectly exclude relevant data” (p. 3), concluding that, “[i]t is, perhaps, an implicit assumption in all research that some data are necessarily excluded” (p. 3). Echoing the point that selectivity cannot be eliminated when it comes to qualitative data, LeCompte (2000) explained that “because such data are collected by human beings, and because people are interested in certain things and not others, selections are made. People tend to record as data what makes sense to and intrigues them” (p. 146). She added that it is important to acknowledge “how it [selectivity] affects data collection, and hence, the usefulness and credibility of research results” (p. 146). It stands to reason, therefore, that, “there should be a transparent account of how the researcher decided what aspects of the story to include and exclude as data, and how the inferences were made” (Greenhalgh, Russel, & Swinglehurst, 2005, p. 445). Bamberg (2012) made a similar point about narrative analysis in general:

Even if narrative is elevated into a central or primary method of sense making, it still needs to be open to interpretation and reinterpretation. This interpretation requires laying open the angles and perspectives from where meaning is being conferred and scrutinizing the methods employed by narrators in arriving at their stories (and lives) (p. 80).

In transparency the emphasis is on the *procedures* being replicable and *not findings* (Hiles & Čermák, 2008, p. 161). I believe that the first step in establishing transparency in narrative research is to be explicit about the research paradigm which frames the underlying assumptions. With this study being situated in a constructivist research paradigm, I wish to reiterate some of its main assumptions here:

1. Ontologically narrative inquiry is rooted in the relativist belief that for each individual teacher multiple realities or identities exist (of which professional identity is but one) linked to the different stories of his or her life. Furthermore, that these realities are apprehensible in the form of narrative reconstructions through their life stories.

2. Epistemologically narrative inquiry is transactional and dialectical; that is, accounts of professional identities are generated in the narratives through the interactions between the researcher and the teachers during the interviews; by all accounts a highly subjective process.
3. Methodologically narrative inquiry is hermeneutical and dialectical by nature; that is, the narratives, being highly variable and personal by nature, can only be elicited and refined through interaction between the researcher and the teachers being interviewed.

By explicitly stating these assumptions, I hope that I have heeded Hiles and Čermák's (2007) call for transparency when they suggested "transparency becomes the overriding concern in laying the groundwork for critical evaluation in qualitative inquiry.... the rigor of NOI relies upon making its underlying assumptions and procedures fully transparent" (p. 2).

4.7 Ethical protocols

From an ethical point of view, and because of the close involvement of the researcher with the research process, the risks and concerns are greater in qualitative research than in quantitative research (Patton, 2002; Corbin & Morse, 2003; Bowen, 2005). Narrative inquiry, like all research that involves real people sharing their 'true' life stories with researchers who then take these stories to a larger audience, is bound to involve several ethical considerations. Often a privileged relationship between interviewer and interviewee (the teacher) might develop, with the result that "the teacher uses the interview as a place to discuss experiences which he or she may not be prepared to make public" (Elbaz-Luwisch, 1997, p. 82). Of course one of the risks of revealing matters of a personal nature during a research interview is that any break in confidentiality/anonymity might have social, financial, legal, or political consequences (Corbin & Morse, 2003). Another risk is that certain topics might arouse powerful emotions – especially topics that "delve deeply into the personal life or experiences of persons" (Corbin & Morse, 2003, p. 337). And then there is a risk that especially narrative researchers should be aware of; that is, that the practice of "taking" people's stories and "putting" them in a larger narrative might impose meaning on the participants' lived experience (Orland-Barak & Maskit, 2011). What this is alluding to is that the considerable interpretive latitude that qualitative researchers enjoy often results in

data that are “rife with personal opinions and feelings” (Bowen, 2005, p. 214). This is a central ethical issue for narrative researchers, described as “the uneasy relationship between the personal and the research relevance of life stories, especially as story details are likely to be taken beyond the purview of the respondents” (Atkinson, 2001, p. 132). It is therefore necessary, for researchers, to take precautions to avoid imposing their beliefs and biases on the research data (Bowen, 2005) and to ensure that the perspectives of the participants are represented by the data (Polkinghorne, 2005).

Two essential factors in reducing emotional distress amongst interview participants are the researcher’s interviewing skills and code of ethics (Corbin & Morse, 2003). The most important ethical issue in a narrative inquiry, according to Lyons and La Boskey (2002), is how the collaborative relationship between the researcher and the teachers is to be constructed, maintained, and realistically thought about; especially when unequal power relationships between researcher and the subjects (teachers) might be an issue. They explained as follows: “Of particular concern are safety and privacy. If people are to share their meanings of experience, they need to be assured... that their work will be confidential” (p. 23). However, as Corbin and Morse (2003) pointed out: “It is this very essence of trust and conversational intimacy that creates both the potential threats associated with unstructured interactive interviews and at the same time makes them potentially therapeutic as well as essential data collection tools” (p. 338). They further explained that much of the risks associated with unstructured interactive interviews can be managed by the interviewing process and the control given to participants (Corbin & Morse, 2003). In this study, for example, it was made clear to all participants, in advance, that they have a choice of whether to participate or not; and, that they could withdraw from the study at any time without penalty (see Appendix B).

Maintaining the anonymity of individuals is always a concern; especially in life history research where the nature of the narratives, based on personal incidents and occurrences and the small number of participants, may allow for easy identification of individuals (Malm, 2001). The concern is even greater when working in a relatively small geographic area, such as the Port Elizabeth or Grahamstown education districts, or in a specific programme, such as the MTEP at Rhodes University; because if the area is small, the schools and the identities of participants may be obvious to knowledgeable readers (Richmond, 2002). In order to

protect the privacy of the participants and to avoid possible distractions (Kear, 2012), the interviews were conducted in the privacy of an empty office or classroom; and, in the case of one participant (P2), even in the school library – provided that there was no-one else there at the time. In that way the nature of the apparent ‘meetings’ with the participants were kept secret from unsolicited third parties at their schools.

The essence of the ethical dilemma faced by narrative researchers is perhaps best captured in the words of Marlett and Emes (2010) who, in reflecting on the ethics of their own work with vulnerable elderly people sharing stories of childhood abuse, wrote:

Telling life stories is therapeutic in a fundamental sense, for it is what humans do to make sense of their lives. Because of the benefits, telling stories can also make people very vulnerable. People generally want and need to tell stories to those who can bear witness to their struggles and accomplishments. However, in the process, they may encounter old fears, pain, and trauma. There is a fear in research communities that these old experiences need to be guarded. Some feel that painful stories are best left alone (p. 134).

The solution to this ethical dilemma, they suggest, is “to be clear about the purpose of your research and how stories will be used” (p. 135) so that participants can be aware of the potential dangers and advantages; and, “to be transparent and honest about what is expected and what safeguards are in place for everyone” (p. 135). However, no-one can predict in advance what will be said during an interview and all of the potential dangers associated with that (Patton, 2002; Corbin & Morse, 2003). In other words, “no one can anticipate what will happen or how the participant will respond emotionally when recalling and reliving their experience” (Corbin & Morse, 2003, p. 350). As Patton (2002) cautioned:

[I]nterviews can be and often are interventions. They affect people. A good interview lays open thoughts, feelings, knowledge, and experience, not only to the interviewer, but also to the interviewee. The process of being taken through a directed, reflective process affects the persons being interviewed and leaves them knowing things about themselves that they did not know – or at least were not fully aware of – before the interview... Neither you [the interviewer] nor the interviewee can know, in advance, and sometimes even after the fact, what impact an interviewing experience will have or has had (pp. 277-278).

In terms of the potential advantages of participation, he advised that: “It is somehow better to appeal to people on the basis of the contribution they can make to knowledge... instead of appealing to their pecuniary interest” (Patton, 2002, p. 278). I have found that, perhaps because all of the participants are teachers, the appeal that, through their participation,

they would be contributing to new knowledge in the field of teaching and learning was well accepted.

In this study the participants were fully briefed about the aforementioned ethical issues, both verbally, before commencing with the interviews, and in writing via the mandatory Project Information Statement for Research Participants (Appendix B) and Participant Consent Form (Appendix C) as required by the Higher Degrees Committee of Rhodes University. According to Bowen (2005): "Informed consent is certainly an important feature of ethical considerations in any research involving human subjects" (p. 214). Bowen explained that it consists of the following basic elements: "a brief description of the study and its procedures; full identification of the researcher's identity; an assurance that participation is voluntary and that the respondent has the right to withdraw at any time without penalty; an assurance of confidentiality; and benefits and risks associated with participation in the study" (p. 214). Therefore, in line with the principle of "informed consent" the nature, aims, purpose and educational benefits of the research were explained as honestly and openly as possible to the participants in this study. The participants were asked to read the Project Information Statement for Research Participants (Appendix B) and, subsequently, to sign the Participant Consent Form (Appendix C) to confirm their willingness to participate in this research. All the afore-mentioned forms clearly displayed the contact telephone numbers of the researcher as well as those of the research supervisor. Prior voluntary consent was sought and secured before any participants were interviewed or audio recordings were made. It was also made clear to participants that participation in the research is completely voluntary, and that they could withdraw from the study at any time if they were uncomfortable with anything related to the study.

The confidentiality issue is echoed by many others, for example, Suryani (2008) who added that the researcher should "be ready if the participant refuses to answer certain questions... be careful in reporting participant's experience, opinion, or personal view that might offend the participant" (p. 121). A key factor in the maintenance of data integrity, however, is to maintain "a certain critical distance between the researcher and the respondent" (Bowen, 2005, p. 214). An important conceptual issue here is that of 'voice', as Atkinson (2001) explained: "If you ask someone to tell his or her life story, will what you get be in that person's authentic voice, or in a voice that he or she thinks you might be looking

for?” (p. 133). A power differential in the relationship between researcher and participant puts the latter in a vulnerable position; in which case both the ‘voice’ that the story is told in, as well as the impact that the telling of the story has on the teller, could be affected (Atkinson, 2001, p. 133).

In this research I have also complied with ethical issues of confidentiality, anonymity and privacy of the participants. To ensure confidentiality, names of the participating interviewees will not be disclosed²⁰; nor the names of the schools, teachers, learners, or principals. Instead, fictitious names will be used throughout the study. Any data gathered during this research will be solely and strictly confined and used for the sole purpose of this research project. During and after completion of the study the raw research data will be appropriately stored by the researcher under lock and key. Such confidentiality initiatives and data storage measures are all in the interest of ensuring and protecting the privacy and anonymity of the participants. All the necessary effort and commitments will be made to ensure and uphold both the informants’ privacy and research ethics principles during the fieldwork and in the compilation of this thesis. As Clandinin (2006) pointed out, when engaging in narrative inquiry, “we need to imagine ethics as being about negotiation, respect, mutuality and openness to multiple voices. We need to learn how to make these stories of what it means to engage in narrative inquiry dependable and steady. We must do more than fill out the required forms for institutional research ethics boards” (p. 52). Finally, as Polkinghorne (2005) rightfully pointed out, the welfare of the participants should be a primary concern in qualitative research, so that: “In addition to maintaining the confidentiality of participants, researchers need to proceed with sensitivity and concern for their needs and desires” (p. 144).

4.8 Chapter Summary

In addition to telling the researcher’s own story, this chapter detailed the actual implementation of narrative inquiry as the research methodology in this study. The chapter

²⁰ Naming the participants P1, P2, P3, etc. is a “distancing technique” (Schiellerup, 2008, p. 169); an attempt to strike a balance between having enough empathy to understand the narratives of the participants and getting lost in their perspectives; to smoothen the transition from understanding from the inside and describing from the outside. Admittedly, the research participants may be objectified by doing it in this way; but, as Schiellerup (2008) pointed out, “such challenges are inherent in interpretive social science concerned with understanding the life-worlds of research subjects” (p. 169).

provided an outline of the actual selection of the participants, data collection, data analysis, data presentation, and ethical considerations in this study. The next chapter will report on the results of the horizontal analysis of the data.

Chapter 5: Horizontal Data Analysis

5.1 Introduction

The aim of this chapter is to explore the narratives of the seven participants²¹ for possible answers to the primary research question posed in this study: *What are the narratives that shape the professional identities of mathematics teachers?*²² Taking a *story analyst* approach (Chenail, 2012), the narratives of the seven participants were explored for common themes that run across their narratives; which were then subjected to abstract theorization. The results of this “*horizontal analysis*” (Kelchtermans, 1993; Hunter, 2010) or “*cross-case*” (Miles & Huberman, 1994) *analysis* are reported here. Seven narrative themes emerged from the analysis: family support; role models; changing work environment; continuous professional development; professional recognition; religion; and, micro-politics. Since the boundaries between thematic categories like these are often permeable, if not completely blurred; the thematic categories presented here are not necessarily mutually exclusive.

5.2 Finding common themes

In a thematic analysis, such as in this chapter, narratives are organised according to themes, with case studies or vignettes used to provide illustrations: “investigators collect many stories and inductively create conceptual groupings from the data” (Riessman, 2005, p. 2). The emphasis is on the content of the text, that is, the “what” is said rather than the “how” it is said; the “told” rather than the “telling” (Riessman, 2006, p. 186). Many stories are collected and arranged in conceptual groupings (themes), which, according to Riley and Hawe (2005), may be generated in two ways: sometimes deductively by the researchers *a priori* research interests; and sometimes by inductively deriving them from the data itself in a fashion that resembles *grounded theory* (Glaser & Strauss, 1967). Sometimes a compromise between the two methods of generating the themes is possible (Zhang & Wildemuth, 2009); in such cases, however, openness to ‘new themes’ in the data must be

²¹ For the sake of anonymity the participants are indicated here as Participant1 (P1); Participant 2 (P2); Participant 3 (P3); ... and, Participant 7 (P7).

²² See Chapter 1, section 1.4.1 for the primary research question.

maintained in addition to the researcher's *a priori* assumptions (Riley & Hawe, 2005). In this study, a compromise between deductive and inductive approaches is not only possible, but also necessary. As Ryan and Bernard (2003) cautioned, on the one hand, a strict theoretical perspective may lead the researcher "to find only what they are looking for" (p. 94); while on the other hand, "assiduous theory avoidance... brings the risk of not making the connection between data and important research questions" (p. 94). Thematic analysis is particularly useful for theorising across a number of cases; in other words, in finding common thematic elements across research participants and the events they report; which in turn can be useful in elaborating a developing theory.

How does one identify a theme in narrative data? Ryan and Bernard (2003) explained as follows: "You know you have found a theme when you can answer the question, What is this expression an example of?" (p. 87). In this study I have replaced "expression" in their question with "story" which is more appropriate when looking for narrative themes. Furthermore, they suggested eight "scrutiny techniques" to look for (Ryan & Bernard, 2003, pp. 33-94) during a thematic analysis:

- Repetitions – when the same topic or concept repeatedly occurs.
- Indigenous typologies or categories – when local terms sound unfamiliar and are used in unfamiliar ways.
- Metaphors and analogies – when thoughts, behaviours, and experiences are represented with analogies and metaphors; often based on the assumption that listeners know what these mean.
- Transitions – marked by naturally occurring shifts in content, for example, in speech these are signalled by pauses, changes in voice tone, or the presence of particular phrases.
- Similarities and differences – usually found by systematically searching for them across units of data, for example, through line-by-line analysis, or, by comparing either pairs of expressions or pairs of whole text for similarities or differences.
- Linguistic connectors – looking for words or phrases which indicate causal relationships, for example, 'because', 'since', 'rather than', 'instead of', and the like.
- Missing data – searching for what is not mentioned, either intentionally or unintentionally.

- Theory-related material – understanding how the data illuminate the “questions of importance to social science” (p. 93).

Not all of the above techniques were deemed relevant for this study which searches for identity shaping narratives. Some of these, for instance: indigenous typologies or categories; transitions; and, linguistic connectors seemed more pertinent to studies of linguistics rather than studies of identity shaping narratives and were therefore excluded. However, the above list is not considered exhaustive and the following techniques, suggested by Love (1994, p. 2), were subsequently added to it:

- Levels and nature of affect – nonverbal cues such as a sudden rise in vocal volumes, changes in body language and facial expressions noted concomitantly with particular content.
- Historical explanations, descriptions, and interpretations – stories of the past used to explain present behaviours and meanings.
- Explicit and implicit interpretations – connections between thoughts, activities, and meanings ascribed to them.
- Serendipity – unexpected behaviours and expressions of participants that differ from the literature and the researcher’s experience.

Together these two lists of “scrutiny techniques” represent relatively straightforward cues for finding themes in narrative data; for instance, when the same topic keeps on coming up in the interviews (repetitions) or when nonverbal cues related to emotions accompany certain stories (levels and nature of affect). Once patterns had been identified in the data, these can then be combined and catalogued into themes and sub-themes, which in turn, can be pieced together to get an overall and comprehensive picture of the participants’ collective experiences (Aronson, 1994). The final step is to build a valid argument for choosing the themes; this is usually done by reviewing and making inferences from related literature (Aronson, 1994). For example, I have used the techniques suggested by Ryan and Bernard (2003) and Love (1994) above to identify themes in the narratives. As Schultz and Ravitch (2013), also drawing on the methodology of narrative inquiry (Connelly & Clandinin, 1990; Clandinin & Connelly, 2000; Clandinin, 2006) duly pointed out, the thematic analysis of teacher narratives is grounded in the notion that their lives are shaped stories that they tell and retell over time.

Language is a primary resource in thematic analysis. As the identifying techniques above seem to suggest, in thematic analysis, language is viewed as a resource rather than the topic of investigation (Riessman, 2005). Moreover, the underlying assumption in thematic analysis is that “language is a direct and unambiguous route to meaning” (Riessman, 2005, p. 2); that is, if the research interest lies in the content of the narrative, and the focus of the interpretation is on “the meaning that any competent user of the language would find in a story” (Riessman, 2005, p. 3). But, as Riessman (2006) later cautioned, this is also a potential weakness of thematic analysis: “When many narratives are grouped into a similar thematic category, readers must assume that everyone in the group means the same thing by what they say” (p. 187). Furthermore, she added that this assumption excludes, for example: ambiguities; deviant responses; and, the unspoken; all of which do not fit easily into the proposed thematic categories. I have attempted to address these concerns in direct consultation with the participants through “member checking” (Guba, 1981; Creswell & Miller, 2000).

According to Riley and Hawe (2005) narrative analysis and thematic analysis differ in two interconnected ways: Firstly, narrative analysis focuses explicitly on the dynamic nature of the interpretive process and how this changes over time, and in the light of new experiences and varied social interactions. Thematic analysis, on the other hand, is static; focussing only on the documentation of different themes. Secondly, narrative analysis always commences from the viewpoint of the storyteller; that is, analysing how different experiences are interpreted and the subsequent actions. Riley and Hawe (2005) explained that “narrative analysis contextualizes the sense-making process by focussing on the person, rather than a set of themes” while “[t]hematic analysis, in contrast, de-contextualizes the data (e.g., by ‘cutting and pasting’ themes together) to examine meta or broader issues” (p. 229). Maple and Edwards (2010), in their study of parental suicide bereavement, based their preference for narrative inquiry on “the distinction narrative inquiry gave by steering clear of mining the data for themes and the danger this has to depersonalize and decontextualize the stories from the participants” (p. 35). They added, however, that: “Due to the intimate and sensitive nature of the research topic, it was important to honor (*sic*) parents’ stories” (p. 35). My participants’ stories are less sensitive, but I have nevertheless attempted to

address both of these concerns through “vertical analysis” in the next chapter where the focus is on the person rather than the collective.

5.3 The narratives that shape the participants’ professional identities

In this section it is argued that the following seven themes, which emerged from the *horizontal analysis* of the narratives of the seven participants, are representative of the narratives that shape their professional identities.²³ In the following subsections, a theoretical case to that effect is made for each of the seven themes.

5.3.1 Family Support

The importance of family and family history in the narrative expressions of life experiences is underscored in Denzin’s (1989) comment: “It is as if every author of an autobiography or biography must start with family, finding there the zero point of origin for the life in question” (p. 18). This is not surprising, because family support is a valued form of social capital (Bourdieu, 1986; Portes, 1998; 2000; Israel, Beaulieu, & Hartless, 2001; Zambrana & Zoppi, 2002) that may bring about social and economic benefits. What stood out in the narratives of most of the seven participants in this project, however, were their stories of family support throughout their school, college, and/or university experiences. Some the stories resonated very strongly with the researcher’s own life experiences in which family support had also played a decisive role²⁴. Most of the participants, P2 and P5 excluded, shared stories of how their families had supported them throughout their studies. Their narratives of family support show several similarities, for example: all of the participants, except P2, were first generation tertiary students²⁵; parents and siblings had limited or no formal education; families could not offer support with their academic work; families were financially stressed; and, for most participants, P2 and P5 excluded, their education seemed to be a family priority. Almost all of the family support, in P2’s case, was directed at her

²³ The author acknowledges that the small sample does not allow for generalization beyond the seven participants in this study.

²⁴ It has been argued, in Chapter 4 section 4.2, that the researcher’s own story might have a tainting effect on the research lenses through which the data is viewed. In this case the researcher was sensitized to the theme of family support by virtue of his own life experiences.

²⁵ The notion of *first generation tertiary student* refers to a student who is the first one in a family to enrol for a tertiary qualification.

older brother who studied Medicine and eventually became a doctor. She had to find a way to support herself. In P5's case, he dropped out of university after his first year of legal studies due to a lack of funding; spent five years in the Army; got married and had children; and then only enrolled at a teachers' training college where he funded himself by working as a security guard at night: "I studied towards becoming a teacher. But it was tough, because I had to work, being a married man, at college. I had to work at night, and in the morning. I... Uhm, I had to go back to college and sleep in the afternoons [...] Yes, a full-time student, and a full-time...uh, security guard at night" (P5; 1st interview). He did not mention family support anywhere in his narratives. It can be deduced that all of the participants came from working-class families and therefore Gibson, Bejinez, Hidalgo and Rolón's (2004) comment applies: "while children from affluent households generally acquire this kind of social capital directly from their families, many working-class youth, particularly those from marginalized communities, may find it only through connections at school" (p. 131). Working-class students typically are reliant on middle-class peers and adult role models for access to the kinds of social capital not available at home (Stanton-Salazar, 2004).

In addition to Wenger's (1998) notion of *joint enterprise*, Bourdieu's (1986) notion of *social capital* presents a useful complementary theoretical tool to make sense of the teachers' narratives of family support. The perspective taken here is that the immediate family makes up such a social network; moreover, that the family support which most of the participants (P2 and P5 excluded) enjoyed, is a form of *social capital* derived from the privilege of being the first generation of tertiary students in their families and can be seen as a *joint enterprise* of the family. Furthermore, the narrative data is in line with Bourdieu's (1986) postulate that the amount of social capital that individuals possess hinge on the size of their network; but also, on their economic and cultural standing (Gasman & Palmer, 2008).

The reader is reminded that all of the participants' stories are set in the sociocultural context of race and gender discrimination of apartheid South Africa. The data indicates that all of the participants' families regarded the education of the participants as a form of *social capital* investment and therefore a *joint enterprise* for the family. It seems, however, that the urge for this kind of investment was stronger in Black families. Perhaps, because of the racial discrimination of the time, Black families sought to improve their economic and social

position by investing in the education of the participants, who were all first generation tertiary students, as a form of *social capital*. For example, P1 explained that his mother was a single-parent and a domestic worker; yet, “she made sure that at least there is something for us for our education as well [...] even in difficult times, she will make sure that we have at least money to go and study” (P1; 2nd interview). She was able to do this by moving back into her father’s house with her children; thus, expanding their social network from a single-parent family to an extended family. The story is reified (Sfard & Prusak, 2005a; 2005b) by the comment, “so it was her influence that has made where I am or what I have become, meaning the support she has given me whilst growing up in her father’s house” (P1; 2nd interview). Similarly, P4’s elderly parents supported her education as far as they could, and her sisters took over: “One thing my mom and dad always wanted was their children to be educated. I got the support, as far as I could remember, encouraging us to go to school [...] when my mom and dad were older and they couldn’t be there, in high school, they (*sisters*) were always supportive” (P4; 3rd interview). In P6’s story, her brother provided the necessary support: “because our parents were working on the farm. He had to ‘abba’ me on his back from home [...]for about six or nine kilometres to school [...] he bought me everything, my mother and my father couldn't afford to buy” (P6; 3rd interview). In these stories, when the participant’s parents were unable to assist, the siblings provided the necessary support, for example, P4’s older sisters and P6’s older brother. This illustrates that the education of the participants were approached by the family as a *joint enterprise*; it also illustrates how the available amount of *social capital* hinges on the size of the network (Bourdieu, 1986). In the above stories the *social networks*, and thus the amount of *social capital*, were expanded by including the extended family or the brothers and sisters.

The data also shows that the participants’ families valued tertiary education as a form of *social capital*, especially for first generation tertiary students. As P7 explained: “They were such proud parents. I can remember the Graduation... They were proud that, that at least someone had gone to University” (P7; 2nd interview). Where families could not support participants with their academic work, because they lacked the necessary academic expertise, they substituted with alternative forms of social capital. As P3 explained: “They (*her parents*) were not educated; you know what I’m saying? My father, well, he must have done Standard 6 (*Grade 8*), my mother didn't even finish primary school. So, that is the way

they couldn't support us [...] in every other way, we knew that we could depend upon them (*her parents*). They supplied... the things, it was there" (P3; 2nd interview). P7's story is similar. His parents were poor and had no tertiary education; however, that did not prevent them from supporting him with alternative forms of social capital: "So, none of them (*his parents*) helped me physically with the actual doing of the Maths, but they helped me with the motivation of it [...] They'd sacrifice some of their own things so that we could get on in life" (P7; 2nd interview). As this excerpt illustrates, parents of first-generation tertiary students, while lacking first-hand knowledge of academia and the tertiary experience itself, "can instill (*sic*) in their children the expectation of attending college and can provide encouragement and emotional support" (Dennis, Phinney, & Chuateco, 2005, p. 224).

The reluctance of P2's family to support her aspirations for a tertiary education, "then they told me, 'If you want to go and study, you'll have to find ... somewhere, the money. You'll have to find it'" (P2; 2nd interview), does not mean that they did not value tertiary education as a form of *social capital* investment. On the contrary, they seem to value it so much that they invested all their financial resources in her older brother's medical studies: "my parents ... they had to pay for him (*her brother*), because there were no bursaries" (P2; 2nd interview). As Gasman and Palmer (2008) suggested, the amount of social capital invested in individuals hinges on their economic and cultural standing in particular social networks. In White Afrikaner culture, at the time, females did not enjoy the same economic and cultural standing as males. Therefore, the sociocultural context of the time, marked by gender discrimination and the patriarchal nature (Castells, 2004) of white Afrikaner culture, may have dictated the obvious disparities in the amount of social capital invested in the first born son as opposed to the two younger daughters in P1's family. In summary, with the exception of P2 and P5, all the participants shared stories of how their families with limited financial and academic resources supported them with alternative forms of social capital.

5.3.2 Role models

The school environment as the sociocultural context, and especially prior experiences with teachers at school, play a strong mediating role in shaping the resiliency and academic achievement in learners (Gibson, Bejinez, Hidalgo, & Rolón, 2004; Castro, Garcia, Cavazos Jr., & Castro, 2011; Jansen, Koza, & Toyana, 2011) as well as the professional identities of new teachers (Flores & Day, 2006; Krabi, 2008). Therefore, any sociocultural perspective

needs to make provision for the potential influence of previous teachers on teacher professional development. Castro, Garcia, Cavazos Jr. and Castro (2011), for example, maintain that: “Often, it is the people in the lives of youth who facilitate their eventual academic achievement” (p. 54). For example, Gibson, Bejinez, Hidalgo and Rolón (2004) pointed out that teacher role models are important sources of *social capital* for learners from marginalised communities whose parents are not educated and therefore unable to assist them with acquiring the forms of knowing and behaving valued in academia. However, the narrative data in this study seem to suggest that the influence of teachers often stretches beyond mere resilience and academic achievement. As role models, teachers often play a central part in shaping the professional identities of the future teachers amongst their learners. Unlike in an apprenticeship (Lave & Wenger, 1991), however, for most prospective mathematics teachers participation in the practices of the *community of practice* of mathematics teachers do not happen while they are still learners at school – not even as peripheral participants (except perhaps for P1 who taught the lower grades while he was still a learner himself). Therefore, I am suggesting that identity shaping through role-modelling of a previous school teacher can be construed as a form of *delayed* legitimate peripheral participation (Lave & Wenger, 1991): firstly, because the actual participation in teaching practices is delayed until the participants have their own classes to teach; and secondly, because it is only then that they can legitimately participate as members (albeit peripheral) in the practices of the community of mathematics teachers. However, the influence of their own teachers on the professional identities of teachers cannot be denied. This is exemplified in Mpungose’s (2010) findings in an analysis of the life stories of six school principals in the KwaZulu-Natal province of South Africa: “the principals were inspired by role models of various types in their social and professional development, which... helped them to define themselves in terms of their roles as leaders” (p. 535).

A sociocultural perspective must also consider the race and gender of the role model. Zirkel (2002), for example, suggested that the identity shaping effects are stronger in the case of race- and gender-matched role models:

[T]he structure of young people’s internalized representations of the opportunities available to them in adulthood are based, in part, on their understanding of the racialized and gendered structuring of society. These representations of opportunity are correspondingly encoded in the identities

they form in adolescence, and this has enormous implications for students' educational aspirations and achievements (p. 358).

The sociocultural context, race and gender play decisive roles in the identity shaping process: "it is the *presence* or *absence* of images of race- and gender-matched models filling socially desirable roles, rather than the specific content of those images, that is critical for young people's developing sense of self" (Zirkel, 2002, p. 359, italics in original). In other words, role models who had preceded them give them a sense of the possibilities available for them in the future, of having a place and value within the larger culture of which they are part (Zirkel, 2002). The effects can be seen in their academic performance; achievement-oriented goals; enjoyment of achievement-relevant activities; thoughts about their future; and looking up to adults rather than peers amongst young adolescents (Zirkel, 2002). This is particularly relevant in the sociocultural context of racial segregation and gender discrimination which marked the historical time, in the midst of apartheid, during which the participants were inspired by their role models at school. Given the sociocultural context of the time – separate education departments and schools for different race groups – it is not surprising, therefore, that race- or gender-matching never came up as a salient issue in the participants' narratives of their role models. That does not mean that this is not important. According to Zirkel (2002), "goals and academic performance can be enhanced by the sense of opportunity afforded by seeing others like you in desirable positions" (p. 372). Significantly, all of the teachers that were identified as role models by the participants were male and of the same race group as the participants.

There are two strands in the participants' narratives of their teachers as role models: One strand has to do with the teacher's disposition (Kilpatrick, 2001) towards the subject, which can be linked to mathematical identity (Eaton & O'Reilly, 2009b; Grootenboer & Zevenbergen, 2008; Kaasila, 2007b) as discussed in Chapter 2 (section 2.6.7). Most teachers attribute the positive influence of their own teachers on their professional development to the "contagious love and enthusiasm for the subject rather than any particular teaching style or technique" (Eaton & O'Reilly, 2009a, p. 232). This can be seen when a teacher is described as "a wonderful man, in terms of his {!} passion for Mathematics" (P7; 2nd interview) and as "a brilliant mathematician" (P5; 2nd interview). This point about the teacher's disposition towards the subject is confirmed in P4's final comments: "From the teacher's side, because if you have passion I believe learners will also have it"; adding that,

“if you (*the teacher*) know your work you will be passionate” (P4; 4th interview). The other strand has to do with the teaching style or technique (Lasky, 2005; Flores & Day, 2006; Schwandt, 2008) of their teachers which can be linked to professional identity. For example, Schwandt (2008), in a moving tribute to his university mentor, Egon Guba, wrote: “The value of my own experience with him was simply ... immeasurable. What made it so was often less a matter of what he taught than how he taught” (p. 329). Lasky (2005) reported that her research participants believed firmly that being openly vulnerable and authentic with their learners is essential for creating safe classroom conditions and building a rapport as a precondition for learning. For example, this is what impressed P7 most about his mathematics teacher, “the sincerity of that man rubbed off on me [...] he {} had direct influence, not only on my life, but on many, many other children that I know about” (P7; 2nd interview). Flores and Day (2006) reported flexibility, motivation, and fairness as recurrent features throughout their research participants’ accounts of former teachers that they admired. This is also what P2 remembers about her mathematics teacher’s classroom demeanour, “It was a very, very spontaneous class, but, uhm, up to a point {}, then he would put down his foot” (P2; 2nd interview). Robinson and McMillan (2006) maintained that many teachers believe in a “pastoral relationship” (p. 331) with their learners; that is, that a good teacher should be nurturing; which, in turn, is linked to sense of responsibility for the academic well-being and the socio-economic health of the learners. As P3 explained, “he (her teacher) was like a father-figure [...] He was easily approach-able [...] He was an easy {} person. He was a disciplinarian {} yes, but... he was open, you could speak to him about anything. And I think that plays a big role, a major role” (P3; 1st interview). Her teacher, it seems, was a combination of what Jansen, Koza and Toyana (2011) refer to as a *tough-love coach*, “[a] teacher who does not take nonsense from any learner” (p. 6); and, an *extended parent*, who “advises on small things and large, on what happens in the classroom and what happens outside of it” (p. 7). Sometimes, however, the role model’s influence may be a combination of both disposition and teaching style. In such cases, Jansen, Koza and Toyana (2011) would regard the role model as a *subject artist*; as a teacher that has “expert knowledge of the subject matter and specialist knowledge of how to teach that subject” (p. 3). For example, P7 explained that in addition to knowing the subject, his mathematics teacher was “a wonderful man, in terms of his {} passion for Mathematics. And not a day

would go by where he wouldn't be in class, or where he wouldn't be explaining something, or he wouldn't ask you: 'How's the maths going?' [...] it seemed like he showed an interest in every child" (P7; 2nd interview).

In a study conducted by Flores and Day (2006), the participants recounted both positive and negative experiences with their teachers. However, in this study most of the participants preferred to focus on the positive experiences with their own teachers rather than on negative experiences. Five of the seven participants in this study made direct reference to how they were inspired in their professional development by role models from amongst their own mathematics teachers. For example: "I try to get a very good relationship with my senior classes [...] I do try to copy him that way" (P2; 2nd interview); and, "I tried to emulate the kind of patience and compassion that he exhibited while was teaching me. And, and to a large extent, you know, it worked!" (P5; 2nd interview). One shared an inspiring story of how her Grade 5 teacher fostered academic resilience: "my class teacher from standard three (Grade 5) would say those that come from the farm, you've come a long way, you wake up at 05:00 and leave at 06:00 to come to school, prove to those in town that you came here to learn. And we were learning and we were doing good [...] We were working very hard because they (*township children*) were ill-treating us" (P6; 3rd interview). In the only negative story, P4 accused her mathematics teacher of favouritism: "we felt as if the teacher spent more time on the very bright students. And he, he ignored us. [...] That is the reason why I feel I wasn't as serious as I should be" (P4; 1st interview).

In addition, two of the participants (P4 and P5) relayed stories of role-modelling by their lecturers during initial teacher education, which is in line with Lasky's (2005) finding that teacher professional identities are mediated by both early professional training and the larger political and social context. However, as Graven and Lerman (2003) duly pointed out, Lave and Wenger's (1991) notion of *legitimate peripheral participation* does not apply to role models who are not practicing school teachers. For example, tutors in pre- and in-service teacher education programs cannot be equated with 'masters' in an apprenticeship model.

[T]he 'masters' are not in the same vocation as the teachers. That is, the 'master' is not a school teacher but rather a teacher educator. Thus, while teachers are learning about the profession of teaching through their participation [in the program] they are not being 'apprenticed' into teaching.

The 'apprenticeship', instead, if they so choose, is into the practice of being a teacher educator (Graven & Lerman, 2003, p. 192).

Therefore, P4 and P5's stories of the role-modelling of their lecturers will be excluded from the thematic category dealing with previous teachers as role models.

5.3.3 Changing work environment

According to Kelchtermans (2013) "a proper understanding of teacher educators' work lives and the development of their sense of professional self needs to acknowledge the organizational and institutional reality they operate in" (p. 3). In other words, the role of context in teacher professional identity needs to be acknowledged (Beauchamp & Thomas, 2009). If the work environment is assumed to be the context, then this also suggests that changes in the work environment would have a shaping effect on teacher professional identities (Canrinus, Helms-Lorenz, Beijaard, Buitink, & Hofman, 2011; Anspal, Eisenschmidt, & Löfström, 2012); which is what the data in this project seems to confirm. The participants' narratives of changes in their work environment included, for example, changes in curriculum; demographic profiles of the school; learner discipline; and, learner motivation. In the following few paragraphs the participants' recollection of these changes in the workplace will be demonstrated with the aid of some of the more salient excerpts taken from the interviews.

Wenger (1998) cautioned that established practices that are construed as "competence" within a community of practice could easily become a handicap, and manifest as a lack of competence, when new practices have to be negotiated. This could potentially happen, for example, when changes in the curriculum demand a re-negotiation of the practices and competencies of mathematics teachers as members of a community of practice. Although P5 is the only participant who has explicitly mentioned Fundamental Pedagogics as the foundation of his teacher training at the college of education, "I come from a tertiary institution which had this Fundamental Pedagogics... as your... foundation for the training" (P5; 1st interview), traces of it are evident in the narrative excerpts of the other participants, for example, "Children need to be taught rules, they need to memorize things" (P7; 1st interview); and "when I started teaching I was able to give how I was trained. Because we were trained to teach {!} the subject matter... the content so, it was not difficult to come and administer {!} that to my learners in those years... That was 1993, '94, '95, '96;

and up..." (P6; 1st interview). It seems that, with the curriculum changes, the principles and practices of Fundamental Pedagogics which were construed as teaching "competence" in the colleges of education (Naidoo, 2005), were no longer relevant and therefore became a handicap. This is evident in P6's comment: "But {!} when they (*Department of Education*) introduced OBE... Then it started to sound funny when I have to put up and then the learners must do it themselves. I was used at telling {!} them and then they reproduce {!} what I've told them" (P6; 1st interview). Most of the participants (P2 and P5 excluded) saw the curriculum changes as inherently flawed. There were two reactions to the changes: Some tried it out before they resorted back to their old practices, for example: "If I'm gonna be honest with you, with Grade 8 I've tried it (*OBE*), but when it got to Grade 10, 11 and 12, I've had to focus on content" (P3; 1st interview); also, "it (*OBE*) also implied that the child had to discover things on their own... before the teacher could tell them what {!} to do [...] we tried that system, but out of thirty or forty kids, you'd find that five could discover things on their own, and thirty-five were left floundering [...] OBE was a disaster in my opinion" (P7; 1st interview). Others simply refused to change their practices, rationalising their position by claiming that, as a subject discipline, Mathematics remained intact and unaffected by the changes. For example, "it was the curriculum that was changing. But the principles in maths are not changing! [...] those things that we were doing in the past, they are still there. It is just that, it is the way now things are being done that I changing. Therefore to me, uhm... Principles are the same" (P1; 1st interview) also, "It never really affected maths educators. You know? [...] Not with maths, because maths is maths!" (P4; 1st interview). It seems that the changes in the curriculum did not affect P2, because it never came up in any of her interviews. Perhaps, in her teaching career of more than forty years, curriculum changes have had less of an impact on her professional identity than, for example, the changing demographics of the learners. It also seems that, as a result of further studies, P5 was the only participant who understood and embraced the curriculum changes: "later on I went to [*name of university*] to read for an ACE in Mathematics Education and Mathematics... and there I've been exposed to ... other ... philosophies [...] one had more knowledge than the person who never upgraded his studies [...] one could really appreciate the changes a little bit, and being slightly more informed {!}" (P5; 1st interview). It seems, however, that the principles and practices of Fundamental Pedagogics

are so deeply ingrained into the *subjective educational theory* (Kelchtermans, 1993) of the participants that it is difficult for them to let go; in other words, it has become a handicap (Wenger, 1998) in terms of shaping their professional identities.

In post-apartheid South Africa, the changes in teachers' work environment is informed by the Constitution which pledges equal rights to all learners regardless of race, gender, ability and socio-economic status; which, in turn, compels teachers to teach learners from different racial, language, and socio-economic backgrounds (Robinson & McMillan, 2006). Ongoing demographic and culture changes are especially prevalent in previous White schools, and demand ongoing changes in the teachers' professional identities. This was the case at P7's school, as he explained: "We started off as a, an all-White school in 1981... and round about 1988 we were the first school in Port Elizabeth, of the ex-Model-C's that opened our doors to people of all races. And we possibly had one black child in our school, and, slowly that has changed to the present situation where 75% of the children are Xhosa. Round about 20% are so called Coloured folk and probably 5% are White kids. So the point that I'm here {} trying to make is that I've learned to understand {} much more about Xhosa children in particular {} than I ... Uh, I had ten years ago" (P7; 1st interview). It seems that only the two White participants (P2 and P7), both teaching at ex-Model C schools, were affected by the changing demographic profiles of their schools. Perhaps this is because the demographic shift has been from township schools to ex-Model C schools and not the other way round. For P7 this was a positive experience in terms of the shift in his professional identity: "[T]he more you mix with any people of a different culture, the more you get to understand [...] it's been a very rich learning experience [...] perceptions that you previously had about children and just people in general, are often smashed [...] when schools were forced to employ people of different colours and cultures, people were threatened [...] but you soon learned that they got so much to share with you and empower you to know how to mix with other people of different races" (P7; 2nd interview). For P2 the experience was different. Unlike P7 who taught at the same school all his life, she has taught at different schools in different parts of the country. In the following excerpt she compares the learners at the demographically transformed ex-Model C school where she is currently teaching with the learners at another Model C school, in a different town, where she had taught before the large scale demographic transformations of the previously White schools: "I came from

a school [...] a Model C school, an Afrikaans speaking school, and a big school where the children... they come from good homes and most of them go to university. So, they were really eager to learn [...] And then, when I moved here [...] a completely different school, children from completely different backgrounds where they are not as motivated as those other kids were [...] so maybe it was unfair of me to compare the two schools" (P2; 3rd interview). Unlike P7, she shies away from mentioning colour, race and culture; preferring instead to focus on differences in socioeconomic backgrounds, language and levels of motivation. For both participants it was an experience of demographic transformation of their work environment. However, they seem to differ in terms of the values they attach to this experience (Beijaard, Meijer, & Verloop, 2004) and therefore also in terms of what they have learnt professionally from the experience (Beauchamp & Thomas, 2009).

The decline in learner discipline, interpreted as an onslaught on the teacher's authority in the classroom, permeates the participants' narratives of change in the workplace and has a profound impact on their professional identities and practices. For example, P2 proclaimed that: "I expected the children to behave to me as we did to our teachers [...] I'm unfortunately of the old lot. I want discipline in my class. I want respect. And I can't stand it if they don't do it" (P2; 1st interview). There are different interpretations of the origins of the perceived problem. Some, for example P4, attribute the declining learner discipline to the new freedoms and rights guaranteed by more lenient policies, "with the introduction of these, uhm, learners' rights the discipline of learners has changed [...] You know with the attitude of 'You cannot beat me; you cannot send me out of the class; you cannot this; you cannot do that; so, I might as well do what as I like.' [...] So you sitting with a bunch of learners that knows {!} that you're not supposed to do anything with them. So the discipline, uhm, I think that's the most thing that's affecting schools, mostly" (P4; 1st interview). According to P6: "The problem came in with the right, the democracy, the rights that were given to children. So children abused those rights. Secondly, the way of life at home, they are bringing, the way of life changed from parents being strict and kids adhering to rules, and that affected the kids now at school. The way they live and they act at home in the communities or in the location, they take it to school and they do as they please at school, because they have not been punished as we were punished at that time"(P6; 4th interview). Others, for example P3, see lack of discipline as something inherent, an essential

quality, of the learners themselves, “it is a totally different breed of child that we have [...] Where children see a gap, they take advantage!” (P3, 1st interview). It is clear that the discipline problems and the current policy context present the participants with challenges for which they have been ill prepared by previous experiences; as P7 explained: “Uhm, maybe 20 years ago, if a child was out of line, in terms of their rudeness or their lack of, uh, respect for the teacher, not doing their homework, perhaps bunking school and I have punished {!} a child for that, it probably would have ended up been giving a hiding, and that hiding tended to sort out the issues, and I’m not saying I’m for hiding but it tended to sort it out” (P7; 2nd interview). However, current policy prohibits corporal punishment, so the practices to which participants were accustomed to sort out discipline problems, like corporal punishment, were no longer feasible. This left an uncomfortable ‘gap’ in their professional identities, perhaps best explained by P7 who, following an incident with a learner in the school hall (to be discussed in more detail in the next chapter) which led to the prospects of legal action taken against him, explained the dilemma as follows: “I was reluctant to discipline children [...] I wasn’t sure what the next action was [...] To this day I don’t have an answer [...] I don’t know sometimes where, where this discipline issue is going to stop or how we are going to reintroduce it [...] children will not obey you and you just can’t do anything to them” (P7; 1st interview). Teachers were forced to improvise and some did so individually. For example, when corporal punishment failed, P6 resorted to an even more vicious method of enforcing discipline, “we used to beat the learners using a switch (*cane*) [...] They didn’t care! Even if I can beat them, they don’t do homework [...] So I resorted on, saying, uhm... If you don’t know the answer, one, you will stand (*this continues until the learner is on the desk*) [...] The most painful, punishment to give them is to sit, stand on their knees [...] And they cry, because they say it’s painful. But I’m forced! I cannot take them out of the class. They must be in the class [...] They take the punishment in this school!” (P6; 1st interview). Note that, according to her, all of this is in compliance with policy – she is not administering corporal punishment, neither banishing learners from class – although her motives for putting the learners through this agony are questionable. Other strategies included excluding learners from class, “the children know, I don’t take nonsense from a child. And I send him out, or her. They can stand in the door, they can still hear what I’m saying, but that’s it. Otherwise, I walk [...] they respect that. So I don’t have so much

discipline problems (P2; 1st interview); even engaging the learners in philosophical reasoning, “right at the beginning of my career, my teaching career, I always used to say: ‘Discipline is very simple. It’s about doing the right thing at the right time for the right reasons’; and I can go on. So that’s one that stands out for me. And always, you know, posing the question, uhm, making a noise... ‘Is this the right time to make a noise?’ [...] ‘Why is it not the right time?’ [...] ‘Because we must make a noise at break time. This is the time to work, to listen’ (P5; 1st interview); or keeping up a strict appearance, “That is why I’ve had to learn to... put my foot down from day one! They must see me as this... boring! [...] I’m a quiet person but {!} in my class you do as I say [...] children are scared of me [...] I’m a Born-again Christian... and every day, I have to say, ‘Lord, you have to go before me today!’ But that alone is not going to help! I have to do my part... I have to put my foot down in my class!” (P3; 1st interview). The more successful strategies came about where the school, as a community of practice, worked together and took appropriate actions to reduce learner discipline problems. According to P2, for example, it is about laying down clear rules endorsed by the school community as a whole, “if you’ve got fundamentals in place, then [...] You’ll find that learners as well tend to cooperate” (P1; 1st interview). He explained as follows: “ Uhm, the institution that I am in... is where, you know, the old type of educators were: ‘You cannot do your hair. You cannot do this and that.’ Ugh... They said: ‘No {!} not here! Only when you are out of the school!’ Of which we agreed; those are the fundamentals. And there are no learners then who are doing those kinds of things or showing off [...] You’ll find that learners as well tend to cooperate...eh, because they know that, ugh, each and every one is expected to do *a, b*, and *c* as it should [...] But {!} if... you have learners coming from other institutions now, where this was not, then they tend to be a conflict. That learner will find himself outside the school, because he’s not towing... Or the ethics of the school... The ethos of the school, he is not conforming. Then that you will find that I love it when everybody is agreeing {!} on, on something. And then, that particular learner then will tend to conform. Eh, we never had problems with discipline [...] We have learners that are so humble. Yes, they are naughty ones. But the majority, 85%, ja, they are good” (P1; 1st interview). Learners know that if they do not comply with the agreed upon ‘fundamentals’ of the school they are expelled, and therefore there are no serious discipline problems. The strategy seems to work if the school community work together as a

community of practice with learner discipline as a *joint enterprise* (Wenger, 1998). For example, P4 explained how it works when a teacher picks up a problem with an undisciplined learner: “We support each other very much. Yes, I should say that we support each other very much, very much [*followed by an explanation of what the learner might have done wrong*] the teacher always, if he brings the learner to the staff room, in most cases most of us are there... Sometimes, if he brings the learner during break time most of us are there if others are busy and we support each other in the sense that we would show that learner, not necessarily... We don't beat anymore; you know we don't give them hiding anymore. But, you know, we will talk in such a way that everybody are on the same... You know. There is no teacher saying: ‘No teachers you are wrong man.’ We support each other very much” (P4; 1st interview). Unfortunately, except for P1 and P4, the other participants have to deal with learner discipline on their own, without the support of the school community, causing much distress.

The learners’ apparent lack of motivation is what causes the participants the most distress; especially since there are close links between learner motivation and the *normative* and *evaluative* components of their *professional self* (Kelchtermans, 1993). As P6 explained: “It frustrates to teach. It frustrates to prepare a lesson. You come with different approaches, but, the learners {!} that you give the lesson, they cannot cope with it. It frustrates. That makes me not to be interested now to teach maths [...] I like the subject! But going and teach it to the learners is challenging” (P6; 3rd interview). From a normative point of view, she sees it as her duty to motivate the learners by preparing herself for the lesson, even using different strategies; and from an evaluative point of view, she is disheartened when she does not get the learners to cope. Similarly, P7 is distressed by the learners’ apparent lack of motivation: “I don’t find my children have much inward motivation [...] I’m worried about them [...] because they do come from deprived back-grounds... and their parents are battling and I’m wondering why they don’t have that same inward motivation, why don’t they want to get themselves out of the situation that they’re in?” (P7; 2nd interview). In her attempt to rationalise the problem, P2 suggests that it might have something to do with the environment: “I don't know whether it's the environment or their situations at home... maybe some of them can't do the homework, they don't have time, or they don't have a place to do it. I don't know. But, uhm, it's... it's really very very bad” (P2; 1st interview). Of

course, P2 has been teaching for over forty years and has proved herself in the mathematics classroom; therefore, she seeks the origins of the problem elsewhere and not in her own practices. P3 explained that the threat of corporal punishment used to keep the learners motivated: “When I started teaching, we could threaten them. And I used to use a ruler and I used to hit on the nails! [...] just the fact that they know they’re going to get a ... hiding or something kept them doing their work” (P3; 1st interview). However, this is no longer an option, and now she is suggesting that the teachers might be failing the learners: “I don’t know where, where we have failed these children” (P3; 1st interview). The problem of motivating the learners is a complex one, as P7 explained, “to try and get children to want to achieve at mathematics [...] it’s a challenge which I don’t know if I ever will solve it in my lifetime” (P7; 3rd interview).

And finally, in many other ways the schools where the participants are teaching are very different from the schools which they had experienced when they were learners themselves, and the schools keep on changing and making more demands on their professional identities. For example, Lasky (2005), in a study of similar changes in secondary schools in Ontario, found that teachers believed that their professionalism was systematically being eroded by the reform context; moreover, that they were impotent to change this. She wrote: “They [the teachers] experienced inefficacious vulnerability as they watched valued work conditions rapidly disappear” (p. 913). When this happens, “[w]hen one’s identity as a teacher, one’s professional self-esteem or one’s task perception are threatened by the professional context, then self-interests emerge. They always concern the protection of one’s professional integrity and identity as a teacher” (Kelchtermans & Ballet, 2002, p. 110). Teachers with a strong commitment to their learners react to cost-cutting measures and increased workload pressure by drawing on the construct of the ‘ideal’ teacher – conscientious, hardworking, and self-sacrificing – and by simply working harder (Robinson & McMillan, 2006, p. 334). Other teachers simply withdraw, as Wenger (1998) cautioned, “members whose contributions are never adopted develop an identity of nonparticipation that progressively marginalises them” (p. 203). As P7 explained, “sometimes when you want to get things right – as I often want to do in the staffroom – I’ve been reminded that I mustn’t be a negative influence on people’s lives and it’s not at all what you’re trying to do. So you, in fact, start being... The one that’s actually trying to do

the thing right is the one that gets persecuted for trying to be a 'Smart Alec' and eventually, you know what happens, you sit back and you say, well, I can see this is going to go one way down, but I'm not going to open my mouth because I'm seen as a stumbling block and definitely I feel that at times. There are times when people listen, but not always" (P7; 3rd interview).

The narratives of changes in the participants' work environment were mostly related to: curriculum; demographic profiles of the school; learner discipline; and, learner motivation. The relative importance of these differed across participants. For example, there was no reference to curriculum changes in the narratives of P2, an experienced mathematics teacher, who started her teaching career in 1968. Perhaps, as suggested before, in her teaching career of more than forty years, curriculum changes have had less of an impact on her professional identity than, for example, the changing demographics of the learners. Only P2 and P7 mentioned changes in the demographic profiles of their schools as significant changes in their work environment. Perhaps, because they are both White they were more affected by these demographic changes as they witnessed how the schools where they teach have changed from predominantly White institutions to predominantly Black institutions as explained in their excerpts above.

5.3.4 Continuous Professional Development

The development of a teacher's professional identity begins as early as the pre-professional period and is mediated through prior influences such as their *past experiences as pupils* and *initial teacher training* (Flores & Day, 2006; Schepens, Aelterman, & Vlerick, 2009; Castro, Garcia, Cavazos Jr., & Castro, 2011). During this time, their professional identity is influenced greatly by factors such as their student images of their own teachers (Zirkel, 2002; Lasky, 2005; Flores & Day, 2006; Schwandt, 2008); their initial beliefs and concepts of what constitutes a good teacher (Schepens, Aelterman, & Vlerick, 2009); their implicit theories of teaching (Sutherland, Howard, & Markauskaite, 2010); and their beliefs about the purposes of schooling (Lasky, 2005). For example, P1 explained his mathematics teacher's profound influence on his professional development: "that impression that he (*the teacher*) imprinted in me is still in me [...] some of those characteristics that he had, I also have them" (P1; 2nd interview). Over time, however, their professional identities are refined through reflection as they develop more sophisticated understanding of their profession through a

combination of educational experiences and formal studies (Geijsel & Meijers, 2005). For example, as P5 explained, “later on I went to [*name of university*] to read for an ACE in Mathematics Education and Mathematics... and there I’ve been exposed to ... other ... philosophies [...] one had more knowledge than the person who never upgraded his studies” (P5; 1st interview). Professional identities may be refined through continuous professional development; either through formal initiatives, such as the MTEP of Rhodes University or the ‘cluster’ system of the Department of Education: “We sit as cluster educators [...] and discuss as educators in a cluster, you know: How do we... solve those various problems that we, we, you know, that we face each and every day at schools” (P4; 2nd interview); or informally, such as through informal staffroom conversations with colleagues. As P2 explained, “the teachers at that school [...] we exchanged ideas [...] you learn from your colleague a lot. More than from just attending workshops and things like that. Be-cause in the class it comes back to how do you teach this, and how do you teach that” (P2; 1st interview).

Formal professional development is important, especially during educational or school reform, provided that it is relevant (Phillips, 2008; Flint, Zisook, & Fisher, 2011). In other words: “Change can take place if Professional Development is relevant and systematic. Change and reform are inevitable with constantly developing ideas of what constitutes best practice in teaching and learning and societal changes” (Phillips, 2008, p. 4). Furthermore, according to Phillips (2008), formal professional development initiatives must be subject specific; involve non critical reflection – either personal or collaborative; and, it must offer opportunities for participation in professional networking. The more meaningful models of professional development are collaborative, learning centred, related to practice, and “unfolds organically rather than being predetermined and having a simplistic endpoint or goal” (Flint, Zisook, & Fisher, 2011, p. 1164). The importance of relevant professional development initiatives is neatly demonstrated in P2’s comments about her experiences of the MTEP programme: “In some of the sessions, I don’t (*learn anything*)... I go away and I say, I could just as well have stayed away! But in some of the sessions, then I can see, okay, this person does it like this [...] not all of it can be used in our daily classes, that is a problem. Nice things {!}, very, very nice things {!}; but... it takes time” (P2; 2nd interview). Formal professional development often fails because of “[a] vague relationship to the classroom, no

preparation required, simple dissemination of information, little relevant activity and no real application” (Phillips, 2008, p. 4). Often the latter takes the form of one-day workshops, described by Flint, Zisook and Fisher (2011) as isolated in nature and having “teachers passively receiving information from identified experts on strategies or approaches that they will then implement unquestioningly (and often half-heartedly or resentfully) in their classrooms” (p. 1164).

In contrast, according to Phillips (2008), informal professional development is often “peer facilitated [and] common for smaller ideas and more directed information, such as individual behaviour or educational plans for particular students” (p. 5). As P2 explained: “And also the teachers at that school... We were three, you know, maths teachers. And we were the biggest friends. And, uhm, we exchanged ideas. Uhm, how do you teach this? How do you teach that? I learned from them, they learned from me. Uhm, you know that’s that’s also something. You must you must open your mind to new suggestions how to do a certain thing. And then when you discover a method that works for you, that works for your children, uhm then, tell others about it [...] you learn from your colleague a lot. More than from just attending workshops and things like that. Because in the class it comes back to how do you teach this, and how do you teach that” (P2; 1st interview). According to Phillips, such inter-collegial networking opportunities count as a form of mentoring:

Mentoring is a practical way to pass on important traditions, information, procedures and knowledge both of subject content and classroom management skills. This type of adult learning is often called intergenerational learning and is recognised as a practical and successful teaching and learning practice (Phillips, 2008, p. 5).

However, if through such mentoring a novice teacher becomes more knowledgeable and greater mastery of the shared practice of teaching is gained, as Phillips (2008) seems to suggest above, then mentoring might be construed as an act of *legitimate peripheral participation* in the practices of a *community of practice* (Lave & Wenger, 1991). Moreover, there are definite correspondences between Phillips’ (2008) notion of mentoring and Lave and Wenger’s (1991) notion of *legitimate peripheral participation*. For example, much like *legitimate peripheral participation*, “[m]entoring is non formal (*sic*) learning and is quite different to learning in formal settings” (Phillips, 2008, p. 6); and for the mentor, certain mentoring skills are imperative: “An ability and willingness to impart knowledge about much more than just classroom teaching... they need [to] help navigating the politics, culture and

day to day administration of the school” (Phillips, 2008, p. 6). Therefore, as Kelchtermans and Ballet (2002) duly pointed out: “Opportunities to share concerns with colleagues or to discuss didactical questions are a very important working condition for beginning teachers” (p. 115). Later Kelchtermans (2013) added: “Collegial relations and interactions – as one of the most influential aspects of teachers’ organizational working conditions – become even more relevant and crucial in the context of university-school collaborations” (p. 2). Thus, in order to be meaningful, “intergenerational learning” (Phillips, 2008) or learning through “collegial relations and interactions” (Kelchtermans, 2013) should be a non-negotiable common denominator in both formal and informal continuous professional development. Through the process of *legitimate peripheral participation* (Lave & Wenger, 1991) or *mentoring* (Phillips, 2008) the professional identity of a mathematics teacher is shaped; while at the same time, the community of practice of mathematics teachers is reproduced. According to Schepens, Aelterman and Vlerick (2009) “research findings confirm that professional identity formation is indeed an ongoing (*sic*) integration of what is individually and collectively seen as relevant to teaching” (p. 376). Hence, I concur with Flint, Zisook and Fisher’s (2011) conclusion: “As teachers participate in authentic and meaningful professional development opportunities in communities of practice, they draw upon their cultural resources, values, attitudes, understandings of the world, and networks of relationships. All of these contribute to forming particular communities of practice and identities” (p. 1164). According to Smith (2001) there are three basic factors that contribute to success during teacher collaboration: firstly, a commonly held belief in collaboration as an ideal way for teachers to work together; secondly, agreement that it is an opportunity to end isolation and to talk and exchange ideas and materials with colleagues in a conducive social environment; and lastly, knowing that one would be able to give and receive support from each other as colleagues when taking on the challenge of learning new teaching skills.

5.3.5 Professional Recognition

Professional recognition is part of the *evaluative (self-esteem)* component of Kelchtermans’ (1993) retrospective dimension of a teacher’s *professional self*. This component has to do with the evaluation of oneself as a teacher. In their first year of teaching novice teachers invest heavily in the development of self-confidence, and the judgement and recognition of learners and colleagues play a central role (Kelchtermans & Ballet, 2002). From the data

presented here it emerges that it is often the learners who are seen as the most important determinants of a teacher's *self-esteem*. Commonly cited indicators of self-esteem include the learners' school results and the quality of the personal relationship the teacher has with the learners. For example, P1's story of his experience, as a beginning teacher, with a group of "technical boys" who were "running away from maths" because their teacher was "this hefty man" and how he turned that around: "Those boys, ever since I worked with them, they got distinctions! [...] I had about eight A's and lots of B's because of... I change the environment. I change the way learners look at maths [...] in my classes, they would come earlier than the normal classes" (P1; 1st interview). Teachers also evaluate themselves in comparison with other teachers. For example, in P1's story above, he compares the success that he had with the "technical boys" with the apparent failure of their previous "hefty" teacher from whom they were running away (P1; 1st interview). Not only did their school results improve, they were now getting distinctions; but also their personal relationship with P1 was better than with their previous teacher; they were now coming to class earlier instead of "running away from maths" (P1; 1st interview). Kelchtermans and Ballet (2002) explained as follows: "If pupils do well on their tests, this is motivating and reassuring to the beginning teacher. Bad results often lead to self-doubts and external criticism. Teachers often tend to blame themselves for pupils' failures. All these artefacts thus get a symbolic importance in beginning teachers' self-presentation and their quest for professional recognition" (p. 112). Teachers' feelings of job satisfaction largely come from their interactions with learners and their feeling that they had some kind of positive influence on the learners' academic, social, and emotional development (Lasky, 2005). This is evident in P6's story of how one of her high-achieving learners mentioned her contributions to his education during a specially arranged farewell function: "When we were doing a sending of for this boy [*name of boy*] it was done in the community hall. He mentioned that, I was a motivation in his life! Whenever {!} they did something wrong, I would correct it immediately" (P6; 2nd interview).

However, teachers also look for professional recognition at sources other than the "significant others" mentioned above. For example, P2 saw her steady progression through the hierarchy of markers of Matric (Grade 12) examination papers as a form of professional recognition: "I was even the trial examiner for the trial exams in the higher grade first paper.

So, ja, I first started with just, uhm, a marker, and then I became a senior marker, for a quite a number of years. And a senior marker has the other markers to... to, you know, moderate their papers. There I learned a lot!" (P2; 1st interview). In this example, the Department of Education itself, as the official administrator of the Matric Examination, is the perceived source of professional recognition. Other sources of professional recognition, outside of the immediate school context, include the parents of the learners. For example, P5's story of how upset the learners' parents were when, after his first year at a Catholic primary school, he resigned to take up a position in a high school: "the parents actually went back to the principal and demanded my reinstatement thinking that I was axed from the staff [...] And I'm a non-Catholic, and it was at a Catholic school! That was really, you know, something for me to see those, the group of parents toy-toying there to have me back at school" (P5; 1st interview). This is a significant (Sfard & Prusak, 2005a; 2005b) identity-shaping story, especially since this happened after his first year in the profession as a teacher. At this early stage in a teaching career, professional public recognition from sources outside of the school is particularly powerful. As Kelchtermans and Ballet (2002) explained:

Sometimes beginning teachers proactively start looking for public recognition and take up professional challenges that might contribute to that goal... the experience of professional success inside and outside the classroom proves to be essential to the development of professional self-confidence by beginning teachers. They strive for as many success experiences as possible and often proactively look for opportunities to demonstrate their competencies and have them recognised by significant others... developing a socially recognised identity as a proper teacher constitutes a highly valued working condition for any beginning teacher (Kelchtermans & Ballet, 2002, p. 111).

In summary, the beliefs that teachers hold about how to be a good teacher are inseparable from their notions of professional identity (Lasky, 2005).

5.3.6 Religion

The constructs of identity and identification derive part of their power from a "need for a situated sense of an entity" (Albert, Ashforth, & Dutton, 2000, p. 13) of which culture is a main provider. Cultures accomplish this by acting as repositories of culturally significant stories: "One's self-concept or self-identity is fashioned by adaptation of plots from one's cultural stock of stories and myths" (Polkinghorne, 1991, p. 135). Moreover, cultures differ, "not only in their understanding of the nature of the world, but also in their views of the purpose and meaning of human existence" (Polkinghorne, 2000, p. 266). Therefore, as a source of identity-shaping stories, one of the primary functions of culture is to provide

answers to the questions: “Who am I?” and “What is my purpose?” The argument here is that these questions are best answered by drawing on the individual’s cultural stock of religious stories.

Whether an organization, group, or person, each entity needs at least a preliminary answer to the question ‘Who are we?’ or ‘Who am I?’ in order to interact effectively with other entities over the long run. Similarly, other entities need at least a preliminary answer to the question ‘Who are they?’ for effective interaction. Identities situate the organization, group, and person (Albert, Ashforth, & Dutton, 2000, p. 13).

A number of narrative researchers (Kerby, 1991; Bruner, 1994; Polkinghorne, 1996; 1988) alluded to the ability of culture to maintain and communicate culturally specific identity answers in storied form. Polkinghorne (1996; 2000), for example, maintained that since pre-industrial times, Western culture has always maintained a “relatively authoritative and consistent set of answers to people’s identity concerns” (1996, p. 365) grounded in religion; that is, that “the purpose of human existence was to serve and please God” (2000, p. 266). He explained as follows:

The answers were set in a metadrama about God’s confrontation with and victory over evil. The theme of the story of people’s purpose in life was service to God in whatever social role He has assigned to them. The drama in these stories centered around the pursuit of salvation and eternal happiness and to overcome the temptations that stand in the way of pursuit of the good (Polkinghorne, 1996, p. 365).

Religion was joined by Science during the Modernist or ‘Enlightenment’ period in propagating the view that “humans have no inherent purpose, their goal is to bring about the greatest happiness for as many people as possible” (Polkinghorne, 2000, p. 267). In contrast, the postmodern period is characterized by general scepticism about the ability of science to deliver human happiness; and even about the appropriateness of happiness as a human goal (Polkinghorne, 2000).

For some of the participants in this study, stories of religion continue to be an inspiration and source of both personal and professional identity. For example, when P3 says: “Uhm, what has also encouraged, what has helped me is that I’m a Born-again Christian... and every day, I have to say, ‘Lord, you have to go before me today!’ But that alone is not going to help! I have to do my part... I have to put my foot down in my class!” (P3; 1st interview); she claims to be drawing strength from God and thus from her religious convictions as a Born-again Christian. This is an example of an identity-shaping excerpt;

because as a first-person account, it is both *significant* and *endorsable* as well as *reifying* (Sfard & Prusak, 2005a; 2005b). In the follow-up interview P3 confirmed this: “Because of my Christian values I've learnt that if a child has upset you, it's a child. Even if my colleague has upset me, we move on. Tomorrow is a new day” (P3; 2nd interview). White (2009) explained that an individual enters a new profession with an existing substantive identity shaped by “prior experiences that influences current notions of self” (p. 861); which, in turn, serves as a platform for the development a professional identity. The individual must then draw on this existing personal identity so that “the personal and professional notions of self shift (*sic*) and interact together to form the teacher’s professional identity” (White, 2009, p. 861).

I consider the religious aspect as the most important to me because I believe that I am who I am because of the...what is the word? Putting it spiritually, I see myself being in the centre of God’s will, this is what He wanted for me, to be a teacher. So I’m very, very happy where I am. When teachers complain, about the politics and all that, but aside from all that in teaching I enjoy teaching. I don’t like all the other admin and all of that but teaching is where I am supposed to be in my life. That’s where I get my fulfilment; I get my satisfaction, being able to make a difference in a child (P3; 4th interview).

In this excerpt P3 explained that her existing substantive identity is rooted in the Christian religion, and that this is the platform for the development of her professional identity. In this respect, she was not the only one. For example, P5 explained how his relation with God made him humble and taught him servitude – to be generous with his time as a mathematics teacher and how he learnt to accept non-monetary rewards like more experience, a deeper understanding of the discipline, and even more opportunities to serve:

I have to journey through life with God on my side, just providing what I need, and not necessarily what I want. So I think that had a huge impact on my life. A very huge impact on my life, in terms of my philosophy, in terms of the quality of my faith which could so easily have gone the other way [...] I became humble, and I think that is a basis for service to other people. Servitude and humility goes hand in hand. I'm glad that that kind of humility could be the springboard for me to continue to serve people, and derive huge fruits and rewards from service. And I could, to some extent, link that to me as a Maths teacher. I feel it makes me more generous with my time, having told you that it wasn't really for the reward that I worked with Plato, but more for the experience and to serve. And there was some Australian model Maths and English school. I can't remember

the name. I taught there as well, just for a few Rand an hour: maybe R14 an hour, something like that. And I also helped a lot of other kids, but without asking any remuneration for that. So, I think, to some extent, it made me a very generous person, and the more I started to help people, especially with Maths and later Accounting, and so on, the more my understanding of the discipline evolved, and the more I could give. And the more I gave, the more I received opportunities, and so on (P5; 3rd interview).

Through his religious convictions, P5 voluntarily forfeits agency to God to provide “what I need, and not necessarily what I want” (P5; 3rd interview). Therefore “religion may be a component of a teacher’s professional identity, if it is an aspect of a teacher’s personal experience” (White, 2009, p. 861). For example, the power of religion in shaping personal and professional identities is demonstrated by P6’s story of the positive role that “the church” (probably used here as a metonym for religion) had played in the shaping of her personal identity (remaining celibate) and professional identity (persevering to become a teacher).

One good thing was going to church. The church had a very good impact on my life. We were suffering. Out of that group of us from the farm I could count only two or three that made it, less than ten of us that made it to working people. I didn't have a fall, I didn't fall pregnant while I was young when most of my friends were pregnant, because I was going to church, and when I was in church I was focused. I was listening to what they were saying and wanted to do exactly what they were saying. I went to Sunday school, went to youth guilds, and that put me on position [?]. When we were doing grade 12 one of friends committed suicide because of her boyfriend. I told myself that it is good that I was never involved with boyfriends, because I would be in that position that she was going through (P6, 3rd interview).

She explained that times were extremely difficult. They did not live in town (her parents were farm labourers) and they had to walk far to attend school in the township on the fringes of the town and there the town people discriminated against them. Many of the group of girls from the farm who attended school with her in town fell pregnant before they were able to finish school. Her life turned out differently because she attended church, remained focused (presumably on becoming a teacher), listened to what they were saying in church (stories of religion) and tried to emulate the church stories (making religious stories part of personal identity). This enabled her to stay celibate by not succumbing to temptations, “I was never involved with boyfriends” (P6; 3rd interview); and that is why,

unlike the other girls who were involved with boyfriends, she was able to avoid their mistakes and pursue her goal of an education.

She also related how, in difficult times, when they were forced to wear hand-made or second hand clothes, the church and priests had shaped her personal self-esteem when the other children were laughing at her.

So the church and the priests of that time had a very good impact on my life. They saw that we were suffering. We would wear clothes that were sown by hand. You could see where it was [unclear], and it was not beautiful, but that priest, [name of priest], [name of priest] and his wife would take us to their house, and give us their kids' clothes. We would wear their kids' clothes in church. We were laughed at by the others in church because they knew that the dress I was wearing was [name of priest's daughter] dress, the priest's daughter, but it didn't make any... because when she [the priest] was giving me those clothes she told me that 'People know this, but to you it's a new dress. You wear it and you come to church. God loves you as you are.' That made me stand even if there were challenges - I went to school, I went to college, I passed, I worked, so the church, specifically that priest, she made a very good impact in my life (P6, 3rd interview).

In this interview P6 explained how she draws her strength and determination from a story of a second-hand dress coupled with a simple religious message: "God loves you as you are" (P6, 3rd interview). This story shaped P6's personal identity and is a source of strength and resilience when faced with difficult challenges, as it enabled her to persevere and to pass through college and become a teacher, despite many obstacles.

5.3.7 Micro-politics

According to Kelchtermans (2005), working conditions at schools are neither static, nor externally given, and constantly develop and change under the influence of changing circumstances and interventions of teachers. Furthermore, he argued that teachers know more or less what their *professional interests* are, that is, what working conditions they prefer in terms of doing a proper job and experiencing job satisfaction. However, when their professional interests are under threat, teachers will engage in *micro-political action* to protect their interests (Kelchtermans & Ballet, 2002; Kelchtermans, 2005). Such micro-political action can trigger intense emotional reactions (Kelchtermans, 2005). For example,

P1 explained how his colleagues refuse to cooperate with his voluntary offers to assist with their teaching, which causes him great emotional distress:

One other low point to the way you do your utmost best to assist a particular teacher now in ensuring that the learners are doing their best and what you are trying to put in is not appreciated [...] this teacher is not the one who is driving what you are driving [...] That to me... it's one of the key things that kills {!} me. And it makes me to be demotivated, because at the end of the day you try to help, but this help is not appreciated (P1; 1st interview).

As a person who loves to work in a group, “in all my studying of maths... we have tried to make groups. And I found that... the more you make groups, the more understanding, the more collegial the groups will be, or the more sharing” (P1; 1st interview), he finds this phenomenon both distressing and demotivating. What is clear, however, is that P1 has triggered a *micro-political action* against his efforts, which are seen by his colleagues as a potential threat to their *professional interests*. Perhaps, in terms of *micro-political literacy* (Kelchtermans & Ballet, 2002; Kelchtermans, 2005), he is lacking the *knowledge aspect* necessary to acknowledge, interpret, and understand the micro-political character of the particular situation; and the *instrumental or operational aspect* necessary to influence the situation. However, he does not lack the *experiential aspect*, which is evident in his expression of intense emotions of discomfort, powerlessness, and demotivation. Likewise, P3 had a similar experience albeit in a different context:

you don't get cooperation with your colleagues [...] you just find you are fighting a losing battle. This person is just going ahead and doing his or her thing... [....] So it's not about me, but when your colleagues work against you, that is very demotivating [...] And each one is just doing his own thing [...] you try hard to get your colleague to work together, you just don't get the necessary cooperation [...] I've had to learn to work around it (P3; 1st interview).

In this context P3, as the grade leader for Grade 8, tried to introduce changes which were perceived by her colleagues as an onslaught on their *professional interests* which they sought to protect by resorting to *micro-political action*. It seems that, like P1 above, P3 also lacks the *micro-political literacy* to deal with the situation. For her the solution lies in teaching all the classes herself: “I would, if I could teach seven grade 8 classes... I will be happy... really! I've got lots of ideals, and I'm going to do this {!} and that {!} with them, you know, and then I don't have to struggle with a colleague [*Emphasizing each word*]... Give me all the grade 8's and I can work! You know what I'm saying?” (P3; 1st interview). In contrast,

P7's attempts to make contributions, mostly based on his experiences as one of the longest serving staff members at his school, are seen as counter-progressive and an obstacle to change:

sometimes when you want to get things right – as I often want to do in the staffroom – I've been reminded that I mustn't be a negative influence on people's lives and it's not at all what you're trying to do [...] The one that's actually trying to do the thing right is the one that gets persecuted [...] and eventually, you know what happens, you sit back and you say, 'Well, I can see this is going to go one way down, but I'm not going to open my mouth because I'm seen as a stumbling block' (P7; 3rd interview).

The *professional interests* of P7's colleagues, who are mostly newcomers at the school, "you'll see that it's one-third Xhosa, one-third Coloured folk, one-third White folk in the staff room, and two Zimbabweans" (P7; 2nd interview), seem to be vested in the continued transformation of the school; and that any perceived obstacles are met with *micro-political action* of the kind P7 describes here. As a result, P7 is rendered vulnerable, perhaps feeling that he has no direct control over the factors that affect his immediate context, and that he is "being 'forced' to act in ways that are inconsistent with [his] core beliefs and values" (Lasky, 2005, p. 901). The reactions of the above-mentioned participants, all at the receiving end of *micro-political action*, are not uncommon amongst people in similar situations of vulnerability: "Rather than willingly opening themselves up emotionally in such situations, they may in fact withdraw, or, close themselves off in a defensive or protective stance" (Lasky, 2005, p. 901). However, such reactions have consequences in terms of their professional identities, as Lasky (2005) pointed out: "Such a closed stance inhibits learning, trust building, and collaboration and the person in that stance may feel political inefficiency, fear, anger, or defensiveness... and [thus] take no risks" (p. 901). For example, P7 decided to exclude himself from any further participation in the staffroom discussions; rather than to run the risk of being silenced. From their reaction to the *micro-political action* of their colleagues, it seems that the latter was successful in forcing the participants to relinquish their agency (Lasky, 2005; Sfard & Prusak, 2005a; Beauchamp & Thomas, 2009) to affect changes to their *professional interest*.

5.4 Chapter summary

It is important to note that, by illuminating and organizing the narratives that shape the professional identities of the seven participants in the way that it is done in this chapter, I am not claiming to have comprehensively covered all of their identity-shaping narratives. Such an ambitious claim would be far beyond the scope of this thesis. At best, what is presented here are the most salient identity-shaping narratives that had transpired during the interviews with the seven participants. These have been organised into seven thematic categories, namely: family support; role models; changing work environment; continuous professional development; professional recognition; religion; and, micro-politics. In view of their shaping effects on the professional identities of the participants, both positive and negative stories were considered for inclusion in the thematic categories. The next chapter will focus on how personal narratives shape a professional identity.

Chapter 6: Vertical Data Analysis

6.1 Introduction

The aim of this chapter is to explore the secondary research question posed in this study: *How do narratives shape the professional identities of Mathematics teachers?*²⁶ In this chapter this question is addressed via a *vertical analysis* (Kelchtermans, 1993; Hunter, 2010) of the narratives of individual participants. It takes a *storytelling* approach (Chenail, 2012) of exploring these narratives for a “narrative plot” (Polkinghorne, 1988; 1991; Oliver, 1998) indicative of a *core narrative* (Hiles & Čermák, 2008) that is representative of a professional identity²⁷. The notion of *core narrative* is defined as “a theme that is vivid, permeating the entire text, and is meaningful” (Hiles & Čermák, 2008, p. 157).

However, in order to count as identifying, a *core narrative* would have to be *significant*, *endorsable*, and *reifying* (Sfard & Prusak, 2005a; 2005b). In this context, *core narratives* can be assumed to be both *significant* and *endorsable* by default: firstly, since they are based on first-person accounts in which the participants told stories about themselves; and secondly, because their significance and endorsability were verified in collaboration with the participants (Ollerenshaw & Creswell, 2002; Schiellerup, 2008) during the member checking (Guba, 1981; Creswell & Miller, 2000). Therefore, in terms of Sfard and Prusak’s (2005a; 2005b) operational definition of identity, a *core narrative* can be regarded as identifying if it can be shown that, in addition to the above, it is *reifiable* as well. As Heyd-Metzuyanim and Sfard (2012) maintain, two features of an endorsed, subjectifying utterance will reveal whether it counts as identifying or not: its power to reify; and, its significance for the speaker.

The interviews rendered extremely rich and detailed narrative data, prompting an attempt at data reduction (Miles & Huberman, 1984b; 1994; Huberman & Miles, 1994) without losing sight of its implications in terms of the power relations between the participant and the researcher (Nespor & Barylske, 1991). Therefore, in the final interview, the cooperation of the participants was solicited in selecting the most pertinent and

²⁶ See Chapter 1, section 1.4.2 for the secondary research question.

²⁷ Identity is not static; it is continually shaped by narratives of new experiences, therefore, what are presented here, at best, are the professional identities of the participants at the time of the interviews.

significant (Sfard & Prusak, 2005a; 2005b) identity-shaping stories in terms of their professional identities.

In summary, in this chapter it is argued that through the process of interpreting the narrative evidence (through stories, descriptions, arguments, explanations, and the like) and joining them into a meaningful *core narrative*; it would be possible to gain insights into *how* personal narratives shape a professional identity. The aim, therefore, is to *restory* (Ollerenshaw & Creswell, 2002) the original raw narrative data into a “*core narrative*” (Hiles & Čermák, 2008, p. 157) which epitomises each of the selected four participant’s professional identities in order to explore *how* these are shaped by their personal narratives.

6.2 Interpreting individual narratives

In this chapter, the *vertical analysis* (Kelchtermans, 1993; Hunter, 2010) or *within-case analysis* (Miles & Huberman, 1994) of the narrative data is based on the *holistic-content dimension* of Lieblich, Tuval-Mashiach and Zilber’s (1998) two-dimensional classification model²⁸. This approach is based on a *restorying* (Ollerenshaw & Creswell, 2002) of the narrative data of individual participants. Unlike in the *horizontal analysis* used in the previous chapter, this approach entails more than just a thematic analysis across the narratives of the different participants. A *vertical analysis* is conceived here as the distilling of a “*core narrative*” (Hiles & Čermák, 2008, p. 157) from the stories of each individual participant; where *core narrative* is defined as “a theme that is vivid, permeating the entire text, and is meaningful” (Hiles & Čermák, 2008, p. 157). The process of distilling a *core narrative* is perhaps best described by Ollerenshaw and Creswell (2002) themselves:

It involves a complex set of analysis steps based on the central feature of ‘restorying’ a story from the original data. The process of restorying includes reading the transcript, analysing the story to understand lived experience (Clandinin & Connelly, 2000) and then retelling the story (p. 330).

In other words, the process of distilling a *core narrative* is tantamount to uncovering the process of *emplotment* (Kerby, 1991; Polkinghorne, 1991; Emden, 1998) and reconstructing the *narrative plot* (Oliver, 1998; Polkinghorne, 1988). As Kaasila (2007a) explained, people’s

²⁸ See Chapter 4, section 4.5.2

lives are incoherent, therefore they retrospectively try to construct more coherent autobiographies by explaining themselves to others: “Usually the narrator tries to explain to the listener things that feel exceptional: explanations are one way to create coherence in the story” (p. 377). Therefore, in order to explain *how* personal narratives shape professional identities, the process of restorying narrative data must entail an examination of individual experiences, as captured in the stories of the participants, for specific elements that can be “combine[d] into a sequence to form a new story, complete with contextual detail and often told in collaboration with participants” (Ollerenshaw & Creswell, 2002, p. 345). The making of this *new story* or “*core narrative*”, defined by Hiles and Čermák (2008) as “a theme that is vivid, permeating the entire text, and is meaningful” (p. 157), is viewed as instrumental in explaining *how* personal narratives shape the professional identities of the participants.

According to Lieblich, Tuval-Mashiach and Zilber (1998), the *holistic-content dimension*, as the name suggests, takes into account the complete life story of an individual and focuses on its content. The *fabula* is emphasized, but not at the expense of *sjuzet* (Hiles & Čermák, 2007); in other words, the focus is on ‘*what*’ the stories are all about, without losing sight of ‘*how*’ they are told. Meanings of separate sections of a story are analysed in terms of content that emerges from the rest of the story, or, in the context of the life story as a whole. Moreover, such exploration and establishment of links and associations amongst discrete pieces of narrative data is construed here as a *restorying* (Ollerenshaw & Creswell, 2002) of the original raw narrative data into a “core narrative” (Hiles & Čermák, 2008, p. 157). Furthermore, if it is assumed that such an emerging *core narrative*, composed of the stories of an individual, is an indication of that individual’s professional identity, as Sfard and Prusak’s (2005a; 2005b) operational definition of identity suggests; then, the *holistic-content dimension* (Lieblich, Tuval-Mashiach, & Zilber, 1998) is a particularly useful theoretical base for a *vertical analysis* (Kelchtermans, 1993; Hunter, 2010) of *how* the participants’ narratives shape their professional identities. From a *holistic* perspective, the life story of a person is taken as a whole, and sections of it are interpreted in the context of other parts of the narrative – preferred when the whole person, that is, their development into being the current person that they are, is the object of interest. From a *content* perspective, the focus is on explicating the *what*, *why*, and *who* of an event from the viewpoint of the teller – the focus might even be on implicit content by probing for the

meaning of a story or a section of it; the traits or motives of the narrator; or, the symbolism behind certain images used by the narrator. Lieblich, Tuval-Mashiach and Zilber (1998) are not prescriptive in terms of the approach that is to be used in a narrative analysis based on their model. As a result, several different approaches for the narrative analysis of life-stories have been developed, all of them tailored to answer different research questions in accordance with specific disciplinary requirements; for example, Hiles and Čermák's (2007; 2008) Narrative Oriented Inquiry in Psychology. What this means, however, is that the narrative researcher using Lieblich, Tuval-Mashiach and Zilber's (1998) model must either select or adapt an existing analytical procedure, or develop a new one in order to answer the research question(s) in accordance with specific disciplinary requirements. Hence, Ollerenshaw and Creswell (2002), for example, distinguished between two approaches to the restorying of raw narrative data: a *problem-solution* approach, and a *three-dimensional space* approach. In the *problem-solution* approach: "A researcher takes the raw data in the form of the transcription and analyses the data for five elements of plot structure: characters, setting, problems, actions, and resolution. The analysis process involves organizing the elements into attempts or events and then sequencing the attempts or events" (p. 333). On the other hand, the *three-dimensional space* approach, based on the work of Clandinin and Connelly (2000), consists of the three dimensions: *interaction*, *continuity*, and *situation*. Ollerenshaw and Creswell (2002) explained this approach as follows:

The basis of this approach is Dewey's philosophy of experience, which is conceptualized as both personal and social. This means that to understand people (e.g., teachers, students, and administrators), one examines their personal experiences as well as their interactions with other people. Continuity is related to learning about these experiences, and experiences of out of other experiences, Furthermore, these experiences occur in a place or context such as a school classroom or a teacher's lounge (p. 339).

In a *three-dimensional space* approach, the interaction involves both the personal and the social; continuity involves the past, present, and future; and, situation involves the context or the "storyteller's landscape" (Ollerenshaw & Creswell, 2002, p. 339). Distinguishing between the two restorying approaches, as Ollerenshaw and Creswell (2002) do, however, does not make them mutually exclusive; and therefore, I will draw on aspects of both when and where necessary. However, it should be pointed out that, from a sociocultural

perspective, the *three-dimensional space approach* seems better suited to explore *how* personal narratives shape professional identities based on the three dimensions of *interaction, continuity* and *situation*. Bishop (2012), for example, pointed out that stories are temporally bound, “we iteratively re-narrate our experiences and our identities in the light of new experiences... [Stories] are a snapshot of what they were then [at the time of telling], but not what they may have been in the past and might be in the future” (p. 379). Stories change over time, and of necessity, because: “It is not enough to retell the same story in the same way across time if that story is to be used to connect with new meaning and inform us in the present... a story remembered must be revisited and reconstructed using our own life experience across intervening years” (Shields, 2005, p. 180). As Bishop (2012) explained: “An understanding of the reconstructive possibilities of self-narratives provides impetus for re-narration” (p. 379) and therefore for identity shaping.

In summary, this chapter aims to *restory* (Ollerenshaw & Creswell, 2002) the original raw narrative data of each of the four selected participants into a “*core narrative*” (Hiles & Čermák, 2008, p. 157) which epitomises each individual’s professional identity; and in doing so, to show *how* these are shaped by their personal narratives.

6.3 Reducing the selected sample

Because of the overwhelming amount of narrative data collected, there was a need for *data reduction* (e.g., Miles & Huberman, 1984b; 1994; Huberman & Miles, 1994). It would be far too ambitious, on the part of the researcher, to attempt to do full justice to the narrative shaping of all seven participants’ professional identities through a vertical analysis within a single chapter of a PhD thesis. Therefore, the focus of this chapter is limited to: firstly, the professional identities of only four of the original seven participants (i.e., P1, P2, P4 and P7); and, secondly, only to the most pertinent identity shaping-stories of these participants. The four participants were *selected purposively* (Guba, 1981; Polkinghorne, 2005) from the original sample of seven on the basis of variations in their sociocultural backgrounds (see Table 5 below). The rationale behind the *purposive selection* is that, based on differences in their sociocultural backgrounds, these participants would have varied experiences and ways of making narrative sense of their experiences; hence, presenting qualitatively richer data in terms of *how* narratives shape professional identities. As mentioned before, only the most

pertinent identity-shaping stories were selected in collaboration with the participants. These selected stories were then treated as the primary units of analysis: firstly, because this is in line with Sfard and Prusak's (2005a; 2005b) operational definition of identity; secondly, because it has been argued so far that all stories are narratives; and thirdly, because from a narrative analysis perspective, the story as a whole, rather than segments of text, should be the focus (Greenhalgh, Russel, & Swinglehurst, 2005).

Table 5: Sociocultural backgrounds of the participants selected for horizontal analysis

Participant	Race & gender	First language	Socio-cultural background	Current school	School district
P1	Black, male	Xhosa	Single parent family, poor, urban township, Eastern Cape	Urban, township	Port Elizabeth
P2	White, female	Afrikaans	Nuclear family, middle-class, small town, Southern Cape	Semi-rural, ex-Model C	Grahamstown
P6	Black, female	Xhosa	Nuclear family, poor, rural farm, Eastern Cape	Semi-rural, township	Grahamstown
P7	White, male	English	Nuclear family, poor urban neighbourhood, Eastern Cape	Urban, ex-Model C	Port Elizabeth

By soliciting the collaboration of the participating teachers in identifying the most significant identity-shaping stories from amongst the many in their personal repertoires, at least some of the idiosyncratic subjectivities of the researcher in the selection process were minimised; heeding Schiellerup's (2008) caution that often "the positionality of researchers and the social context in which they are undertaking research will influence what strikes them in the data, their decisions about what to include and what to omit, the kinds of stories to tell and not to tell" (p. 163). Based on this interpretive framework, the rest of this chapter will now be dedicated to an exploration of *how* the personal narratives of each of the four selected participants shape their professional identities.

6.4 Participant 1

Participant 1 (P1) is a Xhosa-speaking, Black, male, Mathematics teacher, in his late forties, who has been teaching since 1990. He is currently acting as the principal of a primary school

in one of the historically black townships of Port Elizabeth. At the beginning of this study he was a Mathematics teacher and principal of a high school, in one of the historically black townships of Port Elizabeth; however, about midway through the research project, he accepted a position at the primary school where he is currently acting as the principal²⁹. He grew up in a single-parent household after his father divorced his mother when he was still very young, leaving the family to survive on their own and with very little material resources. His mother took care of them: “My mother was able to take us... we were two from my mother... was able to take us from... I don’t know whether you have seen a dog taking its puppy from one place to another?” (P1, 2nd interview). This continued until the family eventually settled in his maternal grandfather’s house. Despite financial hardships his mother nevertheless still managed to make sure that her children would be educated: “Though she was a domestic worker she made sure that at least there is something for us for our education as well and that to me... even in difficult times she will make sure that we have at least money to go and study... So it was her influence that has made where I am or what I have become, meaning the support she has given me whilst growing up in her father’s house” (P1, 2nd interview). This story is significant, because without her support he probably would not have become a teacher. In later reflections he reminisced about the powerful influence she has had on his life, “my mother as I shared with you was a cleaner, a domestic worker at the hospital. That, to me, is something that is in the past, but you surfaced them and you made me to look back and value even my mother” (P1; 4th interview).

After completing his high school education in the old Ciskei (now part of the Eastern Cape Province), he wanted to study Medicine, but did not make the entrance requirements: “I was short of two points” (P1, 3rd interview). He was accepted for his second choice, a commerce degree (B.Com-degree), and offered a six month study bursary. However, realizing that a six month bursary would not be sufficient, he decided to get a job in order to save enough money to complete his studies. Two years later he enrolled at a teacher’s training college. There, he excelled academically (especially in Mathematics and Physical Science), and also in all sorts of sports (including netball): “I was on top... nobody could beat

²⁹ The reason for the move is captured in the story about micro-politics amongst colleagues.

me...” (P1, 3rd interview). In the story of how he became a Mathematics teacher he is narratively positioned as both *resilient* and *competitive*.

Later in his working life he returned to university to complete a B.Com-degree (initially his second career choice) in auditing. He chronicled how he never did Accounting at school and thus had to up-skill himself by reading through all the school books “just to familiarize myself with the terminology of Accounting” (P1, 3rd interview). Thereafter, he also completed a degree in Education (B.Ed-degree). Significantly, he concluded his narratives about his education with the comment: “So to me, in summary, that’s how I turned out to be the person I am now” (P1, 3rd interview). His own education is obviously a very important part of his professional identity.

To date he has taught at three different schools and still tutors part-time on Saturdays as part of an outreach initiative at a local university. In his current role as a school principal he no longer has fixed Mathematics classes on the school time-table, however, he still enjoys teaching Mathematics whenever an opportunity arises at his school.

The following three stories, which had been selected and ranked in terms of their personal significance in collaboration with P1, include: a story of an inspiring young student teacher; a story about learners who stopped “running away” from class; and, a story about the micro-politics amongst colleagues.

6.4.1 A story of an inspiring young student teacher

According to P1 he became interested in teaching Mathematics while he was still a learner in a high school in the Ciskei, one of the former home-lands³⁰, which is now part of the Eastern Cape Province of South Africa. The story begins with a shortage of teachers at the school, so P1 was asked to teach Mathematics to the junior classes, although he was only learner at the same school. In the middle of the story a college student, who did his practice teaching at their school, arrived and helped the senior classes with Mathematics. The story ends with P1 explaining that it was through this encounter with the student teacher that he started to develop a passion for Mathematics and was inspired to become a Mathematics teacher.

³⁰ Home-lands were areas where Black people were entitled to self-determination (a form of self-governance) under the apartheid system.

I: I'm going to ask you to... talk about... How it became ... How you became a teacher. How you became a maths teacher.

P1: Oh, it started long time ago. Uhm... In my... uhm... high school... uhm... time, there was a teacher there... uhm, that was motivating us. And there was also a lack. I was in [*name of school*] in Ciskei then. [I: Uhm...] There was a teacher there that was doing practicals. He was from [*name of college*]. It used to be [*name of college*], that is the college. He used to come to our school to help us with geometry... or with maths. Uhm, during that time as well, we were not having enough educators. So I was taken to teach the lower classes. As it was moving up from standard six, standard seven, standard eight... They will ask me to help the lower grades in, in, in maths. So, that then... ugh... became, ugh, what I call my passion... for maths. It started long, long time ago when I was in high school and then it developed to, ugh, tertiary teaching. At college I was doing maths as well, as well as in the university. So, I've got long history of maths (P1; 1st interview).

The consequence of this encounter with the student teacher is that P1 developed a passion for Mathematics and studied to become a Mathematics teacher. Further probing revealed how this encounter had shaped his professional identity.

I: The one question is (*referring to the transcript of the first interview*) that you spoke about a teacher that you had when you were at high school, who was very motivating to you, and I'd like to ask two questions about that. What are the impacts that that specific teacher had on you as a Mathematics learner; and as a teacher, do you think?

P1: I think I can mention two things about him. He was a sportsman, number one. If I look at him before I can come and answer your question, he was a sportsman and he was lean built and he normally dressed formally and that when he is also coming into a class we will just go bubbly because he does not restrict us in terms of when he is asking questions. He will say, all right... He will make everybody involved. So that in itself I loved, because at the end of the day that impression that he imprinted in me is still in me because at the end of the day this is what I want the learners to be. I want them to be involved. The more involved they are the better for them to understand. You'll find that my teacher was Mr [*name of teacher*] and he was a good athlete as well and I was a good athlete as well. You see some of those characteristics that he had, I also have them and even now during this time I still play, I still enjoy my gym or even my playing of the sport. So that in itself, then, positioned me better in terms of knowing what my abilities are and how then can I help the individuals or anyone that needs assistance. So with that regard Mr [*name of teacher*] brought the best out of me and what I learnt from him as well made me the person that I am – the affinity, the love. But that man used to come to a class sometimes having a paper, but the way he will motivate us in terms of thinking and sharing amongst the group though. OBE during that time was not there, but the sharing of ideas after he has gone from the class will they start and say, 'Man, how then can we make sure that we understand more and others we involved?' So that to me is really what has shaped me into the person that I am today (P1; 2nd interview).

As a role model, this young teacher shaped P1's professional identity through his teaching style or technique (Schwandt, 2008; Robinson & McMillan, 2006; Lasky, 2005), for example, by the way in which he encouraged participation of all learners in the discourses of Mathematics, "when he is also coming into a class we will just go bubbly because he does not restrict us in terms of when he is asking questions... He will make everybody involved" (P1; Second interview). The story is identifying because it shows how the teaching and learning practices to which P1 has been exposed as a learner have become reified in his professional identity; how it has shaped who he has become as a teacher: "that impression that he imprinted in me is still in me because at the end of the day this is what I want the learners to be. I want them to be involved. The more involved they are the better for them to understand" (P1; Second interview). Moreover, the story shows clear evidence of a sociocultural orientation to learning through participation, for example, that more involvement leads to better understanding.

Although P1 was only a learner at the time when he met this young student teacher and both of them were already actively participating in the practices of Mathematics teaching; they were not practicing as legitimate members of the community of practice of Mathematics teachers. This is because, at the time, the student teacher was only doing his teaching practice and P1 was only a learner at the school. Although both were practicing on the periphery of the community of practice (Lave & Wenger, 1991; Wenger, 1998) of Mathematics teachers, their interaction can hardly be called *legitimate peripheral participation* (Lave & Wenger, 1991) as neither of them were legitimate members of that community of practice. However, this may have been an advantage, because as non-members they were not bound by the practices of that community of practice. This may have given them the freedom to invent their own teaching practices; which, apparently, is what they have done. For example, according to P1, this young student teacher was ahead of his time in terms of his teaching style or technique: "OBE during that time was not there, but the sharing of ideas after he has gone from the class will they (the learners) start and say, 'Man, how then can we make sure that we understand more and others we involved?'" (P1; Second interview). In the final interview P1 explained how the class was inspired to stay after school to work together:

So, that enthusiasm was called by the class as well, as I can related now, because after school we will even stay; our school will go around about two o'clock, but we will not go

home because we were having what is called afternoon classes [...] So, during that time where we were asked to study on our own, then we were able to share some of these good things with our friends, with Mr [name of teacher] as well being present and just sitting and listening to us, and at the end of the day he will just say, 'Yes, the point that you are doing, or you are showing, it is the right direction.' So, those things have really encouraged us, that's why I consider that that kind of motivation is a basis of the best that we had, and is the best that we want to give to others as well (P1; 4th interview).

In other words, as a role model, this young teacher has laid the foundations for P1's *subjective educational theory* (Kelchtermans, 1993), based on a sociocultural approach to learning through participation. His experience with this young student teacher has also influenced P1's identity on a personal level. For example, he mentioned that this student teacher was a good athlete; something with which he could identify, being a sports loving person himself. Moreover, he asserts that sport helped him to get to know his own abilities and taught him how to help others who needed assistance. He acknowledges the significant impact this student teacher has had on his professional and personal identity in the following words: "So with that regard Mr [name of teacher] brought the best out of me and what I learnt from him as well made me the person that I am – the affinity, the love... So that to me is really what has shaped me into the person that I am today" (P1; Second interview). He mentioned that the student teacher was male, loved sports, and dressed formally; and, in the final interview, also that he was Black. This meant that stronger identification along race- and gender- based lines were possible (Zirkel, 2002); as P1 explained: "You see some of those characteristics that he had, I also have them and even now during this time I still play, I still enjoy my gym or even my playing of the sport" (P1; 2nd interview). This is the kind of teacher Jansen, Koza and Toyana (2011) would describe as an *inspiring mentor*; one who inspires through words as well as through behaviour; through general composure; through "the way he carried himself" (p. 4).

6.4.2 A story about learners who stopped "running away" from class

This story of the "technical boys" who were "running away" (bunking) from their Mathematics classes with the "hefty" male teacher was told, in the first interview with P1 in response to a prompt about outstanding learners in his career. This story begins with an account of how certain "technical boys" were bunking their Mathematics classes to get away from a certain "hefty man" (not P1) who was teaching them. In the middle of the story

P1 took these classes and turned things around. The story ends where, as a result of P1's intervention, most of these boys passed with distinctions in Mathematics.

I: Have you had any outstanding students in your career?

P1: Yes! Uhm... I can recall when I was starting my career, uhm... As a teacher in the 90's, I had... I started at one of the schools, [name of school] ... There were boys there that were running away from maths. Technical boys, running away from maths. And I said to the principal please give me these boys because they are running away from this hefty man. There was a hefty man that was doing, uh, maths then. And I was able to work with those boys. Those boys, ever since I worked with them, they got distinctions! [I: Uhm!] A's, and uhm... not less than A's. I had about eight A's and lots of B's because of... I change the environment. I change the way learners look at maths. And I was able then to be consistently working with them. Uhm, even in my classes, they would come earlier than the normal classes that they used to have. Because they used to run away, but they... That {!} to me was an excitement {!} or an exciting time were I was able to change. Even now, uhm... We... in the university at [name of university], we have at the end of the... programme, compare the performance of the learners of the different groups. And I found that, my learners are always coming on top. If there are some of them that are receiving awards of 20... uhm, 16 or 13 will be coming from my group. Therefore I see that... That {!} to me excites me. Because I see that learners are... hearing {!} and are doing {!} their utmost best. Because, as you teach maths, you need to motivate them as well. You need to instil in them sense of discipline. You need to make or drive them to make sure they are doing something. That's why I said, maths is a skill acquired through practice. The more you practice, the more perfect you, you become (P1; 1st interview).

The story offers glimpses of the *evaluative (self-esteem)*, *descriptive (self-image)*, and *normative (task perception) components* (Kelchtermans, 1993) of P1's professional identity. In this story his self-evaluation as a teacher is based on a comparison with the "hefty" teacher, and even with the other tutors in the university programme, in terms of the results of the learners; but, also in terms of the quality of the relationship with the learners, for example, the "technical boys" who stopped running away and even started coming to classes earlier. Self-descriptive statements include, for example: "I change the environment. I change the way learners look at maths" (P1; 1st interview). The greatest impact of the experience was on the evaluative (self-esteem) component of his professional identity:

I: What would you say was the impact of that experience on you, professionally?

P1: Really, it was the first time that I see that I can have As and Bs, and it was recognised as well by the department and by the school. That it was the first time that the results were...they shoot up just like that{!}, the level{!} as well as the quality{!} of the results. I've never seen so many As and Bs during those times as I look at this point in time. Even

if I can go back to that school, they will not surpass what I have, or those learners were able to achieve during those times. So, that is the impact that it had on me (P1; 4th interview).

Finally, his *task perception* and some aspects of his *subjective educational theory* (Kelchtermans, 1993) are captured in the statements “as you teach maths, you need to motivate them (*the learners*) as well. You need to instil in them sense of discipline. You need to make or drive them to make sure they are doing something” (P1; 1st interview). His *subjective educational theory* is explained further in: “That's why I said, maths is a skill acquired through practice. The more you practice, the more perfect you, you become” (P1; 1st interview). This story is *significant* (Sfard & Prusak, 2005a; 2005b) because it refers to an experience right at the beginning of P1's career which has shaped his professional identity as a Mathematics teacher. Further probing revealed *how* this story serves as confirmation, for P1, of the difference that a change in the learning environment can make in the teaching and learning outcomes in his Mathematics classroom.

I: Further down (*referring to the transcript of the first interview*) we spoke about the outstanding students in your career and then you'll remember you speaking about those technical boys at your first school who were running away from the math teacher and then when you started working with them they started getting distinctions. [P1: That's true]. And then you say – and here I quote – ‘I changed the environments, I changed the way learners look at maths’ – unquote – and now I'm asking can you elaborate a little more on how you've changed that environment?

P1: When one is negative about something one tends not to look at positive side or one tends to deny his or her abilities and you'll find that these boys, though they were running away, they were running away not knowing how to tackle a particular problem or the teacher was to them maybe too arrogant or they cannot reach that particular teacher. So that in itself, those are stumbling blocks in the learning curve of learners, therefore if I am approaching them I am approaching them in a way where they are relaxed, in a way where they can – if they need to ask questions – they can ask questions at any given point in time and there will be no repercussions negatively, meaning I am able to scratch exactly where they need the scratching and you'll find that in doing so learners tend to love what you are also doing because you are approachable, you are able to assist them if there is a need to be assisted, but I find that learners move away from somebody that is always negative against them. Learners they need somebody that is encouraging them all the time because at the end of the day to them that is important. They are not only looking for now. I always prepare for their tomorrow as well. So it's very, very important if I am able to reach learners and learners as well tend to move and run ahead with that. So with those kids, I was able to get to them, that's the bottom line. The entry point was how then do I make sure that they do their best, how they can share it amongst themselves, how can they be

enthusiastic about what they are doing because at the end of the day if there is no energy coming from yourself as well as from them then things tend to die down, but if there is zeal or some vibe and understanding one tends to say, hey man, I now know this. It's only confidence at the end of the day (P1; 2nd interview).

The change in the environment that P1 describes here is a change in teaching style or technique (Schwandt, 2008; Robinson & McMillan, 2006; Lasky, 2005), learnt via role-modelling from the young student teacher in the first story, and subsequently introduced into this class. The current story covers his first teaching experience as a *legitimate peripheral participant* (Lave & Wenger, 1991) in the practices of teaching, and confirms that what he had learnt from this young student teacher actually works in practice: "So with those kids, I was able to get to them, that's the bottom line" (P1; 2nd interview). This is a *reifying* story, because in it P1 attributes certain identifying qualities to himself (Heyd-Metzuyanim & Sfard, 2012) as a teacher, for example, that he is "approachable" and "encouraging". Reification is achieved by replacing sentences about processes with propositions about states and objects (Sfard, 2008), for example, "I am approaching them in a way where they are relaxed, in a way where they can – if they need to ask questions – they can ask questions at any given point in time and there will be no repercussions negatively" is reified here as "approachable" and "how then do I make sure that they do their best, how they can share it amongst themselves, how can they be enthusiastic about what they are doing" as "encouraging" (P1; 2nd interview). In his reflections in the final interview he explained how this young teacher achieved this:

So, during that time where we were asked to study on our own, then we were able to share some of these good things with our friends, with Mr [name of teacher] as well being present and just sitting and listening to us, and at the end of the day he will just say, yes, the point that you are doing, or you are showing, it is the right direction. So, those things have really encouraged us, that's why I consider that that kind of motivation is a basis of the best that we had, and is the best that we want to give to others as well (P1; 4th interview).

Perhaps, in this story, the confirmation and reification of what he had learnt about teaching is indicative of "an ontological shift – a sudden ability to see something familiar in a totally new light... an instantaneous quantum leap [during which] a process solidifies into object, into static structure" (Sfard, 1991, pp. 19-20). In his reflections in the final interview he explained as follows:

So, to me, that is as well one of the most important things, because at the end of the day I could see that there was something that I did to those boys, and some of them are doctors, though there were some who were technical, but in the midst of the technical boys and girls that were there, they have become doctors. So, really, it was something that I can consider; when I went now to be a teacher and immediately I was able to make a difference out of the lives of those that I met. That, to me, is one of the great things as well (P1; 4th interview).

According to P1 he was so confident that his teaching strategy works that he wanted to share it with all his colleagues; however, as he explained in the next story, this led to antagonism.

6.4.3 A story about micro-politics amongst colleagues

The story about micro-politics amongst colleagues has to do with P1's perceptions about them not appreciating any assistance from him with their teaching. He regards it as one of only two low points in his professional career; the other one is when learners do not ask for assistance when they need it.

The low point is... uh... When I don't being called in when there is a problem. When I am not consulted when there is a problem, or, when a learner knows that: 'Uhm! I'm struggling!' and that learner does not speak out or come clean so that he or she can be helped. One other low point to the way you do your utmost best to assist a particular teacher now in ensuring that the learners are doing their best and what you are trying to put in is not appreciated. That, to me, becomes my low point. You will find that learners are keen to work, but this teacher is not the one who is driving what you are driving. Or you are not in the same level. That to me... it's one of the key things that kills {!} me. And it makes me to be demotivated, because at the end of the day you try to help, but this help is not appreciated even if those learners move to a higher level. That is... I will consider as a low point (P1; 1st interview).

Although presented separately, both low points actually have to do with his assistance being refused. However, if contrasted with the high points in his professional career, it offers insights into the *core narrative* of his professional identity. This is how he describes the high points:

I: Uhm... Is there any outstanding moment that you can think of, in your career that has shaped you, the way you think as a teacher?

P1: Ugh... I can start again from my high school. The way educators trusted me in ensuring that I'm helping... those learners... And those learners actually were doing their best! And I found that it is exciting. But as I moved on, I found that as I moved maybe to a college, I found that, that college lecturer used {!} me again within the class to help. As I moved the university, I found that I've been utilised again. So that to me, ugh... Has really made me change the way I do

things, and the excitement that is there is still there because I've been utilised in one way or the other. I don't know why they are not using others but they will use me all the time. So I love that. Ugh, I love to share. I love to make sure other people understand maths (P7; 1st interview).

In the above excerpt P1 presents himself as a person who is always willing and able to assist others in a teaching capacity. He has been doing this since high school, right through college and university; and, it has become part of the *descriptive (self-image)* and *conative (job motivation) components* of his professional identity (Kelchtermans, 1993): “So I love that. Ugh, I love to share. I love to make sure other people understand maths” (P7; 1st interview). This has always worked for him and that is why he finds it very demotivating when colleagues do not appreciate his offer of assistance: “That to me... it's one of the key things that kills {!} me. And it makes me to be demotivated” (P1; 1st interview). This is how he explained it:

I: Let's talk a bit about that... You know, where maths teachers would work together [P1: Yes]... towards a common goal.

P1: That's true. Ugh...You know... in all my studying of maths... we have tried to make groups. And I found that... the more you make groups, the more understanding, the more collegial the groups will be, or the more sharing. But again, the practical thing, you're doing it now at school, where you are expecting a support and then the same person that should be supporting you is not doing his or her part. That to me, I found is... ugh... demotivating. So, uhm...from time to time, it might be things that are outside your scope, or things that you are aware of or things that you are not aware of, ugh, that will cause that particular educator to move away or not to support you as fully as one is expected (P1; 1st interview).

The following story begins shortly after P1's appointment at a new school where the teachers were laying claim to the pass rate of 89%. In the middle of the story P1 tries to prove that he can further improve the pass rate; so, in the following year he took the learners for extra classes in Mathematics and Science after school, receiving no assistance from his colleagues. The story ends where the pass rate increased to 99% at the end of that year.

I: Yes, let's talk about a particular event.

P1: Uhm... We look at the results of the school. Uhm, when I got into this particular school. I worked with learners though I came in September 2001. They got, uhm... 89%. The following year I worked {!} with those learners in the midst of educators not trying to assist me because I came and the results were high. And they said: 'No, it's not your results!' But I said: 'All right, I'm going to prove a point!' The following year... Uhm... I

worked with the learners. After school, we were staying, we were working, both with maths and physical science. Because those were my specialities. And then, uhm... Working with those learners... then, uhm, proved fruitful. We got 99%. So only one learner failed. It's the one that was not attending the school! [I: Uhm!] So that to me, are...Is my, my experience... ugh, where you are not needed and then... you pull yourself away. Where learners are going all out you tend to have much success. I do have some resistance, or there is some resistance from time to time from the educators as you are assisting the learners. It's like you are intimidating, but it should not be! We are assisting learners and helping the learners. So if a situation where you feel that you are uncomfortable... That to me... I feel uhm-uhm... Is not the way you should be because we are helping the learners here and learners must do their best. You... You must let go of your selfish egos because you are thinking that I am intimidating whereas I just want to assist the learners. So to me, it is one of the things (P1; 1st interview).

In this story the hesitations, emphases of certain words, pauses, and tentative comments which make up the *sjuzet* (Hiles, 2007; Hiles & Čermák, 2008; Hiles, Čermák, & Chrz, 2010) show that P1 has not yet made sense of the narrated experience. So the question remains: “How do we come to endow experience with meaning?” (Kramp, 2004, p. 108). In the following excerpts, P1 tried to do so in terms of professional jealousy; personal differences; resistance to domination; and, jostling for positions of power.

Exactly! It's as if, if you give assistance... uhm, the accolades will go to you, which is not like that! Teachers sometimes they said: ‘All right, I'm going to do *a* and *b* and *c*, and see what he will do!’ So you have those ones that wants to pull down. We call it a ‘pull-down-syndrome’. But at the end it's at the detrimental the child. So there were {!} some incidents where teachers... they do not welcome the external assistance. Actually, it's a really, really sad case [...] Uh... Maybe personal differences? Or... Jealousy. Or... I am not sure, because some of these things one may think are... Maybe, is there something that one is gonna get by not supporting you? I don't understand. It's... It's maybe the positions. That's another thing... The positions... Let's say I come to you as a teacher, and to assist you and then at the end of the day you will see that, maybe as the HOD, the deputy, or the principal... I want to dominate. That to me is not applicable. When you are assisting learners, you want always the support of that particular teacher in that field, but you don't get it [...] Uhm, where one maybe... ugh... Is in a position in the SGB and one wants to... Maybe this particular teacher is in the SGB and she wants now to dominate {!} or make her feel that even in the subject {!} that she's doing, she's the only person that can do it. That to me... I see it as a power... You're, you're hungry for power... I'll make another example. Uhm, maybe a particular teacher is good at accounting. And then maybe because this particular teacher is continuing being late, or is not submitting things on time. Then that particular teacher... Uhm, you'll have a negative vibe amongst yourselves. Then, he or she will take it to the learners. The learners then will fail the subject. And then that {!} in itself brings the school down. So we do have, have those, those kinds of things. When you are trying to correct

something, one will say: 'I'm gonna get him! I'm gonna get him! I'll do this, that, and that!' Whereas it should not be like that (P1; 1st interview).

Again, the *sjuzet* in these excerpts seems to indicate that these are just tentative explanations. However, his reference to a “pull-down-syndrome” (P1; 1st interview) could be explained in terms of Bourdieu's (1986) notion of *social capital*. One of the negative consequences of *social capital*, according to Portes (1998), is that, when the mobility of a particular group has been blocked by lengthy periods of outside discrimination, it may result in an oppositional stance toward the mainstream and a solidarity grounded in a common experience of subordination.

There are situations in which group solidarity is cemented by common experience of adversity and opposition to mainstream society. In these instances, individual success stories undermine group cohesion because the latter is precisely grounded on the alleged impossibility of such occurrences. The result is downward leveling (*sic*) norms that operate to keep members of a down-trodden group in place and force the more ambitious to escape from it (Portes, 1998, p. 17).

Perhaps a history of discrimination and marginalisation had forged the township teachers into a “bounded solidarity” (Portes, 1998, p. 18) as a group of which P1, as a newcomer to the school, was not part. P1 was regarded as an outsider and any attempts on his part to assist the teachers with their practices in the classroom were regarded as threats to the group cohesion; therefore, they refused to work with him. In P1's story, the teachers at the school laid claim to the original 89% pass rate of the learners. The reason for this is not clear, perhaps they just wanted him to back off; implying that this pass rate was already an achievement by township standards and, therefore, that there was nothing wrong with their teaching. Perhaps it was not in their interest, as a “marginalised” group, to increase the pass rate of the school. The latter suggestion seems more likely; because, when he proved his point by improving the pass rate to 99%, the relations with colleagues further deteriorated. The “bounded solidarity” (Portes, 1998, p. 18) hypothesis seems to be confirmed in the following explanation:

[T]here was conflict amongst the...or jealousy, I don't know what you can call it, because at the end of the day it was not about myself, but it was about the learners, where educators, I feel they were threatened by my involvement with the learners in helping them to excel in their endeavours. But to me, I think...I'm not sure whether I call it professional jealousy or what, but it was not something that I was proud of and I didn't like where you are not supported, whereas you're helping the black child, and

you are making sure that they excel in what they are doing, then you are seen as a stumbling block (P1; 4th interview).

As a result of his success with the learners, “you’ll find that the learners in that particular school got A’s (*distinctions*) because of my involvement” (P1; 4th interview), his colleagues refused to work with him. Moreover, they actually worked together to undermine him: “Teachers sometimes they said: ‘All right, I’m going to do *a* and *b* and *c*, and see what he will do!’” (P1; 1st interview). Because of the micro-politics, relations continued to deteriorate to a point where P1 was eventually forced to move to a different school. In a situation like this, as Portes (1998) explained, “social capital, in the form of social control, is still present... but its effects are exactly the opposite of those commonly celebrated in the literature. Whereas bounded solidarity and trust provide the sources for socioeconomic ascent and entrepreneurial development among some groups, among others they have exactly the opposite effect” (p. 18). P1 has rated this story as the third most important one in terms of the shaping of his professional identity, therefore the question: “What is the story about?” (Mishler, 1986b, p. 236) needs to be answered; especially since, unlike with the two preceding stories, the reification is not as clear. Perhaps, because in this story it is not a process or a practice that is being reified, but rather a disposition towards a preferred “atmosphere” which be conducive for extending his subjective educational theory to colleagues. This is demonstrated in his concluding reflections:

After that, because of these in-fights, I had to pull down, pull back myself, and then I did not like that because at the end of the day it’s not what I want; I want the best for each and every learner, and then at the end of the day, if you try to do your best and there are those that are pulling you down, I don’t like that pulling down syndrome of which, at the end of the day, I said, gee, I rather have a place where I can give out and what I give out is being taken and others run with it. I love that kind of an atmosphere, an atmosphere of love, an atmosphere of working, an atmosphere of being united when we are doing things. But if there are things that causes ill feelings and so forth, in that environment, I don’t feel comfortable, I am not myself; it’s as if I would pretend, whereas I don’t like it to be like that. I love to have an atmosphere where there is love, where there is always people that want to get their hands dirty for the betterment of our children (P1; 4th interview).

In addition to reifying his disposition for “an atmosphere of love, an atmosphere of working, an atmosphere of being united” (P1; 4th interview) and making it part of his *subjective educational theory* or the “personal system of knowledge and beliefs teachers use while performing their job” (Kelchtermans, 1993, p. 450); the story also makes a strong moral

point (Larsson & Sjöblom, 2010) and narratively positions P1 as uncompromising when it comes to strong personal beliefs: “because of these in-fights, I had to pull down, pull back myself [...] if there are things that causes ill feelings and so forth, in that environment, I don’t feel comfortable, I am not myself; it’s as if I would pretend, whereas I don’t like it to be like that” (P1; 4th interview). In the last interview, he was asked about the personal significance of the story.

I: So, in short, in terms of that experience and the impact on you professionally, how would you sum it up?

P1: In that, in terms of my professional...I will call it a hiccup, because at the end it’s not helping anyone, and even if now I moved, I move to another institution where I feel I am giving all out, and then there is support, and then you’ll see, even if the buildings are not that much great, but within the environment of the school, people are willing to do things for the learners and see that there is love within, even in the morning assembly, even in our meetings, there is no hidden agendas, this is where I am; this is what I enjoy most.

This excerpt proves that, throughout the whole experience, he did not compromise on his *subjective educational theory*.

6.4.4 Distilling P1’s core narrative

One salient aspect of P1’s professional identity that permeates all three of the selected stories, is his *subjective educational theory* (Kelchtermans, 1993); based on a sociocultural perspective of learning through participation: “I found out that the more I help others, the more I help myself...”(P1; 2nd interview). In the first story he explained how, through a chance encounter with a young student teacher, he was exposed to a teaching approach that would later form the basis for the development of his own *subjective educational theory*. He could identify with this young teacher, especially with how he encouraged learners to ask questions, to be involved, and to participate in class. In the second story, he tested this teaching approach on learners who were “running away” from their Mathematics classes, and found that it worked so well that these learners began to turn up early for their classes and most passed with distinctions. Some of the processes deemed necessary for the approach to work, were reified and made part of his developing professional identity, for example, “approachable” and “encouraging”. What began as a teaching approach in the first story was turned into a *subjective educational theory* in the second story. In the third story, he unsuccessfully attempted to share his *subjective*

educational theory with colleagues at a new school. He even made a point of proving to them that it works by taking the learners for afternoon classes and increasing the pass rate from 89% to 99%. However, these colleagues refused to cooperate; instead they worked against him, forcing him to move to a different school where the sociocultural conditions were conducive for the further expansion of his *subjective educational theory*. As captured in the preceding three stories, P1's *core narrative* is about learning, testing, and expanding his *subjective educational theory*: "I love to share, I love to impart knowledge" (P1; 4th interview).

6.5 Participant 2

Participant 2 (P2) is an Afrikaans-speaking, White, female, Mathematics teacher, in her mid-sixties who has been teaching since 1968. She grew up in a small Afrikaner family and has an older brother and a younger sister with whom she still maintains close contact. Her brother studied medicine and, because her parents paid for his studies, they could not afford to pay for her studies as well. However, she was determined to become a teacher; and managed to obtain a bursary and complete a degree with majors in Mathematics and Physics, followed by a higher diploma in Education. In the final year of her studies the bank where her father was employed offered her a job as a computer programmer, which she refused: "But, that wasn't for me. I decided against that. Maybe I would have been financially better off if I took that, but, I had a passion for children. And, uhm, I wanted to teach [...] And I stuck to what I wanted to do. I have never ever... The thought didn't even come to me that I could have done another job" (P2, 1st interview). Since then she has taught in three schools in three different towns in two different provinces. She has vast experience as a Mathematics teacher, which includes: acting as marker, and later senior marker, of Matric (Grade 12) examination papers; acting as the trial examiner for the Senior Certificate Mathematics Higher Grade paper; and, acting as Head of Department (HOD) of Mathematics at the second school where she taught. Her current extra-curricular professional activities include helping out with a special 'catch-up' programme for Mathematics learners of a neighbouring township school in the afternoons, twice per week, and attending the MTEP programme of Rhodes University on alternate Thursday afternoons. At the time of the research, she was appointed on a fixed term contract, but talking about retiring.

The following three stories, which had been selected and ranked in collaboration with P2 in terms of their personal significance, include: a story of an inspiring new teacher; a story about marking Matric examination scripts; and, a story of a brilliant Mathematics learner. These stories will be used to explore *how* P2's personal narratives shape her professional identity.

6.5.1 A story of an inspiring new teacher

In response to a question about how she became a Mathematics teacher, P2 replied by sharing a story about an inspiring new Mathematics teacher. In this story, P2 recounted how she was part of a group of girls, all good friends, who suddenly developed an interest and motivation to learn Mathematics when a young, unmarried, male teacher replaced their old teacher. The initial story was about the effect that this new teacher had on the group of girls. His arrival signalled a *turning point* (Kelchtermans, 1993; Drake, 2006; Mishler, 2006) in their *disposition* (Kilpatrick, 2001) towards Mathematics. Before, they had a very old teacher, who posed no real challenges and there was little interest and motivation; “and then” (signalling the *turning point*), the new teacher arrived and posed real challenges, sparking interest and motivation.

I: What I'd like to know is Uhm... What started you off in teaching Mathematics? How did it all start for you?

P2: Uhm, when I was at school, I went to school at [*name of the school*], and we were a group of girls uhm... The top eight or nine in the class... We were all girls. All very good friends. And then, uh, we first had a very old teacher. But, uhm, he died; and then, we got a new teacher. He was a young, a young man, unmarried. And, uhm, he had a very, very good personality; and, we actually loved him. And, uh, the competition between the nine of us to to stay in our position... Uhm, the end of the year, it was a very good competition. And especially in maths. In the afternoons we used to go to one or other's house, especially when we did geometry in grade 12 and then we would try and try and do all the sums. And did not want to go to class if we couldn't solve all the problems. And, uh, I think because of that, I loved maths. And in my whole school career I always got the prize for that, uhm, trophy for maths, and I did not want to lose that. So I worked exceptionally hard in maths (P2; 1st interview).

At first, it seemed that their sudden interest and motivation was sparked by an adolescent infatuation or ‘crush’ since she included, “*we actually loved him*” (P2; 1st interview). Further probing, however, revealed that their sudden interest in learning Mathematics had more to do with the new teacher's teaching style or technique; with the way in which he had

changed the sociocultural context of the classroom, encouraging interaction and posing more challenging problems. It seems that this supported the spontaneous development of *communities of practice* (Lave & Wenger, 1991; Wenger, 1998) because it compelled learners to gather in small groups after school and to work together on the more challenging Mathematics homework. With the old teacher this was not necessary, as there were no such challenges; the learners could make jokes in class and still figure out the work for themselves.

I: Uhm ... the first thing that we will do, is to look at the transcript of our previous interview and there are some points of clarification that we need to deal with. So, on page 1 [P2: Ja, uhm...] the first question there, was: 'What started you off in teaching Mathematics?' and then you spoke about this new teacher that you had, who was a young man ... unmarried, and with a very good personality ... And then, uhm, my take on that is, that it seems like, to a certain extent, as young girls in that class, you had a bit of a 'crush' on this teacher?

P2: Uhm ... I won't say a 'crush', but we were, uhm, a very, uhm, strong class... uhm, girls in the class, and, uhm, I don't know whether I said this last time, uh ... and we worked together, and this, this teacher, I think he came to us in Grade 10. Previously, we had a very old teacher, uhm, who was deaf in one ear and we could make jokes and things in class, and uhm, it was a, a clever class, so we could figure out the things for ourselves. But, then he died and this new teacher came, uh, I think it was his first post, but what I meant by 'a very good personality' ... there was, uh, there was a very good interaction between him and us, and he challenged {!} us, so ... in the afternoons, especially in Geometry or things like that, uh, we wanted {!} to prove to him that we could do the sums on our own. And we came together, as a group {!}, 3 or 4 girls, and we worked {!} and we struggled with all the sums, to show him. [I: Uhum!] That was, uh, uh, a very, very nice relationship [I: Uhum!] and uh ... ja ... I think that was more the case, not, not so a case of having a "crush" on him (P2; 2nd interview).

The homework groups showed all three elements of coherence of *communities of practice*: they worked together, showing *mutual engagement*; wanted to prove to the teacher that they could do all the sums on their own, showing *joint enterprise*; and, in the process they gained a *shared repertoire* of valuable mathematical competencies. According to P2, this way of learning Mathematics worked so well that she was inspired, not only to love Mathematics, "*I think because of that, I loved Maths*" (P2; 1st interview); but, also to become a Mathematics teacher herself: "when I got to high school, I met with Mr [name of teacher]. I just started to love {!} maths and my maths marks just improved and improved, and all I ever wanted to do is become a maths teacher!" (P2; 4th interview). This covers the

conative (job motivation) component, showing what motivated her to become a teacher. Moreover, it also shows a clear intention of making these processes of teaching and learning part of her future *subjective educational theory* as a teacher; and by implication, her professional identity. Apart from the clear *sociocultural* element of *learning as participation* in the practices of a *community of practice* (Lave & Wenger, 1991; Wenger, 1998), there are other elements of the new teacher's teaching methods that had a lasting effect on P2's developing *subjective educational theory* (Kelchtermans, 1993). For example, alluding to the element of controlled humour in the interest of building trusting and respectful relationships (Lasky, 2005); she explained how, with the old teacher, the learners could make jokes in class because he was deaf; suggesting that discipline was slipping. With the new teacher, however, discipline was re-introduced into the classroom; jokes would only be allowed up to a point, and then things would get serious again.

I: Yes, uhm ... because my next question would be ... Did he have the same effect on the whole of the class? [P2: Yes, I think so.] Yes!

P2: I think so. [I: Yes] But you must remember, we weren't a very big class, uhm ... because Maths was not compulsory and the other kids took other subjects, so it was only a small class {}, but if I can... compare the Maths class to the Science class, uhm ... You know we could joke with this person, and he would take it like that, uh ... not in an ugly {} way, but, he also made jokes with us. It was a very, very spontaneous class, but, uhm, up to a point {}, then he would put down his foot. [I: Yes] So it was, was, uhm, really... we, we all {} of us looked forward to the Maths period. We really enjoyed it, but I think there were about 3 or 4 boys who took Maths... The other guys took another subject.

I: Okay... This, this experience with this teacher, [P2: Yes!] ... Uhm, to what extent do you think, has that influenced you as a teacher yourself?

P2: Yes! I tried to, I tried to, especially from grade 10 onwards ... Grade 9's when they choose, they are not so interested in Maths. I try to get a very good relationship with my senior classes [I: Uhum!], (*Clears throat*)... Uhm, also to the extent that I can, I can talk about anything outside Maths in the class, and then, when I say, 'Now we start with Maths again' then they immediately go back. So, uhm ... that is one of the things I try to do, because you just do Maths, Maths, Maths, they can be ... it can be boring. So, uhm ... yes, I do, I do try to copy him that way, uhm ... not so that the children must like {} me or whatever... But they must enjoy the class [I: Yes!] Uhm ... (P2; 2nd interview).

Jansen, Koza and Toyana (2011) would describe P2's teacher as a *soft disciplinarian*; one "who has developed the fine art of bringing rowdy classes, stubborn girls and hard-knuckled boys to attention through simple and soft acts of discipline... in ways that demand respect" (p. 5). Her positive experiences with the new Mathematics teacher has purportedly shaped

P2's own professional identity and behaviour as she tries to emulate some of these experiences with her own learners, for example, "I try to get a very good relationship with my senior classes (*Clears throat*)... Uhm, also to the extent that I can, I can talk about anything outside Maths in the class, and then, when I say, 'Now we start with Maths again' then they immediately go back" (P2; 2nd interview); covers the *normative (task perception) component* by alluding to the quality of the personal relationship with her learners. The story is identifying because it shows how the teaching and learning practices to which she has been exposed as a learner have become reified in her professional identity; how it has shaped who she has become as a teacher, as she explained: "*I do try to copy him that way*" (P2; Second interview).

6.5.2 A story about marking Matric examination scripts

According to P2 the story about marking Matric (Grade 12) examination papers³¹ can be regarded as one of the peak experiences of her teaching career; alongside that of getting the Head of Department position at her previous school and being asked to set the Matric Mathematics Higher Grade First Paper for two consecutive years in one of the previous provinces³². However, she rated this story as the second most important one in terms of shaping her professional identity; because: "There I learnt a lot!" (P2; 1st interview). It is one of several positive experiences that she had while teaching at a particular school.

I: So, so, so would it be fair to say that your teaching time in [*name of town*] was sort of the highlight of your career?

P2: Yes! Yes! I think so, because there I think I developed the most. I was... uhm, when I was there for the almost 18 years. And 16 out of those 18 years I was...uh, I marked Grade 12 papers at the end of the year. [I: Yes...] I was, I was even the trial examiner for the trial exams in the Higher Grade First Paper. So, ja, I first started with just uhm, a marker, and then I became a senior marker, for a quite a number of years. And a senior marker has the other markers to... to, you know, [I: Moderate?] moderate their papers. [I: Uhm...] There I learnt a lot!

I: Any interesting stories from your marking days?

P2: Yes! You know... Uhm, the first time I went... Now that was in the oldern days when we went to Cape Town. Okay, then I was at [*name of the school*], I was at [*name of the*

³¹ In South Africa the Matric (Grade 12) examination is a national school-leaving examination. It is written under the auspices of the Department of Education. The papers are marked at special marking centers.

³² Previously South Africa had only four provinces; each with its own Department of Education.

school] ... And we went to Cape Town, but the whole Cape province and Namibia, the papers all went to Cape Town and uh... now we went there. Now that's the first time I marked the Grade 12, standard grade, one, paper one. And I came into the room and all the papers were distributed between the markers and I sat down and the two stacks of papers were sitting next to me. I thought, 'Oh my goodness, must I mark all this?' Okay, and then we had to start. And the examiner, he took the memorandum, and now he went through the first question. You know, I was so nervous that I couldn't... I couldn't mark the first correct mark. I sat there, I thought, wow! [I: No!] It's so difficult! It's such a, a big thing! This child's... uhm, *toekoms*? ... [I: Yes, future?] Future, is in your hands now!

I: So that was quite a big moment for you...?

P2: That was a very, very big moment for me. And, uh, as I finished the first paper then I had to take it to the examiner. And he went it through with me. And if you differ with more than two or three marks from him, you had to redo it... make sure that you now understand where you must give a mark or where not. So okay, after the first three or four papers, and he said: No you're okay. Then I relaxed. And then, since then it went much better and later on I was quite okay and I finished in time. There were some of those people who didn't and some of their papers had to be distributed between us. That was my first experience. But then!... when I got to [*name of town*], and I was a senior marker... Now you had seven other teachers in your group. And uh... Then we decided it worked better if the one person just concentrates on question one. [I: Uhm...] And so we divided the paper and then you get to know that question very well (P2; 1st interview).

In addition to what she had learnt during the experience, “[*about*] all the different ways of answering [a] question and how the marks are allocated [...] to bring back to my own class and to teach them how to answer certain questions” (P2; 1st interview); this story is also important for P2 in terms of the *evaluative (self-esteem) component* of her professional identity. In the past, to be a marker of Matric examination markers was tantamount to membership of an elite *community of practice* (Lave & Wenger, 1991; Wenger, 1998); an accolade reserved for only the most competent teachers who were regarded as experts in their fields. Again, all three elements of coherence of a *community of practice* are present: the members were *mutually engaged* in marking, working together and sharing the papers amongst themselves when necessary; their *joint enterprise* was to finish the marking job, even if it meant that one person would concentrate on marking only one question; and, their *shared repertoire* was the skills they developed in the process, “[to] understand where you must give a mark or where not” (P2; 1st interview). The practices of marking are learned through an apprenticeship model. A novice marker is guided by an experienced senior

marker along a trajectory from peripheral to full participation in the practices of marking through a process of *legitimate peripheral participation* (Lave & Wenger, 1991). In this story P2 progressed along this trajectory from being a nervous first time marker, “I was so nervous that I couldn't... I couldn't mark the first correct mark” (P2; 1st interview), to a senior marker, later to trial examiner, and eventually to provincial examiner of the Mathematics Higher Grade First Paper. She regarded the latter as one of the peak experiences of her career. This story is reifying, because her promotion along this trajectory implies mastery of all the skills and practices of the different levels along the way; and therefore, that she is a competent teacher. Perhaps her experiences with “learning as social participation” (Wenger, 1998, p. 4) in the homework groups have prepared her for optimal participation in this community of practice. Some others, perhaps because they were not privy to this way of learning before, failed to make similar progress.

P2: Okay, I once had a guy, uhm, and he had to mark the geometry. Now in those days, the question started with a theorem [I: Yes] and then a problem.... And he started to mark it, and then they had to bring it to me and I had to see if they're okay. He couldn't... mark... a theorem!... And I sat with him again. And I showed him again. Because if the child just deviated a little bit on what is exactly on the memorandum... he couldn't interpret it... [deep breath] In the end, I went to the examiner and I showed him what's going on and he took the guy... and no!...

I: What do you think was the problem with him?

P2: I don't know. I don't know. You know, what I then did, I divided... I gave that question to other people... and I put him on the end, and he just had to count the marks... But I couldn't do anything else with him. There were cases that a guy was sent home, the examiner just said: 'No, he's not capable of doing it.' Uhm... (P2; 1st interview).

Unlike for P1, learning through *peripheral participation* did not work for this marker; as a result, neither P1 nor the examiner could help him to learn appropriate marking practices. However, according to P2, this incident happened “maybe ten, twelve years ago” (1st interview) at a stage when the selection criteria for markers were more relaxed: “I remember. Now some of the guys were sent home, but you know, what happened...? Some of them came as markers and they didn't even teach grade 12. And then, they (*Department of Education*), they got much stricter in choosing the markers” (P2; 1st interview). It is quite possible, therefore, that the marker was not even familiar with the content of the curriculum as P2 later reflected:

People come to the marking sessions and they are not... fully equipped to do it. They think they'll get a memo and they can just tick, that answer must be there so that's fine I can do that, but now geometry is quite something different. You can't... you actually don't have a memo because you must follow the way that the child is thinking, and then he had the problem because he couldn't read and follow how the child was thinking. If it's just a memo it must be like this then he could do it, but he couldn't do it the other way. And, it's experience maybe, or actually knowing your subject, and they came because its extra money and he wasn't capable of doing it (P2; 4th interview).

In the original story, however, P2 compared her own successful learning trajectory as a Matric examination marker with the failed learning trajectory of this unfortunate marker. According to Kelchtermans (1993), comparison with other teachers is one of the important indicators of the *evaluative (self-esteem) component* of the *professional self* of professional identity. The story is reifying because in it P2 is narratively positioned as a competent Mathematics teacher; one who had successfully negotiated the learning trajectory of a marker and mastered all the skills and practices of a provincial examiner of the subject in the Matric examination. In the story competence is the reified version of skills and practices.

6.5.3 A story of a brilliant Mathematics learner

This story of a brilliant Mathematics learner is rated by P2 as the third most important story of her professional career as a teacher. The story can be linked to the *evaluative (self-esteem) component* of her *professional self* or professional identity in which learners, especially their school results and the quality of their personal relationships with the teacher, are seen as the most important determinants of a teacher's self-esteem (Kelchtermans, 1993).

P2: Uhm... I can think of pupils. You know, I once had the, the, a pupil in, in [name of town]. He was... He was brilliant! And, uh... I so wanted to teach him something that he couldn't do by himself. It was a challenge, because [name of learner]... I will always remember his name! You know he was a bloke who got 97%. Things like that. I just couldn't, If I, If I... If they wrote exams, than I first take [name of learner]'s paper and I mark it, and then I see if my memorandum is correct [laughs]. [I: Uhm...] You know, I could do that. I was actually very nice for me to subtract one mark here, which is not a 100% correct. Things like that. Yes, there are pupils like that. I will remember his name forever, because he was so brilliant.

I: Do you know what happened to him?

P2: Yes, he went to university, and I think he is a teacher. I've... I... I am not sure, but I think he is. [I: Uhm] And, uhm, but, yes... In that class, it was a very good class. Uhm, I had... a lot of A's. But they, they were the type of class, that we were. And, uhm, for instance

on a Friday afternoon, that was in the old syllabus, uh... You know, it was a few years ago, ten years might be, they I'd say to them: 'Listen it's Friday, but let's do a geometry workshop this afternoon. Bring something that we can braai.' And we did that. Then they worked! I gave them sums and then they do it. And then we discussed it. And then we had a little braai, and then we carried on till nine o'clock. [I: Uhm] It was a.. It was a very, very, special class. And you don't... I think a teacher gets a class like that only once in his career... I, I think... [I: Uhm] But that class, yes, I'll remember them because they kept me on my toes, you know, I couldn't go there without me being absolutely sure what I wanted to do in that period (P2; 1st interview).

Perhaps the class of which this learner was part reminded P2 of her own class when she was a learner: this was also good class, who scored lots of A-symbols; they were also willing to work together after school; they also had a good relationship with their teacher; and, they also liked challenges, "it kept me on my toes {!}" (P2; 2nd interview). These correspondences made it easier for P2 to apply the teaching practices that she had learnt from the inspiring new teacher in the first story because the sociocultural context was similar: "It was a very, very, special class. [...] I think a teacher gets a class like that only once in his career" (P2; 1st interview). The story is reifying because it confirms the validity of P2's *subjective educational theory*, at least with this "very, very special class" (P2; 1st interview); also, because it was preceded in the interview with the following "small story" (Bamberg, 2006a; Georgakopoulou, 2006; 2008) about another class, in a different sociocultural context, where these practices did not work.

You can think for yourself, if I tell you. Monday... Five of the 45 did their homework [...] Yesterday... I've again asked them to open their homework then it was about 12 (*out of* 45) that did their homework. So, it's also I think, it's just that class. I think it's the... I don't know whether it's the environment or their situations at home... Uhm, maybe some of them can't do the homework, they don't have time, or they don't have a place to do it. I don't know. But, uhm, it's... it's really very very bad. And, how can you go on the next day if they haven't tried the previous day at least? [I: Uhm...] So then you must stop there, and redo the work, give it again... (P2; 1st interview).

Perhaps, the *small story* above was alluding to boundaries to the applicability of her *subjective educational theory* in terms of the sociocultural context.

In addition, the story about the brilliant Mathematics learner is significant in terms of its influence on at least two other components of P2's professional identity: the *conative (job motivation) component* and the *evaluative (self-esteem) component*.

- I: On page 3 (*referring to the transcript of the first interview*), I want to get to your brilliant student in [*name of town*]. [P2: [*name of learner*?]] Ja, you mentioned that he was

brilliant and that, 'I would remember his name forever because he was so brilliant.' And I wanted to know, you know, did this student who was so brilliant, have an impact on you {} as a teacher?

P2: Yes, it did. I told my class yesterday, my Matrics, or was it the Grade 11's, I think ... you know... especially, he took Higher Grade and you know some of those sums can be quite, quite a challenge. And I liked, I really liked and he also, uhm... I liked to... especially him, give him some extra sums to do, to see if he could... and between him and me ... If I gave him a sum and he could not do it, then he would come to me, 'Miss, Miss, just show me, just show me how to start!' He was also a child that would struggle, and struggle on with a sum until he could get it. Uhm, I think if I compare that particular class to another class, I would, I would be totally {}, uhm... prepared for that class. It was a very good class but especially him. You know, a teacher does not want to stand in front of a class and there's a child who can do the sum and the teacher can't do it. So yes, it did, it kept me on my toes {}, especially that, those challenging sums. With that class, if I gave them one of those in Geometry or Trigonometry, all those difficult proofs, I would make sure that before I go to that class, I could do it.

I: So, what was the greatest impact... in terms of your preparation for a class?

P2: Yes, preparation for that, particular classes, not all the sections in the, the syllabus but especially the Geometry, those very, very complicated, uhm... examples I would do... really make sure that I know what was going on... and the proof of those identities also. I don't want to stand in front of a class, luckily it never happened, and I can't do it and there's a pupil who can do it. And he {} was capable of it, you see, the other kids never ... because if I can't do it, then they can't do it but [name of learner] could, so, uhm, my preparation for those particular sections in the work was very much more intensive (P2; 2nd interview).

Much like the learner, P2 also liked a mathematical challenge and a bit of competition to keep her motivated and their classroom interactions shaped at least two components of her professional identity: the *conative (job motivation) component* because the challenges kept her motivated; and the *evaluative (self-esteem) component* through the constant challenges which she successfully negotiated, "I don't want to stand in front of a class, luckily it never happened, and I can't do it and there's a pupil who can do it" (P2; 2nd interview), and which had prepared her for future challenges, "I think if I compare that particular class to another class, I would, I would be totally {}, uhm... prepared for that class [...] it kept me on my toes {}, especially that, those challenging sums" (P2; 2nd interview). In addition to reifying P2's *subjective educational theory*, the story also reifies P2's competence as a problem solver who can stand her ground in front of a challenging class: "Actually, your classes, your children in front of you, has a very big influence on that, I think, because some of the classes will challenge you, and you have to improve your way of teaching" (P2; 4th interview).

6.5.4 Distilling P2's core narrative

Much like in the case of P1 as discussed above, all three of P2's selected stories can be related to the development of certain teaching and learning practices, based on a sociocultural perspective of learning through participation; and, reifying these practices into a *subjective educational theory* (Kelchtermans, 1993). In the first story she explained how an inspiring new teacher brought about a *turning point* (Kelchtermans, 1993; Drake, 2006; Mishler, 2006) in her disposition towards the learning and teaching of mathematics and laid the foundation for her own developing *subjective educational theory* based on "learning as social participation" (Wenger, 1998, p. 4). It should be pointed out, however, that her story predates Wenger's (1998) *social theory of learning* which is also premised on the notion of *learning as participation* in the practices of a *community of practice*. In the second story, P2 is narratively positioned as a competent Mathematics teacher who has successfully negotiated the learning trajectory of a marker, through *legitimate peripheral participation* (Lave & Wenger, 1991); and, mastered all the skills and practices of a provincial examiner of the subject in the Matric examination. This story implies that she has a positive disposition towards *learning as participation* which, in turn, can be traced back to her *subjective educational theory*. In the third story, P2 confirmed the validity of her subjective educational theory with a "very, very special class" (P2; 1st interview); noting that it is applicable within certain sociocultural boundaries. As captured in the preceding three stories, P1's *core narrative* is about the development of certain teaching and learning practices, which are based on a sociocultural perspective of learning through participation; then, reifying these practices into a *subjective educational theory* (Kelchtermans, 1993); and finally, using and applying it in different contexts.

6.6 Participant 6

Participant 6 (P6) is a Xhosa-speaking, Black, female, Mathematics teacher, in her late forties. She started her teaching career in 1993 at the same high school where she is currently teaching Mathematics and English Second Language. The school is located in a "semi-rural" area on the fringes of a fairly large township just outside one of the towns in

the Grahamstown Educational District³³. P6's professional life story is one of resilience and survival and paints a clear picture of what life is like for many school teachers in rural South Africa. In this context, resilience refers to "the ability to remain competent despite unrelenting adversities" (Lee, 2009, p. 13); in other words, to show "successful adaptation despite challenging circumstances" (Hong, 2012, p. 419). P6 narratively positions herself as drawing resilience from the *social capital* (Bourdieu, 1986) of an extended supportive *social network* (Portes, 1998; 2000; Israel, Beaulieu, & Hartless, 2001; Zambrana & Zoppi, 2002; Gasman & Palmer, 2008) which includes: her immediate family, especially her elder brother; the church, a certain priest in particular; her primary school teacher; and, her current school principal. It seems that *social capital* in this context emanates from "bounded solidarity" (Portes, 1998, p. 8) between P6 and her social network. This usually occurs when people who are thrown together in a common (often adverse) situation learn to identify with each other and support each other's initiatives³⁴. Twice in the third interview, P6 repeated: "We were [all] suffering" (P6; 3rd interview). It seems, therefore, that joint suffering bounded together the social network and motivated them to work together towards the *joint enterprise* (Wenger, 1998) of educating someone from their midst – in this case P6.

Discrete stories with structural features like a beginning, middle, and end (Labov and Waletzky, 1967/2003; Mishler, 1986b; Sarbin, 1986; McAdams, 1993; Oliver, 1998; Bamberg, 2004) are noticeably sparse in P6's initial interviews; most emerged only in the third interview. She offered the following explanation: "In the beginning it was just fun but when I started doing the interview where I had to tell a stranger about my experience, which I didn't know how he was going to react, or how he's going to categorise me, I felt uncomfortable" (P6; 3rd interview). However, as a rapport between the interviewer and P6 started to develop over time, she felt more comfortable to share her personal stories with the interviewer. The following stories were selected in a bid to show how P6 went about narratively positioning herself as resilient.

³³ The Grahamstown Educational District covers a relatively small geographical area. Moreover, only a few schools from this area participate in the MTEP of Rhodes University, which increases the risk of easily identifying the participants (Malm, 2001; Richmond, 2002). Thus, as an additional measure to protect the anonymity of the participant, the town is not named here.

³⁴ Unlike in P1's story about micro-politics amongst colleagues, in P6's story "bounded solidarity" (Portes, 1998, p. 18) has a positive outcome in terms of socioeconomic ascent.

6.6.1 A story of family support

Both of P6's parents were illiterate farm workers who could not offer her any help with her school work; their support was restricted to supplying her basic needs such as shelter, a cooked meal, and washing her clothes. Her elder brother played a major supportive role:

I would say I come from an illiterate family. My mother and my father cannot read and write but I have one brother, he's older than me, and I looked up to him. As I grew, before he even went to school, he is a boy, but he was doing the housework, so I would do as he was doing. He would teach me how to cook and how to do things. I remember well when I first went to school I was living on the farm. So he had to prepare himself and then prepare me and then take me to school, my brother, because our parents were working on the farm. He had to 'abba' (*the traditional way of carrying a child on one's back*) me on his back from home. I remember well that when we approached the gate of the school, it is far, I think we were walking for about six or nine kilometres to school, and then I would see my friends, and then I would let him put me down so that I could walk. He did that for almost the whole year I was in Sub A (*Grade R*). He would 'abba' (*carry*) me from home up to the gate of the school or where I could see other children going to school. So my brother was of great support to me, very much. I remember well when I went to college – he had stopped at Grade 12 and he was working as a traffic-cop – he took me to Fort Beaufort for the interviews and fortunately I was taken [*unclear*] college. When I was going to school he bought me everything. My mother and my father couldn't afford to buy the modern things. So when I had to go to school he washed an old blanket that I was using at home and an old sheet that I was going to take to school. My brother bought me new things when I was at school, and he helped me make my bed, so when I was at school I was studying for him. I looked up at my brother because he was my support. So that one thing made me stay at school, because I knew he was supporting me. When I studied, I was studying for him. I knew that when I did well he would clap hands, and say, well done. So from my family side my brother was very supportive, he knew everything. My mother and my father would support in cooking or washing my things as parents, but they didn't know anything about education. It was my brother that was taking me through (P6; 3rd interview).

This is an important story because it suggests that the *social capital* (Bourdieu, 1986) invested in P6 by her family, her brother in particular, as part of a supportive *social network* (Gasman & Palmer, 2008) greatly contributed to her successful passage through school and college to become a teacher. Her brother, in particular, is lauded as a great source of motivation. As mentioned before, *reification* refers to the act of replacing sentences about processes with propositions about states and objects (Sfard, 2008); moreover, that reifying the actions of a person attributes that person with certain identifying qualities (Heyd-Metzuyanim & Sfard, 2012). However, in P6's story, it seems that the actions of her brother

had become *reified* in her as a *motivation* to succeed; a *resilience* (Zambrana & Zoppi, 2002; Lee, 2009); a steadfast *determination* not to let her brother down. The *social capital* that her brother invested in her included: preparing her for school; carrying (“abba”) her to school; taking her for the interviews at the college; and, buying everything that she needed. She explained that it was because of these actions that she had become motivated, resilient, and determined to make a success of her studies: “I looked up at my brother because he was my support. So that one thing made me stay at school, because I knew he was supporting me. When I studied, I was studying for him. I knew that when I did well he would clap hands, and say, well done [...] It was my brother that was taking me through” (P6; 3rd interview). In an earlier paper, Sfard (1991) defined *reification* as “an ontological shift – a sudden ability to see something familiar in a totally new light... reification is an instantaneous quantum leap: [during which] a process solidifies into object, into static structure... detached from the process which produced it” (pp. 19-20). This definition is in line with P6’s explanation of how the *social capital* embodied in her brother’s actions had been reified in her as *motivation*, *resilience*, and *determination* to succeed.

6.6.2 A story of religion

The power of religion in shaping personal and professional identities, via the method and content of the church’s teachings, is demonstrated in the following stories. The first story is a narrative of the positive role that the church had played in shaping P6’s personal identity, in terms of *resilience*; and, her professional identity, in terms of *subjective educational theory*:

One good thing was going to church. The church had a very good impact on my life. We were suffering. Out of that group of us from the farm I could count only two or three that made it, less than ten of us that made it to working people. I didn't have a fall, I didn't fall pregnant while I was young when most of my friends were pregnant, because I was going to church, and when I was in church I was focused. I was listening to what they were saying and wanted to do exactly what they were saying. I went to Sunday school, went to youth guilds, and that put me on position. When we were doing Grade 12, one of my friends committed suicide because of her boyfriend. I told myself that it is good that I was never involved with boyfriends, because I would be in that position that she was going through (P6, 3rd interview)

In this story, many of the girls from the farm group who attended school with P6 in town fell pregnant before they were able to finish school. It is a *significant* story in which P6 claims

that her life might have turned out differently if she had not attended church; but it has not, because “when I was in church I was focused. I was listening to what they were saying and wanted to do exactly what they were saying” (P6; 3rd interview). By following the teachings of the church she was purportedly able to remain celibate; to avoid the mistakes of the other girls; and, to achieve her goal of making something of her life. As part of P6’s supportive *social network*, the church fostered *resilience* against temptations: “I was focussed” (P6; 3rd interview). In this story, certain behaviours taught by the church (“what they were saying”) was reified by P6 into *celibacy*, “I was never involved with boyfriends”, and *resilience*, “I didn’t have a fall, I didn’t fall pregnant while I was young” (P6; 3rd interview); traits which enabled her to successfully complete her studies, unlike many of her friends. This experience, however, may also have shaped P6’s *subjective educational theory* (Kelchtermans, 1993). She explained that she managed to stay focussed, and to achieve her goal, by doing exactly what she was told by the clergy in church. Subsequently, this is what she expects of her learners as well, “telling {!} them (*the learners*) and then they reproduce {!} what I’ve told them” (P6; 1st interview). However, this does not always work: “You talk to them. They don’t listen” (P6; 1st interview); leading to great frustration, “in Maths {!} it will only be 0,5% that can recall that this {!} was taught. You put the formula there, they are unable to substitute {!} in that formula. You substitute {!} for them in the formula, they are unable to press the calculator {!} (*taps on the table with finger tips*) to get the answer! That frustrates me!” (P6; 2nd interview). It seems, therefore, that in addition to the behaviours advocated by the clergy, their teaching practices have also been reified as part of P6’s *subjective educational theory*.

The second story is a narrative of how the church and priests had shaped P6’s self-esteem and fostered *resilience*:

So the church and the priests of that time had a very good impact on my life. They saw that we were suffering. We would wear clothes that were sown by hand. You could see where it was [unclear], and it was not beautiful, but that priest, [*name of priest*], [*name of priest*] and his wife would take us to their house, and give us their kids’ clothes. We would wear their kids’ clothes in church. We were laughed at by the others in church because they knew that the dress I was wearing was [*name of priest’s daughter*] dress, the priest’s daughter, but it didn’t make any... because when she (*the priest*) was giving me those clothes she told me that ‘People know this, but to you it’s a new dress. You wear it and you come to church. God loves you as you are.’ That made me stand even if there were challenges - I went to school, I went to college, I passed, I worked, so the

church, specifically that priest, she made a very good impact in my life (P6, Third interview).

In this story, P6 links her *resilience*, “I went to school; I went to college; I passed; I worked...” (P6; 3rd interview), despite the difficulties, “we were suffering”, for example, not having clothes to wear, to a simple religious message, ‘*God loves you as you are*’ (P6, 3rd interview). She claims that this message is the source of her resilience: “That made me stand even if there were challenges” (P6; 3rd interview). These narratives of religion, captured in P6’s stories of the church and the clergy, explain *how* P6’s personal and professional identities were shaped by the method and content of the church’s teachings.

6.6.3 A story of curriculum changes

Already in the first interview, a “narrative plot” (Polkinghorne, 1988; 1991; Oliver, 1998), constructed around P6’s experiences with OBE (Outcomes Based Education) started to emerge. This *narrative plot*, with its temporal structure manifested in a beginning, middle, and end (Oliver, 1998), proved to be useful in explaining how, over time, P6’s professional identity was shaped by her narratives of the unfolding events. A good strategy when searching for identity-shaping narratives is to search for “turning points” (Denzin, 1989; Kelchtermans, 1993; McCormak, 2000; Bruner, 2001; Drake, 2006; Mishler, 2006) in life stories. Usually, according to McCormak (2000), a turning point splits a life story into two halves: what happened before the turning point, and what happened thereafter. Another central element of narrative plot construction is the notion of “trouble” (Bruner, 1999; Conle, 2000b; Daiute, 2011), which causes a disruption in the story’s original setting; and may be a turning point itself, or lead to one. In P6’s life story, for example, *trouble* came in the form of Outcomes Based Education (OBE) which signalled a *turning point* in her professional career. Hopefully, the following *narrative plot* will give meaning to the different bits of narrative evidence that were recounted in the interviews as part of P6’s professional life story; and also explain *how* her professional identity is being shaped by these narratives. The narrative plot is concisely captured in the following excerpt.

- I: If you think about your... Your career as a teacher now... What was it like then, when you started teaching many years back? [P6: Uhm...] Has it changed?
- P6: It has changed a lot. Firstly, when I started teaching I was able to give how I was trained. Because we were trained to teach {!} the subject matter... the content. [I: Okay...] So, it was not difficult [I: Yes...] to come and administer {!} that to my learners in those years...

That was 1993, '94, '95, '96; and up... But {} when they introduced OBE... Then it started to sound funny when I have to put up and then the learners must do it themselves. I was used at telling {} them and then they reproduce {} what I've told them. Because that is how we did it. We tell {} them everything then we asked {} what we told them. We'll include, uhm... In maths they won't be asked the same examples, but the content will be the same. With the OBE we were more facilitators... So it was very much difficult. I started with it, maybe for the first week or so, then I realize that it's not working with the type of learners that we have. So I switched back {} to teaching... spoon feeding, my learners (P6; 1st interview).

The *narrative plot* is relatively simple: In the beginning P6 was able to teach as she was “trained” to do at the college and it seemed to work well in the context at that time; in the middle OBE demanded a fundamental change in her teaching strategies, for which she was ill-prepared, and which did not seem to work; and in the end, she switched back to what she was familiar with and “trained” to do. However, the different bits of narrative evidence that are connected to the narrative plot reveal much about the shaping of P6’s professional identity.

At the teachers training college, P6 was “trained” to “administer” content knowledge to the learners by “spoon feeding” them. These are suggestive of powerful metaphors that describe a *subjective educational theory* (Kelchtermans, 1993) rooted in *fundamental pedagogics* and the “banking” education model (Freire, 1970/1993).

Education thus becomes an act of depositing, in which the students are depositories and the teacher is the depositor. Instead of communicating, the teacher issues communiqués and makes deposits which the students patiently receive, memorize, and repeat (Freire, 1970/1993, p. 53).

From P6’s comment it is clear that learners are viewed as ‘empty’ and need to be filled with content knowledge which they must be able to regurgitate on demand: “I was used at telling {} them and then they reproduce {} what I've told them. Because that is how we did it. We tell {} them everything then we asked {} what we told them” (P6; 1st interview). The influence of *fundamental pedagogics* was confirmed in the last interview:

I: The words fundamental pedagogics, does it mean anything to you?

P6: Yes, at college when we were trained we were taken through that phenomenon, when we were trained in education, what education is (P6; 4th interview).

The *normative (task perception)* component (Kelchtermans, 1993) of P6’s professional identity is confirmed when she defines her job as a teacher as that of “administering” content knowledge to the learners by “telling” them, even by “spoon feeding” them if

necessary, and then they must be able to “reproduce” that knowledge on demand. Note how she emphasizes the words “telling” and “reproduce” in making the point. This is how she was taught by the clergy in church and this was also the teaching methods that she was taught at the teaching training college. Perhaps, her emphasis on these words is her way to indicate their reification as part of her *subjective educational theory*; which, as Kelchtermans (1993) explained, is the result of career experiences more or less reflectively integrated into practice.

The *trouble* with OBE is that it expects a complete shift away from the “banking” approach to a sociocultural approach of learning through participation, for which P6 was ill prepared. Instead of “telling” the learners and then they must “reproduce” what they have been told, OBE expected her to change her practices to become a facilitator of learning:

With the method of OBE which was to facilitate in maths {!} It was a very difficult, because, they say you start from what the learners know and build {!} from it. And looking at maths as a subject, it was totally difficult for me... to translate maths to... their life... Because not every topic in maths can fit in with life! [I: Uhm...] You give examples... of... If you do multiplication... of... maybe a business, where someone comes in to buy and then you just, if they are so many it will cost this, and if they are so many it will cost that. But, not everything could fit into their lives {!}. Like graphs! I have to plot graphs there for them. [I: Uhm...] That was something that is new, and it has no background in them... It was more difficult. So I had to switch off from the facilitating method to teaching (P6; 1st interview).

This excerpt shows a particular view of Mathematics as disconnected from the real life: “not every topic in maths can fit in with life! [...] not everything could fit into their lives {!}. Like graphs! I have to plot graphs there for them. [I: Uhm...] That was something that is new, and it has no background in them... It was more difficult” (P6; 1st interview). When her attempts at implementing OBE failed, she reverted to “the old method of teaching”; arguing that, at least, three years of training went into that, whereas OBE relied on a few workshops and a document which, according to P6, was clearly inadequate.

The problem why we switched quickly to... the old method of teaching, telling them is that, with the OBE [I: Uhm...] With the, the teaching, teaching practice, we were trained for three years... The subject at school, the content at school, was done to understand the content exactly, then you go practice. You do practice teaching two times in a year. So I feel that we were fully trained to teach {!} the learners. But {!} with OBE it was only workshops... A week, or two days, and then you were given that document. When you look at that document, it didn't make much sense to you, when you have to change from the teaching method that you used... to the facilitating method. It was totally

difficult for us, because we have been trained {!} fully on teaching, not on... facilitating (P6; 1st interview).

Here she seems to suggest that the *trouble* was not OBE in itself, but rather the way in which it was introduced; without preparing the teachers adequately for implementation. Educational or school reform, such as the curriculum reforms described by P6, can only succeed if the teachers are prepared through relevant professional development initiatives (Phillips, 2008; Flint, Zisook, & Fisher, 2011). Knowing that that the MTEP of Rhodes University was one such initiative, I prompted her to talk about that:

I: And MTEP? Have you been involved with them in any way?

P6: MTEP, yes... Ugh... Ugh... We were invited to be part of the MTEP in Grahamstown, Rhodes University... It started well, because we had to attend. We attend on Tuesdays, every fortnight. Tuesdays. We came. We were introduced to it. Uhm... then they asked how we want how we want it (*inaudible*)... them to administer it. We told them we will be glad they could do the topics that challenge us at school... That challenge the learners during exams. We gave them the topics. They did the topics. But what I felt is that... They used more technology in teaching us with the MTEP... Uhm...that MTEP programme, which was... We were unable to do it the same at schools, because we don't have much technology. In our school we only use the chalk. [I: Uhm...] We don't have the projectors. We don't have... The...what they use the computers. And even, it was challenging to me, because I'm computer illiterate! I cannot use the computer. So what they do there, I was just looking at a partner next door how it was done. I had nowhere to practice it at school because I'm computer illiterate, I'm on my own (P6; 1st interview).

The problem with the MTEP, it seems, was that the suggested teaching methods depended on technology³⁵; which were not relevant to teachers, like P6, who still use chalk in the classroom, either because they are not computer literate, or because the technology is not freely available in their classrooms. In P6's case, she does not know how to use a computer: "it was challenging to me, because I'm computer illiterate! I cannot use the computer. So what they do there, I was just looking at a partner next door how it was done. I had nowhere to practice it at school because I'm computer illiterate, I'm on my own" (P6; 1st interview). As a result, she could not take skills like enlarging and minimising graphs with a computer, to her learners: "I couldn't take that to my learners, because I don't have a... a

³⁵ It should be mentioned, however, that P6 was only involved with MTEP for a short time in the beginning; so her response is based purely on initial impressions. According to more regular attendees, e.g. P2, the use of technology is one of several other useful teaching strategies propagated by the MTEP.

computer with me... We don't have even projectors here at school" (P6; 1st interview). There is a computer room at the school, but it is used for other purposes. Most of the time, however, the computers are broken.

Firstly, that computer lab was used for learners to, during the computer period, so that they can be computer literate. [I: Uhm...] But I think, because we've got many learners, the computers were broken down. So they, the, the... That computer lab have been closed for quite some time. Because the computers are not... We cannot use them. But they have started to maintain that lab. But not all the learners go in there (P6; 1st interview).

As a result of the perceived overemphasis of computer methods at MTEP, deemed not relevant in her classroom, P6 stopped attending the sessions. Another potential professional development initiative is the 'cluster' system of the Department of Education. This is a geographically bounded *community of practice* in an educational district consisting of subject teachers who gather regularly to discuss subject related matters:

The purpose of the cluster, as it was explained, was that we would interact; we'll [unclear] with the other schools. If I have a problem the teacher from the other school can come and help me or can give me material so that I can cope with what is challenging me at school. We can interact on planning, interact at how to approach a certain topic, or sometimes I can invite the teacher to come and help me here at school. That was one main reason of the cluster; working and planning together (P6; 3rd interview).

From a sociocultural point of view, participation in the clusters present an excellent opportunity for professional development as it entails participation in the practices of a community of practice (Lave & Wenger, 1991; Brown & Duguid, 1991; 2001; Wenger, McDermott, & Snyder, 2002; Goos, Galbraith, & Renshaw, 2004) which is a central thrust in Wenger's (1998) theory. Unfortunately for P6 and her colleagues, it is a missed opportunity. They cannot attend because the cluster meetings start while they are still at school.

The only problem is that... the cluster meetings would be called at two o'clock and at two o'clock we start our last period here at school, the last period ends at 2:45. So if I have to go to the cluster I will miss my last period. So that was the main reason why we couldn't go, because the other schools are finishing at two, and the cluster meeting starts at two, and we have to leave a class unattended to go there, and most of the time it will be my Mathematics class that I don't want to miss. So it doesn't work, the cluster is not working with us. We only go for cluster when its moderation or it's a workshop; we know we must be there (P6; 3rd interview).

She blames the “cluster leader” for not considering their school: “if the cluster leader calls the meeting then I would say that it (*the time*) favours him or her, because it's at two o'clock, and I still have a class to do today, every day, so I normally don't attend. It's very poor attendance in a cluster, which is called by the cluster leader” (P6; 3rd interview). Their school only attends if the cluster meetings are called by the Subject Education Specialist (SES) for moderation purposes, and then only because they are forced to do so: “Moderation happens in a cluster, it is compulsory, so we go because your marks cannot be entered, in your school, without moderation, being moderated, again, external, by the cluster. So we go for moderation, it doesn't have any problem, it is attended” (P6; 3rd interview). Thus, by not participating in communities of practice, such as the MTEP and the clusters, P6 and her colleagues are deprived of one important benefit of such participation; that is, the opportunity of engaging in “learning as social participation” (Wenger, 1998, p. 4), which is a central thrust in the sociocultural framework of learning (Lerman, 2000; 2001; 2006; Kieran, Forman, & Sfard, 2001/2002; Goos, Galbraith, & Renshaw, 2004; Cobb, 2006; Goos, 2008). This limits their professional development to informal interactions with colleagues, “We (*colleagues*) do support one another when the need comes. [I: Yes] When you shout that I need some help. Because, in Maths for example, there are four of us [I: Uhm...] but one is on leave now. There are three of us here” (P6; 1st interview). The benefit of participating in larger communities of practice is obvious; more variation in the practices, which means more opportunities to learn something new.

It is clear that OBE demanded a paradigm shift in terms of the teachers' *subjective educational theories* (Kelchtermans, 1993) which is, in turn, intertwined with their professional identities. Hence, she described OBE as a turning point and explained it in terms of what happened before and what happened thereafter (McCormak, 2000).

I: Uhm... So you say that... uhm, a lot of changes has taken place but you have reverted back teach in the traditional way that you were taught at [P6: Ja, ja, ja...] at college because of... that works best for the learners [P6: Ja...] Uh-hum... Was there any outstanding moments in your career as a teacher where you really felt this is the job for me! I love this!

P6: I think uhm... just before the OBE... took part, I enjoyed teaching maths. I had some learners who did, who did very good in maths. That time, you'll do it, you'll go for extra classes. They'll come and attend. They'd come to you with extra problems that they have tried on their own. I can mention, uhm... A boy... He is now overseas doing medicine. He was... He was challenging me. I had to fully prepare to go to class,

otherwise if I haven't fully prepared, I'll get a challenge in class. That was the time when I felt that, oh {}, this is my...this is my career! This is what I have to do! Because in some cases, you just go to class fully prepared... Made different approaches. You give them this approach... They are dull and there. You change the other approach... They are dull and there. But with that group, they were (*clicks fingers twice*)... Just, if you do it once, they are there! (P6; 1st interview).

In this response she covers both the *evaluative (self-esteem)* and the *conative (job motivation)* components of Kelchtermans' (1993) *retrospective dimension* of the teacher's *professional self* (identity). Before OBE was introduced, she enjoyed teaching Mathematics; the learners were motivated and challenged her in class; one learner even made it overseas to study medicine: "That was a high point {}, a peak {} experience in my life. It motivated me. When we were doing a sending of for this boy [*name of ex-learner*] it was done in the community hall. He mentioned that, I was a motivation in his life!" (P6; 2nd interview). The narrative of this learner's success is construed here as proof that her training at the college seemed to work in practice. After the introduction of OBE, however, no matter which approach she tried, the learners were not motivated: "You give them this approach... They are dull and there. You change the other approach... They are dull and there" (P6; 1st interview). As a result, she no longer feels that this is the job for her, because even what she was trained to do at the college does not work anymore:

I: Okay. Okay... And that's the time that you really felt, you know, good about your work as a teacher? [P6: Yes. Yes...] But now, not so more? Or do you still have those moments?

P6: Now, I... with maths... I don't feel like coming {} to school and teach. Because, you try your best {} and explain. I feel that with the introduction of OBE, the NCS, the RNCS... the learners lost that part, that skill of retaining {} what is taught. You teach them today... You ask them tomorrow... They don't know... You repeat it ... You, you, you sort of... just want to check on them... You give them the same {} examples you did in their class work, in what they did in class, for a short test or a class test, but you take the class work books with you... They won't get it! (P6; 1st interview).

She blamed the curriculum changes for changes in the learners losing "that skill of retaining {} what is taught" (P6; 1st interview) with emphasis on the word "retaining"; in other words, she is expecting memory and recall from the learners, while the new curriculum has different outcomes: "So what I can say, they (*the learners*) can do best {} out of this system (*the OBE curriculum*), it can produce people that can draw {} and colour! Not much of, uhm... brilliant {} learners" (P6; 2nd interview). Here she strongly suggests that the new

curriculum, at best, produces lower order skills like drawing and colouring; while the old curriculum, at least, produced brilliant learners that could retain and reproduce knowledge.

Uhm... the learners that we have today are not the same as the learners that we started with in the 92's 93's when I started teaching [...] With this system {} of education now, it has changed {} their way of retaining and reproducing knowledge (*emphasizing each word*). So, uhm, even if you know {} that this topic was done... in the lower grades... You start {} afresh {} in high school. That's what I meant [...] when OBE came, it's changed the method {} of teaching. So... we're unable to give {} them, to teach {} them, because, even the lesson plans will tell you that you facilitate! You give them this, they will work on this. It is challenging for them to work on their own! So with the OBE... Yes, I can say that it is the OBE that causes them to be like that. Because, before OBE, we didn't have much learners who are this... inactive {} in class. There were inactive learners, but it was a very low percentage. But now you have higher percentage that is inactive and only very few that will be active and go with you, with your lesson (P6; 2nd interview).

According to P6 the problem is so dire that even the Subject Education Specialist does not know what to do about it. When the teachers called for assistance, he merely assessed the situation, then suggested that they follow the work schedule, and left never to return!

The Maths SES {}, we called him in... He came to our school for progress, then, we went to him as the maths teachers, all the maths teachers... He looked at our work schedules. He saw that we were all behind schedule {}, about two, three weeks, all of us! He was asking why. And we showed him the class work books of the learners, that they... it's...it's... It won't work for us to rush {} and be on schedule [Uhm] when they don't understand! We did this! This is the class work! They did bad! I repeat that {}, different examples {}, still they do bad! I changed {} the approach. You go and change the approach, then you teach it again, that is why we are still behind. Then he said the work schedule is there for us to finish in a year. So we must go according the schedule (*emphasizing the words*). If you have done it, go pass... That was the last day we saw him at our school as, as our supporter... (P6; 2nd interview).

In response, P6 resorted to corporal punishment, and when that failed, to making the learners stand on their benches in class if they cannot come-up with the correct answers.

P6: The only thing I can share is that... During that time, we used to beat the learners using a switch [I: A switch?] A pipe or... [I: a cane?] a cane {}, yes. But I saw that... It, it didn't make any... It didn't... They didn't care! Even if I can beat them, they don't do homework. I give them the latch or something wrong. I give them the latch. They didn't care. So I resorted on, saying, uhm... If you don't know the answer, one, you will stand. Ask... it will go throughout the class. You answer your turn. You answer... If you don't answer, you stand up. Then if I ask a question again, you were standing up, they will stand on the chair. Then it goes again. Third question. You don't understand. You don't know it. Then you'll, from the chair you go to your desk. You go up. Which shows now

that the level {!} of you not understanding is going up. [Uhm] Uhm... My learners, they felt very embarrassed {!} to be seen by the other learners standing on the desk. Because it show that they did not practice. [Uhm] So, it changed them. From that punishment, I saw that very few of them are not doing homework. Very few of them do careless mistakes. So that was one part that, that I loved a lot. When I was thinking of it I loved a lot in that group. In my, in that group. It worked {!} a lot with that group, when I was not beating that (*inaudible*) group (P6; 1st interview)

According to P6 a more painful punishment, worse (for the learners) than corporal punishment and the embarrassment of standing on the bench in class when they cannot come up with the correct answer, is the practice of making them stand on their knees in class while copying from the blackboard.

Uhm (*pause*)... You talk to them. They don't listen. The most painful disi- [*leaving the word incomplete*]... uh, punishment to give them is to sit, stand on their knees. If they haven't done homework, then they'll be on their knees, writing. You will be class work to be written, there was light kneeling! And they cry, because they say it's painful. But I'm forced! I cannot take them out of the class. They must be in the class. So, I let them... I feel that is one punishment that they feel it's painful to sit on their knees... Kneel and then listen or do written work kneeling (P6; 1st interview).

According to P6 she is forced to take such drastic actions, because she has run out of options; for example, she cannot put the learners out of her class if they do not perform. Moreover, she claims that it is a pleasure to work in an environment where one can punish the learners without any problems: "They take the punishment in this school!" (P6; 1st interview). She claims, however, that it is better to teach English than Mathematics: "It's better to teach English. Because what I teach them in English, they'll be... At least 50% that can be able to recall what was taught. But in Maths {!} it will only be 0,5% that can recall that this {!} was taught" (P6; 2nd interview). This is what she has been doing at the school for nine years before the Department of Education discovered that there was a qualified Mathematics teacher at the school not teaching Mathematics: "For the past nine years I was teaching English only in this school, till the Department said: 'Is there a maths teacher who's not teaching maths at school?' Then I was taken back to maths. This is the third year that I am teaching maths. I had a break {!} of about nine years, not teaching maths. That was, that is the one part that makes me feel bad" (P6; 2nd interview). Now she is back in the Mathematics class, doing what she was "trained" to do at the college.

6.6.4 Distilling P6's core narrative

As P6 explained, she grew up in extremely difficult circumstances. They lived on a farm where her parents were ordinary farm labourers; they had to walk far to attend school in the township on the fringes of town; and there, the township people discriminated against them. Rather than suppressing these stories of inequality and discrimination, however, she successfully links them together into a *core narrative* of resilience. By telling tales of fortitude in the face of adversity she managed to narratively position herself as one of only a few learners from the farms who was *resilient* enough to overcome her circumstances and improve her life. When asked about the relative importance of her stories in terms of shaping her professional identity, she responded as follows:

I would say one, it is the upbringing at home, the help from my brother, a sibling, and then the help from the community, especially the church, the church leaders, and then again, when I came out from school, the support that I got from my first headmaster, which is my current headmaster, the support that I get from my HOD, and I would say I am so... I am not pleased by the way the kids... the pass rate of the kids, the change now because you aim high when you prepare the lesson, but now what you sow is not what you reap, you teach them hoping to get good results. I think that is, those are the main facts in my profession (P6; 4th interview).

In the first story the *social capital* (Bourdieu, 1986) invested by her family, and her brother in particular, who made up an important part of a supportive *social network* (Gasman & Palmer, 2008), are reified into *motivation*; *resilience*, and *determination* to succeed. In the second story of religion, the clergy, through their teaching and support, have shown to P6 that she has the agency to re-story her identity (Sfard & Prusak, 2005a); to transform her context; and, to reach her goals (Beauchamp & Thomas, 2009). Their teachings, and the behaviours that emanated from it, were reified into *resilience* against temptation and also into a *subjective* educational theory. Although not captured in separate stories, she claimed that her headmaster and head of department (HOD) also played strong supportive roles. It is clear that the role of a supportive *social network* should not be underestimated: "A person's sense of agency and his or her ability to act cannot be separated from the effects that meditational systems have on shaping him or her" (Lasky, 2005, p. 902). The resilience that P6 has shown so far is the result of the *social capital* invested in her and the *agency* to change her personal circumstances, mediated by her *social network*, and now embodied in the stories that she carries around with her as part of her personal and professional identity.

However, this has not prepared her for challenges of the impending changes in the curriculum, as the third story of curriculum changes reveals. Moreover, it seems resilience (to changes) and her subjective educational theory have become handicaps when it comes to curriculum changes:

I can say that when I compare myself with the other teachers who live in cities, I can see that they are on a par with knowledge, while I am still using my old methods [...] I would say that I have not developed myself up to the right level, because I've got 20 years teaching experience, but I don't feel I am, I have 20 years good experience in teaching, because I have not developed myself to the level of changes that happened when I was trained to teach, and the changes that happened during my teaching profession (P6; 4th interview).

Perhaps, that is why she prefers to teach English rather than Mathematics, and why she still teaches using the strategies for which she was “trained” in college. She had an interesting view of the future:

Again, now they are coming with another change, from the NCS to CAPS, which they say CAPS now goes back to the old syllabus. Now it makes me to feel a bit comfortable, that now I will use the training that I was given that time, it will now be, I will be able to use that, because I will be using that method of teaching the kids, instead of what they have changed to, from me being the facilitator, just facilitating the kids. Now I will be teaching. So I will see now, the future is bright, but the material, the kids that we have, I still have some question marks if we will produce, we will get good produce from them, because as I see them, we will introduce the CAPS to the NCS group, because CAPS is going to start from, next year we start it at Grade 8 CAPS, which from the beginning, they were OBE and NCS, only now we change the CAPS, the old syllabus. So it will take some time, but I hope that in the future, at the end we will get what we envisage, good results (P6; 4th interview).

This confirms how *resilient* P6 is and the resilience of her *subjective educational theory*. She hopes, and is prepared to wait, for the curriculum changes to pass and for the “old syllabus” to return so that she can teach, with official sanctioning this time, as they were “trained” in college.

6.7 Participant 7

Participant 7 (P7) is a White, English-speaking, male teacher in his mid-fifties; who, at the time of this study, was still teaching Mathematics in the same inner-city high school in Port Elizabeth where he started his teaching career in 1981. The school is located close to the poor working class neighbourhood where P7 was raised as part of a humble but close knit nuclear family.

You know, I had humble parents who came from humble backgrounds, who had no... They had no hang-ups in life at all, there were no issues in their lives. You know, whether it be divorce, whether it be, uhm... one partner going out on their own. My family was a very normal... sort of united family (P7; 2nd interview).

His parents were poor and did not have money to send him to university; so, after passing the Matric (Grade12) examination in 1975 with a distinction in Mathematics, P7 went straight into the army³⁶. After a spending a very frustrating year in the army – he really wanted to study – he was awarded a bursary to study “Teaching” at a university. Although “Teaching” was not P7’s first choice – he mentioned that he would have loved to do some scientific work in a laboratory – his love for Mathematics and the bursary motivated him to pursue a teaching career instead. Now, more than thirty years later, he is still teaching at the same school where he started his career in 1981.

As a result of the political changes in the country, the demographic profile of the school where P7 is teaching has shifted from exclusively White to almost exclusively Black; few White staff members remained behind; and, the majority of learners are Black and Xhosa-speaking. This post-1994 phenomenon is not uncommon in many previously White schools in South Africa, which makes P7’s narratives especially relevant and interesting. However, it is not only the demographic profile that has changed in P7’s workplace; other changes include: on-going curriculum changes; deteriorating discipline; lack of internal motivation amongst the learners; and questionable assessment and promotion practices. In P7’s narrative he attempts to negotiate the meaning of these dramatic changes in terms of his own experiences at the school. There are four “big stories” (Bamberg, 2006a; Georgakopoulou, 2006; 2008) in his narrative: a story of a “quirky” Mathematics teacher; a story of parental support; a story of an altercation with a learner in the school hall; and, a story of a denied promotion post. However, according to P7, the stories of the altercation in the school hall and the denied promotion post have had only a temporary and negligible effect on his professional identity:

Some of them (the stories) only affected my life for a little short time. For instance not getting the promotion post, although that was a blow, it was a short term thing, because I’ve been teaching for 33 years now, so that was only say maybe a two year incident out of the 33 years. The incident in the hall, although I was angry and upset by

³⁶ During this time in the country’s history all White, male South Africans were forced by the Apartheid government to do at least one year of compulsory military service or face a lengthy jail sentence.

it, it was a short lived incident. But I learnt a valuable lesson from it you know. But those didn't shape necessarily my career [...] They were disappointments in my life, but they never changed the way I felt about teaching children. So I think, I don't think that I've ever changed, from the day I started at this school until today, I don't think I've changed the way I feel about mathematics, and the teaching of mathematics [...] It affected my personal, emotional self, but not my outlook towards teaching, if that makes sense (P7; 4th interview).

Of these two stories, however, the story of an altercation with a learner in the school hall seems to be the one that has had the greater and longer lasting influence on at least the *normative (task perception) component* of his professional identity: "And after that, I was reluctant to discipline children at all, because... I wasn't sure [...] To this day I don't have an answer for that particular situation" (P7, 1st interview). Therefore, this is the story that will be included here. The story of the denied promotion post, he claims, has only affected him for a short time: "Of course I've gotten over that now" (P7; 3rd interview).

In the fourth and final interview, as part of the member checking (Guba, 1981; Creswell & Miller, 2000), P7 was asked to rate these stories on the grounds of their significance in terms of his professional identity. These first three stories³⁷ will be presented here in the order of decreasing significance as P7 rated them. The ensuing interpretation of these three selected stories in terms of P7's *core narrative* aims to show *how* his professional identity is shaped by his personal narratives.

6.7.1 Story of a "quirky" Mathematics teacher

This story of a "quirky" Mathematics teacher was rated by P7 as the most significant story of them all, "because without that Maths teacher I would not have gained a passion for Mathematics and I would therefore not have even known where my life would have led me to. So that to me is number one" (P7; 4th interview). An allusion to the role-modelling effect that teachers have on learners came up spontaneously in response to a question about interesting things in P7's career that might have changed his professional identity.

I: Let's talk about interesting things that had happened to you in your career [P7: Uhm, ja (*softly*)...] things that had changed you as a teacher.

³⁷ In the fourth and final interview, P7 rated his "passion for helping children" as the "second most important thing" in his professional career. However, because this is a personality trait rather than a story, it is replaced here with the next most important story; a story of parental support.

P7: Ja, that's... uhm... (*softly*)... I think on the positive {} side... I don't know it has changed {} me, but it's made understand... Uhhhh.... How, what big effect that you (*the teacher*) have on children's lives. As you teach children from grade eight to grade twelve, you teach them Mathematics, and you forget that you are teaching them life skills and that you are setting... uh, a role model for them... serving as a role model. You forget {} about those things... (P7; 1st interview).

The effects of such role-modelling, however, were not explored any further until it came up again in the second interview; this time spontaneously, in a story about P7's own Mathematics teacher, in response to a prompt about the origins of his passion for Mathematics and teaching.

I: [...] And throughout, you know, the transcript (*of the first interview*) I picked up 'passion', uhm, comes up time and again, so my question is: Where did this begin, this passion for Mathematics and Mathematics teaching? [P7: Ja...] How did it begin for you?

P7: Ja... [*name of researcher*] that's such a good question you know. I've got a very definite answer with that one... I went to... and I know you've blotted out the school's name which I appreciate, but I went to [*name of high school*] as I mentioned to you. And that was the old [*name of high school*] where [*name of current school on that location*] is at the moment, it's up on the hill here, quite close here...and uhm, I was just a very average, uhm, Maths {} student, my general academic things were good, I was always in the top ten, but Maths, just average 50% sort of...and we were given in Grade 10, which was the old standard eight ...I was allocated to a teacher called Mr [*name of teacher*]... Uhm, who was a short, little, quirky Maths teacher; but a wonderful man in terms of his {} passion for Mathematics. And not a day would go by where he wouldn't be in class, or where he wouldn't be explaining something, or he wouldn't ask you: 'How's the maths going? Uh, [*name of P7*]... Uh, did you manage number 3? Uh...?' And he showed an interest in each {} ... I don't know how he managed it, because we also had thirty children there, it seemed like he showed an interest in every child, even the ones that were getting 10% {} There was a boy called [*name of learner*] and he'd say, "[*name of learner*], I know you can go from 10 to 15, and the class used to laugh but the teacher was sincere and the sincerity of that man rubbed off on me from that day... that was in Grade 10. And my maths marks... Then I developed a passion for Maths. I bought study-guides, I bought Maths books and did homework {} Uh, just extra homework until I got up to getting 80's and 90's for Maths in Matric. So, it all started with the teacher I had, whose name was [*name of teacher*]. That guy I met many years later. Uhm, funny enough, uh, he became a headmaster in, in [*name of high school*], in the Free State and I met him through chance and he was still the same. Today, I believe he is in America somewhere. He used to get teased by a lot of the children for being... nerdy or quirky but, but he {} had direct influence, not only on my life, but on many, many other children that I know about. And so that passion started there... and then... I can mention how it progressed if you'd like to... (P7; 2nd interview).

In this story, P7 claims that he was just an average achiever in Mathematics until they were given this “short, little, quirky Maths teacher” (P7; 2nd interview) who turned all of that around.

So the mathematics teacher was the one that showed an interest, and when he showed an interest, and in particular, would write a little comment at the top of the page, good work or something like that, that implied that I was mastering the maths content, and that in turn motivated me to go onto teaching maths (P7; 4th interview).

It has been pointed out before that there are two views on how teacher professional identities are influenced by role-models amongst their previous teachers: disposition towards the subject (Eaton & O Reilly, 2009a), and teaching style or technique (Lasky, 2005; Robinson & McMillan, 2006; Schwandt, 2008). According to P7, this teacher had both a “passion for Mathematics” (P7; 2nd interview) and certain characteristics that made him exceptional in the classroom. One such characteristic, for example, is his *quirkiness*; which can also be construed as a form of teacher vulnerability (Lasky, 2005). Perhaps it is this vulnerability that P7 tries to emulate in his classroom antics:

I would, for instance, if I saw the class not listening to me, I would actually jump onto the desk and I would ask them if they could see me and they start giggling etc., but suddenly I would... The turkey that was right at the back that wasn't actually even listening, he had his head down, his head would come up. Another thing I would do is I would actually jump into the waste bin – and I really did do this – big black dirt bin. I'd jump into it so that they could actually see me, so that I could know that they were watching me. I even locked myself in the cupboard once. I said... Now I don't know what prompted this, [name of interviewer]. It sounds stupid, but I'm going to get to the point. I could see that the children weren't listening and I said, “What if I disappear?” And I jumped into one of these cupboards and they cackled and they laughed etc., but years went by and those same children came to me and they said: “You know, sir, you were crazy. You jumped on your desk; you jumped in your cupboard; I can even remember you standing in the wastepaper bin”. And they said, “But those were times when just as we were not listening, we actually started listening” (P7; 3rd interview).

It seems that, by expressing his vulnerability in this way, P7 hopes to capture the attention of his learners, build trust, and facilitate learning. Lasky (2005) pointed out that, in order to facilitate learning and build trust and collaboration, it is necessary that “people willingly open themselves to the possibility of embarrassment, loss, or emotional pain because they believe that they, another individual, or a situation will benefit from this openness” (p. 901). According to P7, his Mathematics teacher was deemed “quirky” and the children often teased him for that; but, he had nevertheless achieved his goal of making a difference in

their lives. This is apparently what P7 tries to achieve by emulating some of his teacher's quirkiness in his classroom antics.

Instead of reifying the characteristics of this teacher by using the adverbs *always* or *usually* (Sfard & Prusak, 2005a), P7 achieved the same reifying effect by using the double negative form; for example: "And not a day would go by where he wouldn't be in class, or where he wouldn't be explaining something, or he wouldn't ask you: 'How's the maths going? Uh, [name of P7]... Uh, did you manage number 3? Uh...?'" (P7; 2nd interview). In other words, this teacher would always be in class; he would always be explaining something; and he would always show an interest in every learner by asking about their progress in Mathematics. In addition, he had an important value that corresponded with the values of his parents – sincerity. As P7 explained, the sincerity of this teacher "*rubbed off*" on him one day when he witnessed with how much sincerity this teacher motivated a weak learner: "There was a boy called [name of learner] and he'd say, "[name of learner], I know you can go from 10 to 15, and the class used to laugh but the teacher was sincere and the sincerity of that man rubbed off on me from that day... that was in grade ten" (P7; 2nd interview). The reader is urged to read his comment about the suggested value of sincerity as one of the core values of a Mathematics teacher in section 4.7.6 where it is suggested that the special appeal of *sincerity* as a core value might stem from his strong religious background. In his narrative, however, P7 construes his Mathematics teacher more as a "maths role model" (P7; 2nd interview); in contrast, his parents are construed as the very embodiment of morals and values: "his (*the teacher's*) role model was slightly a different one again. It was the, it was the maths role model, whereas the parents were the morals and the values" (P7; 2nd interview). It seems that this "quirky" mathematics teacher in P7's stories is the embodiment of at least three of the "many faces of greatness among teachers" (Jansen, Koza, & Toyana, 2011, p. 3): he was a *subject artist*³⁸, an *inspiring mentor*³⁹ and an *extended parent*⁴⁰. These characteristics of this special mathematics teacher, who has been his role model, have since been adopted into P7's own professional identity. This is how he

³⁸ He had expert knowledge of the subject matter and showed specialist knowledge of how to teach it.

³⁹ He inspired through his words and behaviour.

⁴⁰ He offered the same affection, diligence and care as a parent.

explained it, right at the beginning of the first interview, in response to a question of whether his professional identity has changed over the years.

I: Is there any other {} aspects of your professional identity that has changed over... over the years?

P7: No, not really... You know. Uhm, I think, if, if I'm interpreting it correctly... If you say... If you're asking me... Have I become less passionate? Have I become... Uh... slightly... Uh... less motivated? The answer is no {}, not really... Uhm, in other words when I see the 30 to 40 faces in the desk, I have the same passion for sharing information with them as I had in 1981. Uhm, it's a funny feeling, but you... Your heart, well my heart won't allow me to... to actually say to myself... Look there's only ten kids listening to me here...and therefore, uhm, I'm not gonna give my all. I give my all, whether, whether {} they are going to achieve or not. So, no {} the passion hasn't changed, not at all. The love for Mathematics hasn't changed, my preparation hasn't changed, my marking and my work ethic hasn't changed. I'm never late for a class. Never... never underprepared. Uhm, I always have the marks back, feedback back to the children. And my patience {} with the children has never changed. Uh, to be totally honest with you, uh, a child could ask me the same question five times, and I would repeat the answer for five times, or the explanation. Obviously not ... asking questions like when the bell's gonna ring and things like that. But I'm talking about mathematical questions. So I haven't... (P7; 1st interview).

At this point in time, the story of the role-modelling of his Mathematics teacher had not been told yet; this would only be told in the second interview. However, there are unmistakable correspondences between P7's list of personal professional characteristics and that of his "quirky" teacher role model; for example, they both: have passion for Mathematics; love teaching; have impeccable work ethics; are patient; and, have had some influence on learners' lives. Moreover, P7 claims his teacher's sincerity has already "rubbed off" on him in Grade 10 when he witnessed with how much sincerity he encouraged another learner. Moreover, in the above excerpt his professional characteristics are *reified* by the use of the verb *have* and the adverb *never*; which, in addition to being both *significant* and *endorsable*, makes them identifying (Sfard & Prusak, 2005a; 2005b). For example, when P7 says: "I *have* the same passion for sharing information with them" (P7; 1st interview), or, "I'm *never* late for a class" (P7; 1st interview); he is expressing aspects of his professional identity. The teaching-and-learning relationship between P7 and his "quirky" Mathematics teacher can hardly be described as a traditional apprenticeship model as conceived by Lave and Wenger (1991) when they coined the classical version of the term *legitimate peripheral participation* (LPP). Firstly, if the boundary of the *community of practice* (Lave & Wenger, 1991; Wenger, 1991; 1998; 2000a; 2000b) of mathematics teachers is conceived to be a

formal teaching qualification, then P7 only became a “legitimate” member of the community of practice of mathematics teachers in 1981; after he had formally qualified as a teacher and taken up a teaching position at his current school. Before that, at the time of his interaction with his “quirky” mathematics teacher, he was not a legitimate member yet; not even a peripheral member. Secondly, there is also no evidence that P7 had participated in the practices of teaching mathematics while he was still a learner in school (unlike P1). What that means is that the practices of what he had learnt from his teacher were delayed until he had qualified and been offered a position as a mathematics teacher. Therefore, at best, this learning process can be described as a form of delayed *legitimate peripheral participation*; in doing so, perhaps breaking another one of the “barriers” in Lave and Wenger’s (1991) classical anthropological approach which, as Fuller, Hodkinson, Hodkinson and Unwin (2005) suggested, need to be broken so that LPP can be applied elsewhere.

6.7.2 Story of parental support

Speaking about the distinguishing characteristics of the outstanding learners in his career, P7 alluded to the importance of an “inward motivation to succeed” which, in turn, is subject to “good family support structures” (see excerpt below). In his narrative these characteristics are linked to his own professional life story where both, purportedly, played a significant role in shaping his professional identity.

I: Yes, yes. Its... uhm, it’s very interesting. What do you think make these particular children (*the outstanding ones*) that you have mentioned different from the rest of the pack?

P7: Gosh, that’s a good question! ... I think there’s two things, but I can’t be sure about them. Uhm, the first thing is that the family life plays a huge, huge role in a child’s life... Uh, the role models that the family have to, to play here... I see many, I discipline many daily children, daily {!}... Because I’m a grade head as well, and uhm, I would guess... This is just a guess. This is just a guess, [*name of the interviewer*], I can’t be sure... But out of every ten I see, the five of them, there’s a broken marriage... And it tends to be either the mother or the grandmother that’s looking after these children. The father tends to be working somewhere else, perhaps the Transkei. The mother tends to be working long hours, in hospitals maybe. And the point is; when the child returns home, there’s very little parental guidance at home. Which means that the children doesn’t have anyone {!} to ask them: ‘Has your homework been done? How’s it going at school? I haven’t seen your report card. Why have you been absent lately? I’ve noticed you’ve not been putting on your uniform.’ That sort of thing. So the children tend to live by their own laws. And, so the first point, I think, that, that played a part in that particular

child and the other one I mentioned was that they'd good family support structures. The second... thing that, that happens and I think that this happens because of the family, is that you have to have and inward (*emphasis by saying it slowly*) motivation to want to succeed. And unfortunately, I don't think more than... a third of the children have that inward motivation. And I'm not sure if it's all family structures, I can't say that for sure (P7, 1st interview).

In this excerpt, P7 repeatedly states that his view on the purported link between "inward motivation" and "good family support" is "just a guess" and that he "can't be sure"; thus implying a lack of theoretical and empirical grounding; and, leading him to conclude that "I'm not sure if it's all family structures, I can't say that for sure" (P7, 1st interview). The literature, however, shows that his view is well aligned with notion of *social capital* (Bourdieu, 1986) as a framework for examining the influence of family and community on promoting educational achievement (e.g., Bourdieu, 1986; Portes, 1998; 2000; Israel, Beaulieu, & Hartless, 2001). Much like the outstanding learners in P7's career stories, he was also an outstanding learner who passed with an A⁺ in Matric Mathematics himself. Therefore, when towards the end of the second interview he was prompted to clarify the points raised in the excerpt above, he responded by using his own family and the support of his parents as a reference. His own story highlights several key points raised by Bourdieu's (1986) notion of *social capital*.

I: Yep! You go on on page five... [*Referring to the transcript of the first interview*] and, uhm, I picked up three things: 'family life'; 'role models'; and then, 'an inward motivation to succeed'... [P7: Ja...] And, uhm, I'm going to ask you how these three factors... What role they played in, in your life as a Math learner and a Math teacher?

P7: Okay! Let's just... [*name of researcher*], just go through these things? It was, the first one was?... [I: Family life] Ja [I: I've circled them... 'role models'...] Oh there, sorry, I could not see [I: and inward motivation to succeed...] Okay, okay! Gosh, those are good questions, [*name of researcher*]. You know one doesn't think about these things. I want to compliment you on the, the way you've asked that because you doesn't think about it, you know. And, and I want to start with my own family life. You know, I had humble parents who came from humble backgrounds, who had no... They had no hang-ups in life at all; there were no issues in their lives. You know, whether it be divorce, whether it be, uhm... one partner going out on their own. My family was a very normal... sort of united family. With, with average parents you just had average work. My Mum was always at home! That was very important. I remember when I, when I got home from school, my mother was at home, she could have... not that she could afford to, my father wanted her at home. And the point is, she was always there to ask me, "Do you need anything for school? Have you got your correct books? I've ironed your shirt. I've got your clothes waiting for you. Do you want me to wake you up tomorrow morning,

early to study for that...?" Whatever test it was. Uhm, "Here's your bus fare. Here's your lunch" Those issues one doesn't realise as a child, when you're growing up, have a huge {} supporting role because, because the parent is showing such an interest in you, you then feel obliged to show an interest in your schoolwork {}, which in fact is what your parents are wanting you to do! So it's an indirect link there. My father was always there from a sporting point of view more so. He would come and watch the cricket games I played, the soccer games I played, he'd ask me about my Maths but worked late hours so he could not really help. So, none of them helped me physically with the actual doing of the Maths, but they helped me with the motivation of it. And they would always... even if they had five rand left, they'd say, "We don't have much money, here's two rand, make sure you buy a sandwich at the tuck shop", or whatever the case is. They'd sacrifice some of their own things so that we could get on in life, and uhm I don't think they ever, ever pictured any of their children going to University because they, they just couldn't afford it. But things ...It's God's Will I suppose, thing turned out that I was able to go to University. They were such proud parents, I can remember the Graduation... *[at this point P7 gets very emotional]*... They were proud that, that at least someone had gone to University. They've passed on about... at least 10 years now, one misses them! Uhm, okay, so, from my own family ... that was their point. Then the role model... You know my parents didn't... The role model that my parents played, to me was that they always tended to do the right thing... in terms of, if I was in the wrong, they'd tell me, I was in the wrong. They wouldn't say to me, "Look, you failed the test, uhm... It's fine to fail the test", they wouldn't say that. They would say, "You failed the test, we're disappointed {} in you failing the test, but let's try to find out how to correct the thing" And very often I find parents that I... of children I teach today, they, they accept the children's shortcomings and even take their side in it, instead of saying to them, "This is wrong, but we're gonna try and work in getting it right" So, my parents were good role models in that sense, their value systems, morals, they, they stuck to it. I had to go to Sunday School. I had to go to Church. I had to live a good life. They expected {} those things of me. Uhm, they weren't perfect, but they expected me to, to live a good life. I tried as far as I could to do that. As far as the teacher's role model, remember I spoke to you about Mr. *[name of teacher]*? He... Uhm, because he always... was at work, he was always on time, because he always knew... he was always prepared for his maths lessons... So, his role model was slightly a different one again. It was the, it was the maths role model, whereas the parents were the morals and the values... And then, that Inward motivation to succeed – That is something that I think... one gets ... if you, I don't know if this is true or not, but I feel that if you come from a slightly deprived background or poorish background, there's definitely this will to get to improve your own life, so that your family's life can improve, so that your children's lives can improve. Sometimes we, we do too much; we spoil our children too much, but... I knew that I didn't want to have to battle too much in my life later on. I saw my father. My father used to go to work at 5 in the morning and come home at 6 at night, and he used to work long hours on a layer, a metal layer. He was a turner, and he was exhausted by the time he was 57. He was exhausted and he couldn't carry on, and I thought to myself, I need to get a job that motivates me, that I don't have those long standing times with,

etc. You know, so I think the inward motivation comes from trying to live a better life than maybe my parents had lived (P7; 2nd interview).

As P7 reflected in the story above, there are at least four ways in which the support of his family contributed towards “inward motivation”. Firstly, his parents had high aspirations for their children and made unselfish sacrifices so that they could better their lives: “They’d sacrifice some of their own things so that we could get on in life” (P7; 2nd interview) even though they knew that they could not afford to send them to university. The focus of such *social capital*, according to Portes (1998; 2000), is one of the benefits accruing to individuals or families by virtue of their participation in groups and on the deliberate construction of sociability as a resource. Here, as the immediate *social network*, it seems that P7’s parents had hoped that through their *social capital* investment, at least, they would put their children in a better position to improve their lives. And for P7 it worked, because after a year in the army he went to university and became a teacher. Portes (1998) further maintained that *social capital* is greater when parents have high aspirations for their young, because that would “foster greater parental attention, more hours spent with children, and the emergence of an achievement orientation among adolescents” (p. 11). This was clearly the case with P7’s family, and it can be linked to the second point, the interest shown by both P7’s parents in his schoolwork. This was a huge source of motivation: “because the parent is showing such an interest in you, you then feel obliged to show an interest in your schoolwork {!}, which in fact is what your parents are wanting you to do!” (P7; 2nd interview). Even though his parents were not in a position to help him with Mathematics, they had high aspirations for him and showed interest in his work and this had been a great motivation: “none of them helped me physically with the actual doing of the Maths, but they helped me with the motivation of it” (P7; 2nd interview). Thirdly, his mother was always at home to take care of their needs. As Portes (1998) suggested: “Intact families and those where one parent has the primary task of rearing children possess more of this form of social capital than do single parent-families or those where both parents work. The primary beneficiaries of this resource are, of course, the children whose education and personality development are enriched accordingly” (p. 11). This was clearly the case with P7’s family, as he explained: “My Mum was always at home! That was very important. I remember when I, when I got home from school, my mother was at home, she could have... not that she could afford to, my father wanted her at home”(P7; 2nd interview). Their father seems to have

realised the importance of having their mother stay at home to take care of the children after school. Lastly, the values instilled by parents – socially acceptable values translate into discipline, which is a valued and rewarded in school. In the first interview P7 suggested that at least half (five out of ten) of the discipline problems that he has to deal with on a daily basis can be attributed to a “broken marriage” and “very little parental guidance at home” (P7; 1st interview). In P7’s own life story, however, his parents were exemplary role models of a particular value and moral system: “The role model that my parents played, to me was that they always tended to do the right thing... in terms of, if I was in the wrong, they’d tell me, I was in the wrong [...] my parents were good role models in that sense, their value systems, morals, they, they stuck to it. I had to go to Sunday School. I had to go to Church. I had to live a good life. They expected {!} those things of me. Uhm, they weren’t perfect, but they expected me to, to live a good life. I tried as far as I could to do that” (P7; 2nd interview). Moreover, his parents were the very embodiment of morals and values, “the parents were the morals and the values” (P7; 2nd interview). According to Portes (2000), this is one of the key functions of family: “What families do, above all, is to facilitate children’s access to education and transmit a set of values and outlooks” (p. 2). If such values and outlooks are in line with those of the educational institution, it is to the learner or student’s advantage. In his story, P7 claims that he had learnt the values and morals that underpins his professional identity from his parents. It seems, however, that the values instilled by P7’s parents are often difficult to reconcile with the conflicting values in the context of today’s parents: “And very often I find parents that I... of children I teach today, they, they accept the children’s shortcomings and even take their side in it, instead of saying to them, ‘This is wrong, but we’re gonna try and work in getting it right’”(P7; 2nd interview). Regardless of the circumstances, however, personal values are the drivers of commitment and influence practice (Day, Elliot, & Kington, 2005; Mpungose, 2010); and, making sense of and (re)interpreting one’s own values are central in the development of a professional identity (Flores & Day, 2006). Therefore, it could be argued that, through the role-modelling of their value system, his parents had played a significant part in the shaping of P7’s professional identity. For example, he summarised the most important values of a Mathematics teacher as follows: “So, sincerity {!} and loyalty {!} to the children, honesty {!} also, not... not, uhm, lowering your own values and morals, uhm, saying to them, ‘This is right, that is wrong and I

expect this of you, but I'm not perfect, etcetera'" (P7; 2nd interview). Note that values like sincerity, loyalty, and honesty are presented here in *reified* form; that is, as propositions about states rather than as processes (Sfard & Prusak, 2005a; Sfard, 2008), and therefore they are identifying; for example, the value of "sincerity" is something one either has or does not have.

In the third interview P7 alluded to the role that his father had played in his decision to become a teacher; and, also to the facilitation role that parents can and should play in their children's education.

Yes, if I could go back to childhood I think maybe I can add something here. My father, he worked as a tradesman and he'd always told me that although working as a tradesman can be rewarding, when you get older it is a very tiring job physically and he begged me to make a wise choice in my life. He had no idea what I could become or should become, but he begged me to make a wise choice in terms of working because one's working life is a 40-year experience, more or less, and I've never forgotten that. I've never forgotten that he said to me make a wise choice about what you're going to be one day in terms of, not necessarily money, but in terms of job satisfaction and I think that has had a big point in my life or a big impact because I thought of helping young children. I didn't think of the standing or the cricket coaching; I thought of the ability to help young children with Mathematics. That would have been an influence on my life. So again it was advice given to... My father didn't know that that advice would end up with that, but it was something that he planted a seed. So I think parents have a got a big role to play in terms of motivating their children and here in particular in Mathematics, if parents knew, for instance, that [name of university] criteria for admission to a certain course required a level five for Mathematics – I'm just giving you that as an arbitrary thing – if they knew how important that was they could maybe go home and sit with their children and try and help them with their homework. I know not everyone can do maths, but maybe they can say to them show me that you've done ten sums or whatever they're called... ten problems, go and ask your teacher why you don't know number six – but nothing like that is happening. So I think parents have a got a far bigger role to play (P7, 3rd interview).

His explanation, in this story about the role that his father had played in his decision to become a Mathematics teacher, can be linked to the conative dimension (Kelchtermans, 1993) of his professional identity, that is, the motivation for choosing this job rather than any other job: "I thought of helping young children. I didn't think of the standing or the cricket coaching; I thought of the ability to help young children with Mathematics" (P7, 3rd interview). Witnessing his father's weariness after operating a lathe in a factory for long hours was another motivating factor: "I knew that I didn't want to have to battle too much

in my life later on" (P7; 2nd interview). This link with the conative dimension was confirmed at the beginning of the third interview when he related why he had chosen to teach at that particular school in a poor white neighbourhood, while also being offered two alternative posts at schools in considerably more affluent neighbourhoods, "and this school in particular struck me as... this is when I was straight out of varsity. Now this school struck me as one where the children were not that well off. They came from a disadvantaged background. Although most of them were white children, they were poor white children – most of them, not all of them – and I felt that I could make more of an impact at this school than I could maybe at a slightly wealthier school"(P7, 3rd interview). He claims that his father's advice had been instrumental in helping him to make that decision, "he said to me make a wise choice about what you're going to be one day in terms of, not necessarily money, but in terms of job satisfaction"(P7; 3rd interview). In reality, however, his father's appeal might have been less romanticised, "My father, he worked as a tradesman and he'd always told me that although working as a tradesman can be rewarding, when you get older it is a very tiring job physically and he begged me to make a wise choice in my life" (P7, 3rd interview). Reflecting on the above exchange, he concluded that, "So I think parents have got a big role to play in terms of motivating their children and here in particular in Mathematics" (P7, 3rd interview). These narratives of the role of parents is intertwined with other elements of his professional identity, for example, when he talks about the changing work environment; specifically, the learners' lack work ethics and discipline is blamed on a lack of parental support and misguided parental support respectively.

In summary, these stories of family support capture the way in P7's parents have shaped his professional identity: Firstly, he was motivated to improve his own life so that he would not have to struggle to make a living like they did: "I think the inward motivation comes from trying to live a better life than maybe my parents had lived" (P7; 2nd interview). In other words, his parents were the source of this "inward motivation" that he had within him to improve his life. Secondly, through their role-modelling, P7's parents have instilled certain values and morals that he has made part of his own identity; for example, always striving "to do the right thing" and "to live a good life" have become part of who he is as a person. And finally, the rationale behind Bourdieu's (1986) notion of *social capital* is captured well in his words: "I feel that if you come from a slightly deprived background or

poorish background, there's definitely this will to get to improve your own life, so that your family's life can improve, so that your children's lives can improve" (P7; 2nd interview).

6.7.3 Story of an altercation in the school hall

In the following narrative excerpt, in which P7 responded to an interview question about a time in his career when he felt particularly despondent about teaching, he is alluding to the story about the school hall altercation with a learner.

Uhm, and then...Other things that do affect me when I don't want to teach anymore is when I discipline {!} a child... Perhaps I do... hold him on his shoulder, which happened, and there's no, there's no... There's no malice or anything... but the child is blatantly {!} rude to you... (deep breath) uh, terribly arrogant, and no {!} respect for you at all... and still has the cheek to go and report {!} the teacher {!} to the parent {!} for saying that he, the teacher, was rough... which I've never-ever been. But it happened once in my life where, uhm, I did hold a child by the arm and the child accused me of, of, of being rough with him. And that sort of... And then the parent took the child's side. So you start wondering. How do you discipline children? How do you? What do you do? Do you give them writing out to do? Which is ridiculous. I do contact parents continuously, and I've actually got a book here which I'll show you. Uhm, parents have got limited control over children very often. And they want {!} you to do something, but when you do {!} something, they're very, very angry that you did {!} do something. So, so those are times when you want to stop teaching. When you... When the children refuse to cooperate and the parents are actually quite rude, and stroppy... (P7; 1st interview).

Several issues are raised in this excerpt; the most important one is P7's uncertainty about how to discipline learners because parents take the learner's side. His reference to holding a child on his shoulder alludes to the above-mentioned altercation with a learner in the school hall; the full story, however, would only follow after the forty-minute first interview had been concluded and the tape recorder had already been switched off. It seemed, however, that the story needed to be told and that P7 was quite anxious to share it with the interviewer. Therefore, with P7's approval, the full story was recorded as an addition to the first interview.

So the situation occurred in the school hall, firstly, where there were lots and lots of children. Let's call it... uhm... three hundred children that we tried to settle because there was a guest speaker in the hall for them... and this particular boytjie who was close to... It is important to know that he was a big boy... He was close to about six feet tall... Uhm, as you can see I am five-foot-seven; I've never posed a threat to this boy... He just wouldn't sit down and I asked him on three occasions, 'Would you please sit down, would you please sit down?' And he wouldn't sit down! And while he was standing, of course, the guest speaker was waiting to speak. And... and this boy

wouldn't sit down! And he kept on telling me he would do it in his own time. Uhm, he's just busy fetching a book from some-one... And eventually you, you lose your cool...and I did. I grabbed him on his shoulder, but without any, any form of malice at all and I forced him onto the ground. I pushed him down onto the ground, but it was my hand on his shoulder like that (*gestures with hand*). [I: Uhum...] And I pushed him onto the ground. And he, he went crazy. He actually... He lost it. He accused me of assaulting him, and humiliating him... And the next day he brought... his aunty!... I'm not sure why his mother wasn't involved, it was an aunty and another relative... uh, another woman, plus a human rights lawyer... plus another family member... There were four people in total, three of them were family members, and, and one was a human rights lawyer... And they... They absolutely lambasted me for, for being, for getting physical with the boy which was really not the case...uhm... Uh, they wanted to know how could I ever... Uhm assault a child like that, which wasn't the case. And the human rights lawyer actually... uhm threatened me with various actions, I suppose court actions if I didn't apologise, which I... I said 'Ma-am I can apologize, but it is hard to apologize for something ... that you actually didn't really do.' In other words if I'd hurt the child... I think I would have apologized without even, even betting about it, but I hadn't. I was really a ridiculous situation! But I had to (*sigh*) ... I apologized! And after that, I was reluctant to discipline children at all, because... I wasn't sure having asked a child five times to do something... nicely! ... Uh, I wasn't sure what the next action was... Uhm... Do you just leave the child to walk around the room (*makes scoffing sound*). I still don't know. To this day I don't have an answer for that particular situation (P7, 1st interview).

The above story has had a marked influence on P7's subsequent approach to discipline problems at school. The incident signalled a *turning point* (Denzin, 1989; McCormak, 2000; Bruner, 2001; Drake, 2006; Mishler, 2006) in the *normative dimension* (Kelchtermans, 1993) of his professional identity; that is, in the way he perceives his task as the teacher in charge of discipline at the school. Previously, a simple hiding would have sorted out a discipline problem, as he explains in the excerpt from the second interview below:

Uhm, maybe 20 years ago, if a child was out of line, in terms of their rudeness or their lack of, uh, respect for the teacher, not doing their homework, perhaps bunking school and I have punished {} a child for that, it probably would have ended up been giving a hiding, and that hiding tended to sort out the issues, and I'm not saying I'm for hiding but it tended to sort it out. The result was that the issue was sorted out very promptly and it had, uhm, a very positive result in that, the child didn't come back and reject or dislike you for what you did, they actually felt almost that you've done something to, uh, help them correct their actions (P7; 2nd interview).

He continued to explain that, unlike in the past, giving a learner a hiding was no longer the solution as the parents would take their side, even if the learner was in the wrong. He is suggesting that the problem is much deeper than simply the learners' rudeness and lack of discipline; it is about the parents supporting the children, even if they are wrong.

[b]ut today's kids, I battle with, because if they were late at the gate for instance and we punish {!} them, they give you ten thousand reasons why you are the wrong person, you are in the wrong and they are right. They'll probably phone parents, parents will then lambast you for locking them outside the gate, when they are clearly in the wrong and the parents might also be in the wrong (P7; 2nd interview).

As a *turning point* in P7's narrative of professional identity, the school hall altercation not only disrupted his sense of routine and orderly existence, it also made him doubt previous taken-for granted assumptions (Crossley, 2000), for example, about the role that parents are supposed to play in their children's education. He battles to reconcile the values instilled by his parents with the seemingly conflicting values of today's parents.

[W]hat I don't understand is why parents can't understand how difficult it is to deal with very difficult children, and that they need to support us more than what they are in fact supporting us. So instead of fighting us, with a silly incident like I described in one of those things, they should have rather said, 'Sir, you know, I apologise for my child's bad behaviour', and that's something that I find is not happening. The parents are supporting the children more and more, and I think it's because the children don't get the support at home, in terms of the parents being present and homework being done and things, so then when the parents gets an opportunity, they support the child in front of the teacher, even if the children are wrong. I find that happening a lot, but I've also come to understand that and accept it (P7; 4th interview).

The original story of the school hall incident was clearly an emotional one as indicated by the *sjuzet* (Hiles, 2007; Hiles, Čermák, & Chrz, 2009; 2010) of the story consisting of many pauses, false starts, hand gestures, and even sighs and scoffing sounds. As discussed before, teachers' emotional reactions influence their professional identities (Day, 2002; Day, Kington, Stobart, & Sammons, 2006); risk taking behaviour (Reio Jr, 2005; Darby, 2008); professional vulnerability (Kelchtermans, 2005; Lasky, 2005; Hong, 2012); and how they respond to challenging circumstances (Hong, 2012). After the school hall incident, for example, P7 was left feeling vulnerable when it comes to disciplining learners. According to Lasky (2005), vulnerability is often triggered by critical incidents and can develop due to feelings of powerlessness, betrayal, or defencelessness, especially in situations of high anxiety or fear. This is what P7 had experienced. Not surprising therefore, his solution to the deteriorating discipline problem lies in playing safe; knowing where to draw the line in terms of what lies within your locus of control and what does not:

The point therefore that I am making, it is very often easier to let things slide because by correcting every single issue that you used {!} to correct, you now have too many problems on your hand to sort out and you don't get support. You don't get support

from the Education Department or the parents, and, uhm... generally the headmaster supports you, provided you don't overstep the mark, but the point is that (*deep breath*) things that I didn't accept previously {!} I now have learnt to accept because it makes my life a little bit easier and I know it is wrong {!} but I don't have the energy to solve all the problems. Uh, another example, will be, a child runs pass this passage here and jumps over the fence! I used to actually get into my car and try and catch that child, who would be bunking, and I don't have that energy anymore, because even once I've done that, uhm I will be in the wrong for leaving the classroom, or leaving the school property, or something like that. I think you get the idea! [! Uhm...] So, you tend now to pick out certain things that you can {!} control. And the things that you can't control, for instance, uhm... children bunking school almost is uncontrollable, children arriving late is almost uncontrollable, chewing gum in class, you, you inevitably get so much flak from the children, that you stop worrying about those things. However, the one issue that I will never, ever give in to, is rudeness from a child towards me, uhm... arrogance, rudeness, uhm, blatant disrespect, so, there I have drawn the line (P7; 2nd interview).

Finally, he emphasizes that he is not prepared to compromise when it comes to the following: "rudeness from a child towards me, uhm... arrogance, rudeness, uhm, blatant disrespect" (P7, 2nd interview). This is where he draws the line. Perhaps his position about drawing a line there can be linked to what he has learnt in the Army about discipline and about showing respect towards people in authority. Perhaps it is about the values of respect that he has learnt from his parents. Perhaps this is why he lost his "cool" (P7, 1st interview) in the school hall when, from his perspective, a schoolboy, taller than himself, challenged his authority as a teacher. Perhaps, at a subconscious level, he experienced this as a threat to what Kelchtermans (1993) refer to as the *normative* (his task perception as the official disciplinarian of the school) and *evaluative* (his self-esteem as the official disciplinarian of the school) components of the retrospective dimension of his professional identity. According to P7 the moral point (Larsson & Sjöblom, 2010) of the story is this:

[N]o matter what a child does, no matter how rude they are, no matter how naughty they are, you just cannot physically even put your hand on their shoulder, you can't do that, because that is basically what happened that day. So I learnt a lesson in terms of never ever touching a child, in terms of putting your hand on their shoulder. Unfortunately that does mean sometimes when you have to console a child or congratulate a child, you're also reluctant to do that because of that incident, you see. So until you go through that little incident, you don't realise the impact it has on you. But it hasn't affected my outlook on teaching; it's just taught me a very valuable lesson (P7; 4th interview).

In terms of the *prospective dimension* (Kelchtermans, 1993) of his professional identity, P7 claims that the future of restoring discipline in the schools looks bleak; that he does not

know how to handle discipline problems anymore; or where this is going to end: “So what I am saying is... I don’t know sometimes where, where this discipline issue is going to stop or how we are going to reintroduce it, because some of the children will not obey you and you just can’t do anything to them (*sigh*)...” (P7, 1st interview).

6.7.4 Distilling P7’s core narrative

When P7 was asked for a succinct summary of his professional story; this is how he responded:

I would say I love teaching and I love mathematics and I love young people and I love helping young people and I enjoy a response from young people back to me again [...] It’s the joy out of seeing young people mature and grow into better people and in fact learning in the classroom and learning on the sports field and the discipline that both of those things bring to young people (P7; 4th interview).

All three stories presented here can be linked to P7’s own summary of his *core narrative* above. In the first story, P7 attributes his love for Mathematics and for teaching to an encounter with the “quirky” but inspiring Mathematics teacher whom he tries to emulate in his teaching practices. In the second story P7 suggested that “inward motivation to succeed” can be linked to “good family support structures” (P7; 1st interview), although he admits that he is not absolutely sure about that. However, this link is confirmed in the literature (e.g., Bourdieu, 1986; Portes, 1998; 2000; Israel, Beaulieu, & Hartless, 2001) via the notion of *social capital* (Bourdieu, 1986). In the third story, P7 links the lack of learner discipline to a lack of parental support at home, which is quite the opposite of the experiences that had shaped him as a person.

6.8 Chapter summary

In this chapter the question of how narratives shape the professional identities of mathematics teachers was explored through a vertical analysis of the narratives of four of the participating mathematics teachers. The process was to carefully interrogate the narratives of each of the selected individuals and to re-story these into a core narrative representative of that individual’s professional identity. In this way it was possible to gain insights into *how* narratives shape a professional identity. The next chapter will conclude the study with a focus on its envisaged impact on pre-service teacher education programmes and in-service teacher development initiatives.

Chapter 7: Significance of Study and Conclusion

7.1 Introduction

The aim of this chapter is to explore the potential significance of this study for pre-service teacher education programmes and in-service teacher development initiatives; and in doing so, to provide the necessary social and practical justification (Clandinin & Huber, 2010) for the study⁴¹. A careful scrutiny of the available literature for suggestions and examples of where and how the developing theory of narrative and professional identity might be utilized in educational settings revealed eight potential areas of influence, namely: pre- and in-service teacher education; introducing 'identity talk' into the classroom; exposing the ideologies shaping educational discourses; developing 'strong' professional identities; influencing identities of colleagues and learners; influencing professional development initiatives; giving teachers a voice about their own identities; and, knowing more about the context of practices that shape identities. In this chapter these areas are used as a background for exploring of the significance this study and making suggestions for future research. In addition, the research limitations of this study are discussed. Finally, the chapter is concluded with remarks about the personal significance of the study for the researcher.

7.2 Exploring the potential significance of this study

A useful starting point for this section is Marshall and Rossman's (1999) comment that arguments about the significance of any qualitative study should convince the reader about its links with "important theoretical perspectives, policy issues, concerns of practice, or persistent social issues that affect people's everyday lives" (p. 34). However, they cautioned that even though a study may well be able to contribute understanding and action in all four of these domains, it is unlikely to make an equal contribution in all four; hence, they urged that a researcher should rather emphasize one particular domain in terms of a study's potential contributions. As a teacher educator, however, I am inclined to strongly emphasize the significance of this narrative study in terms of *concerns of practice*; particularly in pre-

⁴¹ Important justification for a narrative study (See Chapter3, section 3.4).

service teacher education programmes and in-service teacher professional development initiatives where, according to Conle (2003), narrative research activities have a definite role to play as curricular activities. She describes the role of narrative curricula in the field of teacher development as follows: “It encompasses not only what is explicitly learned but also what is learned practically, at a more tacit level, touching not only the intellect but the moral, practical, imaginative realm” (p. 3). Although the contributions of narrative research in domains other than teacher education are not denied, it will be assumed henceforth that narrative curricular practices in teacher education are historically linked to and rooted in narrative research (Conle, 2000a). In the following subsections the potential contributions of this study to pre-service teacher education programmes and in-service teacher professional development initiatives will be discussed; without distinguishing between the two, because the discussions hold for both.

7.2.1 Influencing teacher education

There is ample evidence in the literature that identity is fast becoming more prominent in initial teacher training programmes (Miller Marsh, 2002a; Conle, 2001; 2003; Darby, 2008; Beauchamp & Thomas, 2009; Eaton & O Reilly, 2009a; 2009b; Grootenboer & Ballantyne, 2010; Hong, 2010; Timoštšuk & Ugaste, 2010; Thomas & Beauchamp, 2011) especially as it is becoming clear that “gaining a more complete understanding of identity generally and teacher identity in particular could enhance the ways in which teacher education programmes are conceived” (Beauchamp & Thomas, 2009, p. 176). Afterall, “[w]ho you are as a person has a profound influence on what you will or will not learn in teacher education” (Timoštšuk & Ugaste, 2010, p. 1563). Moreover, “[c]larifying the process of professional identity development during teacher preparation could be very helpful for better preparing new teachers for the challenges of their first year” (Thomas & Beauchamp, 2011, p. 767). In the following paragraphs I will argue that this study has the potential to make a novel contribution in the areas of both pre-service teacher education programmes and in-service teacher professional development initiatives; because, as pointed out before, there is still a significant gap in the current research into the area of the narrative shaping of teacher professional identity, especially in the South African context⁴².

⁴² This gap in the research is more prevalent in developing countries (see Chapter 1, section 1.2).

According to Holland, Lachicotte, Skinner and Cain (1998) there is a strong relationship between identity and personal history (which is brought to all situations and has a key influence of the perspectives individuals bring to the interpretation of new activities). Here, especially, it is important to acknowledge the potential of stories and personal narratives ("auto/biography") to illuminate the social context of individual lives; while, at the same time, allowing room for unique personal stories to be told (Griffiths & Macleod, 2008). In narratively oriented teacher education, especially pre-service teacher education, narrative cases are perhaps the most widely used "as vehicles for discussion of important issues and as a means of acquisition of key concepts and practices" (Conle, 2003, p. 4).

Samuel and Stephens (2000) argue that policy makers involved with the design and implementation of teacher education need to learn more about the "identity baggage" (p. 488) acquired during the formative stages of their lives that student teachers bring with them into the professional arena, which may include, for example, experiences of violence at home, experiences of relationships between adults and children, or, what it means to be different from others. Hence, while identity is shaped through participation in various communities of practice, at the same time identity also shapes the participation in those communities of practice (McKeon & Harrison, 2010). Narrative researchers have access to this information through the stories that teachers tell. This study shows how narrative inquiry might be employed as a method to access the stories of mathematics teachers and also how these stories might be analysed in terms of how they shape their professional identities. Their stories may reveal the identity issues that need to be addressed in teacher education programmes; and could assist us in designing better teacher education programmes since "it is the responsibility of teacher education programmes to create opportunities for the exploration of new and developing identities" (Beauchamp & Thomas, 2009, p. 176). It is important, however, to bear in mind the powerful alternative cultural functions of narrative, other than the purely didactic intended to teach specific content:

Stories open possibilities to our imagination. The quality of those possibilities is vital to the quality of our future. A person without access to certain stories is a person without hope, without social vision... The narratives available to us delimit our areas of choice. It is the narrative repertoire of our imagination that helps us distinguish the world we live in from the world we want to live in (Conle, 2003, p. 4).

Exposure to the narratives of the seven participating mathematics teachers in this study could expand the narrative repertoire of other mathematics teachers in pre- and in-service teacher education programmes and prompt engagement and reflection on their own professional practices.

Important identity issues gleaned from a horizontal analysis of the seven participants' stories in this study include: family support; role models; changing work environment; continuous professional development; professional recognition; religion and micro-politics. These identity issues are common to all seven of the participants from the Grahamstown and Port Elizabeth education districts of the Eastern Cape Province and designers of teacher education programmes and professional development initiatives (like MTEP) would do well to take note of these in their quest for opportunities to further explore and develop the professional identities of mathematics teachers, especially in this regional context. Stories and storytelling provide a powerful means for studying teaching and building pedagogical knowledge; and for teacher development (Bullough, Jr. & Baughman, 1996). Participation in narrative research could be a first step for teachers towards becoming reflexive practitioners themselves; because, it offers them the means to narratively assess the approaches that govern their own and other teachers' practices; a means to analyse this together with the researchers; and, to compare it with formal knowledge (Clemente & Ramírez, 2008).

According to Bullough, Jr. and Baughman (1996), "[when stories] carry normative value by illustrating patterns of thought and themes that are characteristic of the profession and of teachers working within particular contexts. Teachers see themselves in such stories, and in the seeing, make comparisons that stretch understanding and nudge development" (p. 385). It could, for example, be argued that the stories in this study are likely to resonate stronger with student teachers and teachers who are familiar with the context of the Grahamstown and Port Elizabeth educational districts of the Eastern Cape Province⁴³. On the other hand, with stories that carry such normative value, there is always the danger that they may become self-affirming, uncritical, censoring tools that avoid exploring sensitive issues (Bolton, 2006). That is, unless the teacher educator ensures that a spirit of a *narrative*

⁴³ This, however, does not mean that the themes captured in the horizontal analysis of the narratives of the seven participants in this study are necessarily limited to this regional context. See the comment in section 7.4 on future research.

reflective practice is maintained; encouraging the students to critically examine such stories; to view their lives from different perspectives in the light of such stories; and, to elicit and learn from the responses of their peers to such stories (Bolton, 2006).

The opportunity to tell their stories of practice gives teachers a chance to focus on, and examine more deeply, particular instances of teaching (Richert, 2002; Bolton, 2006). Hence narratives are significant in teacher practice research where they are seen as a significant contributor to the teacher's perceptions and experiences of their own practice (Daugbjerg, 2010). Moreover, "it is commonplace that teachers frequently and almost naturally turn to story to communicate their classroom experiences and their knowledge of teaching" (Lyons & LaBoskey, 2002, p. 15). The reader is reminded of an account in my own story⁴⁴ where I attempted, unsuccessfully, to use aspects of my personal stories in my Educational Thought classes. The attempt failed because the students could not relate to the stories which, in their opinion, were outdated. However, as Doyle (1997) pointed out, for those researchers interested in enhancing teacher development, "narrative may well be a powerful tool for representing aspects of teaching and capturing the imagination of teachers" (p. 94); provided of course that the teachers can relate to the stories. In this regard, Davis's (1991) three points about the role of 'rich cases' (thickly described cases) in the discipline of Bioethics might very well apply to teacher training as well: Firstly, "as an indispensable tool for teaching theory, useful for class discussion and exam questions" (p. 12); secondly, "to provide a pool of shared experience (if only second hand), a fixed point for discourse in the profession" (p. 13); and, thirdly, "by describing real experiences ethicists [in this case education lecturers] can make points and draw conclusions while inviting their readers [students] to make their own independent judgements" (p. 13). I am arguing that, like the case studies in Bioethics, judiciously selected stories of teachers can be used in the same way in teacher education and teacher professional development initiatives. For example, in the introduction to their book, *Great South African Teachers*, Jansen, Koza and Toyana (2011) also encourage teacher educators to extract case material from their collection of teachers' stories "for teacher preparation and in this way alert the next generation of teachers to the kinds of professional orientations and behaviours that make a lasting impact on students" (p. 14).

⁴⁴ See account of this in researcher's own story (Chapter 4; section 4.2.3).

The paths of teacher identity development are not necessarily smooth and are more likely “fraught with periods of self-doubt and questioning” (Thomas & Beauchamp, 2011, p. 767) and this information should be shared with pre-service teachers so that they might have a clearer idea of what to expect in terms of their own professional identity development in the early years of their careers⁴⁵. Certain narrative practices may even serve as exemplar models of inquiry for teachers to try in their own settings; not with the purpose of replicating, but rather to extend these investigations into new settings (Lyons & LaBoskey, 2002, p. 11). This study, for example, illustrates the use of narrative inquiry methodology to uncover the identity-shaping stories of the participating mathematics teachers. However, narrative inquiry is more than a tool for research into teaching; it can also be used as a medium for teacher professional development, as a “vehicle for curriculum” (Conle, 2000a, p. 50) in both graduate and pre-service teacher education programmes. In educational research, narrative can be both a medium of data representation and a guide to methodology development; especially, if the intention is to retain the narrative qualities of temporality and contextual detail in the analysis and reporting of data (Conle, 2000a, pp. 50-51). As a method, narrative could be useful for analysing the elements on which teachers build their classroom experiences and for understanding the basic challenges of their professional practices (Clemente & Ramírez, 2008). The introduction of narrative and narrative inquiry is especially pertinent in the discipline of Mathematics Education where both are relatively new in comparison with other disciplines.

In terms of professional development, teacher/researcher collaboration can be an opportunity for the teachers participating in a research project “[t]o become better acquainted with their own story” (Conle, 2000a, p. 51); especially since teachers are often so busy that they have little time for reflection themselves, unless prompted by participation in such research. This point is beautifully illustrated in P4’s reflections on her participation in the research:

For me, yes, I would say it’s eye opening; most of the things that we’ve spoken about are my daily bread, what I do at school daily. Sometimes we, as teachers, are so busy we don’t even think about ourselves, as a teacher, and where you want to be. Where

⁴⁵ This is powerfully illustrated in P7’s story about the altercation in the school hall (Chapter 6, section 6.7.3) and the subsequent effects on his approach to discipline problems at the school.

have you been, where are you coming from, and where do you want to be? To me, yes, I have been alerted to most of the important things, specifically as a maths teacher. Sometimes, in most cases, you only get frustrated when... We get so frustrated that learners don't pass; but you've reminded me of some of the learners within the group that have excelled. In most we let our past experiences be; we don't take from that what might help us through the challenges that we are presently facing. I think, for me, this has been an eye opener in that aspect. If you think of what happened and what we have been through, and there are some things which we can pick up and work with that will help us (P4; 3rd interview).

Anspal, Eisenschmidt and Löfström (2012) agree: "Providing opportunities for reflection in teacher education is one of the most important tasks in supporting the development of teacher identity" (p. 199). Moreover, they argue that teaching practice during pre-service teacher education provides such opportunities for identity development:

For students to be able to cope with whatever situations the school reality offers them, it is important that they have developed sufficient reflective tools during their initial teacher education. Through reflection, the student teachers become aware of their sense of self, their beliefs, emotions and strategies of coping with different challenges. These will be a key factor in their future professions as teachers (Anspal, Eisenschmidt, & Löfström, 2012, p. 214).

The best mechanism for enhancing professional development and improving teachers' practices, according to Goodson (1997b), is through on-going research and reflection on their own practices in collaboration with external researchers, for example, in faculties of education. Goodson (1997b), however, cautioned against a narrow focus on 'practice' in the traditional sense of the word, arguing that: "Practice is a good deal more than technical things we do in classrooms – it relates to who we are, to our whole approach to life... So I would want to argue for a form of research which links the analysis of the teacher's life and work together" (p. 19). In reflecting on their participation in this study, all of the participants commented on how this has compelled them to reflect on their professional experiences – and on how they appreciated the opportunity to be able to speak with somebody about some of the things that they had, in some instances, not shared with anybody before. From a professional development perspective, these are significant comments; because, as Bolton (2006) explained, "exploring and discussing our essential narratives is a route to taking responsibility and control of our lives, professional and personal" (p. 205).

For in-service teachers, "[s]tudent stories can provide powerful inducements to reflect on your own practices. Frightened by some of the other teacher stories they hear and troubled by student stories, teachers need also to hear stories that remind them of

teachers' potentially good effects on the lives of students" (Noddings, 1996, pp. 440-441). In this study the participants shared several good stories of the role-modelling effect that their teachers have had on their professional lives and also of the effect that they (the participants) have had on the lives of their learners. Such good stories need to be shared with both pre- and in-service teachers. As Daugbjerg (2010) pointed out: "Narratives construct the past in the present. Narratives give a language to teachers' disposition for doing their job. The teachers' dispositions are structured by their past and are structuring their presence and future" (p. 9).

It is worthwhile noting that, as Coffman and Reed (2010) maintained, narratives have predictability and "teachers must provide the support for students to learn the predictable format of narrative" (p. 5). They suggest that such instructional support should have four elements in place: exposing students to the consistent use of narrative text terms; and, teaching them that narratives have a common structure; that narratives have connectivity; and how to use visual or graphic representations to support comprehension. Furthermore, they suggested that teachers must be careful to select the components necessary for comprehension: a linear plot – the character's goals, attempts, and outcome are clearly stated or easily inferred; and, the narrative contains episodes based on characters, goals, attempts, and outcomes (p. 9). In short, "pre-service teachers must learn to be good consumers of available resources and that adaptations may be necessary" (Coffman & Reed, 2010, p. 11). I am contending that the analysis of the mathematics teachers' narratives in this study is a useful exemplar that could serve as the basis for the development of such instructional support.

Apart from research and reflection, stories might have yet another benefit in education. Noddings (1996), for example, argued that the negative effects of neglecting affect in education might be remedied by increasing the use of stories in teacher education: "Stories, judiciously chosen, can increase interest, add to cultural literacy, enhance human relations, and help to connect studies to the great existential questions" (p. 435). Increased use of stories in teacher education might dispel the false belief that affect is undesirable impairment in professional functioning: firstly, because of the fear that emotions might impair professional judgement; and secondly, because of the danger of 'burnout' resulting from caring too much (Noddings, 1996). The fundamental importance of affect in teaching

and to teachers was also emphasized by Gómez-Chacón (2010) who forwarded three reasons for its importance: Firstly, mathematics teachers experience intense emotions about their teaching, learners, mathematics as a discipline, their professional skill, and about the likely effects of educational policies on their learners and themselves. Secondly, their emotions are rooted in cognitions, which can be understood from two points of view: on the one hand, mathematics teachers' thoughtful actions in the classroom are reflections of their emotional involvement as well as their moral judgements about education and mathematics. On the other hand, engaging in mathematical activity also involves emotional states relative to these processes. Thirdly, neither cognition nor feeling can be separated from the social and cultural forces through which they are structured and shaped. I agree with Richert (2002) about the significance of narrative methodology as an opportunity to explore teachers' feelings; and also that: "[t]eaching is a highly emotional enterprise, but teachers have little opportunity to make note of their emotions much less tell others about them. Since feelings are so much part of teaching, however, they are centrally important to narrative work" (p. 57). As Hong (2010) pointed out, "teacher education programmes play a critical role in building teachers' professional identity and need to be improved in a way that emphasises the practicality of teaching, increases awareness of the significance of emotions, and prompts pre-service teachers to reflect on their own professional identity formation" (p. 1540). In this study, all of the stories that the participants selected as significant in terms of the shaping of their professional identities were emotionally laden⁴⁶, neatly illustrating Gómez-Chacón's (2010) three reasons for the fundamental importance of affect in teaching. Therefore, I am arguing that these and similar stories could be used for the improvement of teacher education programmes in the way that Hong (2010) suggested.

7.2.2 Introducing 'identity talk' into the classroom

The importance of raising awareness of the process of professional identity development in initial teacher education programmes is underscored by Thomas and Beauchamp (2011):

[T]he paths that teacher identity development can take are not necessarily smooth but often fraught with periods of self-doubt and questioning. This information should be made available to pre-service teachers so that they will have a clearer idea of what to expect in terms of the process of identity development in the early years of their careers... the development of a professional identity does not automatically come with

⁴⁶ See Chapter 6, sections 6.4 – 6.7 for examples of such emotionally laden stories.

experience, and some form of deliberate action is necessary to ensure that new teachers begin their careers with the appropriate tools to negotiate the rocky waters of the first few years (p. 767).

Thomas and Beauchamp are not clear on what form such “deliberate action” might take, instead they suggest that further research is necessary. I am arguing that there is already research suggesting that teachers’ descriptions of their own learning experiences are central in understanding their own professional development (e.g., Fenstermacher, 1997; Johnson, 2007; Goodson & Deakin Crick, 2009).

Human beings construct meaning through narrative. Our sense of our self is embedded in the stories we tell and retell. When a person’s life story is in focus and both the process and content of learning connect with their life story, then they will make meaning and engage. Without engagement there will be little learning and without a sense of self there will be little engagement (Goodson & Deakin Crick, 2009, p. 232).

Therefore, as Bullough, Jr. and Baughman (1996) pointed out, teaching stories can be useful in teacher education programmes: “Stories may be treated as data, and comparisons made by those whose stories are told or by those who listen or read them for what can be learned about teaching and teacher development” (p. 389). Moreover, as Richmond (2002) pointed out: “Transformative learning can occur when groups of people come together in community or social groups to critically reflect on the conditions that constrain their actions and create difficulties” (p. 1). According to Goodson and Deakin Crick (2009): “Both individuals and communities construct stories as a primary means of understanding and negotiating their lives” (p. 232). In other words, the life stories of teachers are at the center of ‘identity talk’. Novice teachers might not yet have stories of their own to explore, but they can still gain by exploring the stories of other teachers, for example, the stories of the seven participants in this study. Schultz and Ravitch (2013) maintained that if teachers share their stories, these stories will become an integral part of each other’s practice and growing sense of professional identity; allowing them to look more deeply into their own teaching. According to Wardekker and Miedema (2001), therefore, education has a double function to fulfil in the continuous creation of identity stories: “On the one hand, it presents the students with a richer array of story composition elements than most of them would have access to outside of the institution. On the other hand, it challenges their present stories by showing that the world outside is more complicated, different from what they thought, and thus, requires a different relationship to it” (p. 38). Studies such as this one could be useful

for the teacher educator and students because it offers a potential methodology⁴⁷ for extracting and analysing such teaching stories.

The role of the teacher educator is central, just like the role of the teacher includes fostering a positive mathematical identity in learners; but to affect such change requires knowledge about learners' mathematical identities (Eaton & O Reilly, 2009a). Similarly, teacher educators need knowledge about the professional identities of the teachers that they work with. In making a case for the use of narratives to better understand teacher practices, Daugbjerg (2010) wrote:

To understand teachers we need to know their history and how they have experienced it. This is the basis for their present teaching and for their potential to develop their teaching. This history of teachers is more, than is normally assessed by looking at their knowledge on pedagogue and subject matter. I do not reject that assessing teacher knowledge can contribute to understanding their practice. I only say that using narratives unveils subjective understandings that are close to everyday teacher practice (p. 9).

On a practical note, Cohen (2008) suggested that opportunities to engage in "identity talk" (p. 92) should be included as an important part of teachers' professional environments, teacher education, and professional development; which will allow for active engagement in reflective and critical theorising about teacher professional identity. As Macintyre Latta and Kim (2010), arguing for narrative inquiry as a pedagogical medium for professional development, pointed out: "By becoming a good storyteller and a good listener to other people's stories, teachers and students can see the lives of others and their own lives as a whole into which the fragmented parts of narratives can be integrated and embodied" (p. 139). The value of narratives for teacher education, they argued, is that narratives "capture meaning and interpretation of teachers' lived experiences while providing text to be examined and explored by and for teachers themselves" (p. 140). A narrative approach could improve teaching practices because it opens up opportunities for teachers to reflect on and talk about the *what* and the *why* of their personal teaching practices.

Commenting on the current trend in South African Higher Education where mathematics modules for pre-service teachers are often offered by mainstream

⁴⁷ What is presented in this study are methodological and analytical approaches which worked best for the researcher in the particular context of this study and which a teacher educator and students might adopt or adapt to their specific contexts. However, it is acknowledged that the teacher educator and students might use other, or invent novel, and more appropriate approaches to suit their particular contexts.

mathematics departments rather than subject didactics departments, Naidoo (2005) wrote: "It becomes imperative that these more limited opportunities for engaging with pedagogic knowledge and pedagogic content knowledge should focus on the teachers and what they are about to face in the real world of classroom practice" (p. 203). With this in mind, I can think of no better reason to introduce these 'pedagogically deprived' pre-service teachers to the narratives of experienced teachers through 'identity talk'!

I concur with Schultz and Ravitch (2013) who concluded that teaching professional habits such as arriving on time and dressing appropriately is not sufficient in teacher education programmes; what is needed in such programmes is "enough space for discussions about the acquisition of a professional identity and the dimensions of professional practice" (p. 43) or 'identity talk'. They concluded: "There is much that we can learn by looking at these narratives, including what it feels like to be a new teacher, new teachers' understanding of the processes of learning to teach and taking on a professional identity, and how these experiences vary across individuals and contexts" (Schultz & Ravitch, 2013, p. 44). Hence, I contend that the introduction of identity shaping narratives, such as those of the seven participants in this study, is necessary to stimulate 'identity talk' in pre- and in-service teacher education programmes.

7.2.3 Exposing the ideologies shaping educational discourses

Miller Marsh (2002a) warned that teacher educators promote, often unwittingly, certain ideologies through the choice of discourses they use when working with prospective teachers. As these new discourses are appropriated and their inherent ideologies are absorbed, they shape the identities of prospective teachers and will eventually also shape the identities of their learners. According to Miller Marsh it is the responsibility of teacher educators to help "prospective teachers to identify and articulate the ideologies that are alive in discourses... [for example] compare how teachers, children, and families are positioned within particular discourses and how these positionings make a material difference in the lives of specific groups of individuals " (p. 345). In the interviews for this study, for example, both P4 and P5 shared stories with explicit reference to the discourses

of their college lecturers⁴⁸ which show definite traces of fundamental pedagogics. Moreover, stories may provide a basis for critically engaging with public theory:

Public theory has the virtue of inviting the teacher outside of herself, to consider development more broadly and from different, and perhaps contrary, perspectives. Given the isolated nature of teachers' work, this turn outward is one that we believe is centrally important and is supportive of efforts to create contexts within which teachers can compare and contrast their own stories as well as seek insights from study of more formal and published studies of teaching (Bullough, Jr. & Baughman, 1996, p. 386).

This point is vividly illustrated in P3's reflections on her participation in this study:

But it was a good experience, your questions made me think about a lot of things so it brought a lot of things to the fore, things I wouldn't ever have considered. So with your questions I was forced to think about certain things. So for me it was also not an eye opener, it enlightened me. You know sometimes you suppress things and put them at the back of your mind but your questions forced me to think about certain things [...] It's been a learning experience, it's been a good experience, a positive experience I would say. When you asked the questions and I said to myself: What questions are these? Where are they coming from? I don't feel for this now. But looking back it's really been a learning experience, one learns every day. So if I decided initially I'm not going to cooperate with you I'm sure I would have been the poorer, if I did not have the experience as part of my life (P3; 4th interview).

Specific discourses may limit or create possibilities for learners and while using different discourses there may be shifts in identities. According to Kelchtermans (2013): "Theoretical knowledge is not only relevant and necessary if teachers want to improve their teaching practice, but also – and maybe even more importantly – if they want to act as responsible professional actors in their work environment (as contrary to the teachers as just executors of policy decisions made by others and imposed on them)" (p. 2). Theoretical knowledge, according to Kelchtermans, is relevant and necessary for teachers to be able to act with "professional autonomy in a working environment that is highly defined and normatively sanctioned by others" (p. 3). Furthermore, "[n]ormative beliefs (as enacted in actual practices) represent an important form of working conditions for teachers" (p. 3). The analysis of the narrative data in this study exposed some of the ideologies shaping the educational discourses of the participants and, subsequently, their professional identities; for example, the discursive positioning of families, own teachers, colleagues, learners,

⁴⁸ These stories were not included in this study; because, according to Graven and Lerman (2003), they do not comply with Lave and Wenger's (1991) notion of legitimate peripheral participation in the practices of school teachers. For the full argument, see Chapter 5, section 5.3.2.

curriculum and religion, and the differences these have made in their professional lives.⁴⁹ Therefore, I contend that the stories of the seven participants in this study would be a valuable resource for teacher educators who intend to expose student teachers to the ideologies that shape educational discourses.

7.2.4 Developing ‘strong’ professional identities

According to Timoštšuk & Ugaste (2010) initial teacher training is an important time for students to lay the foundations for a “solid teacher identity” (p. 1563) that would sustain them in the future. Although I agree that laying a strong foundation for teacher professional identity is important, describing it as “solid” seems to suggest an essentialist view of teacher identity, which is undesirable. Therefore, “strong” is proposed as a better, non-essentialist descriptor. The attainment of a “strong” professional identity is important “so that teachers have authority as curriculum designers in their local classrooms, creating knowledge while also providing conditions for youth to construct their own understandings. Without a strong professional identity, teachers are more likely to mindlessly implement curriculum handed to them by outsiders” (Schultz & Ravitch, 2013, p. 44). It is important for novice teachers to enter the profession with strong professional identities in order to deal with the challenges of the first year of teaching (Beauchamp & Thomas, 2009; 2011; Thomas & Beauchamp, 2011). While acknowledging the eminence of further identity development later on in actual practice, Beauchamp and Thomas (2009) argued that teacher education programmes should be “the ideal starting point for instilling not only an awareness of the need to develop an identity, but also a strong sense of the ongoing shifts that will occur in that identity” (p. 186); explaining that, as teacher educators “[w]e must then try to incorporate what we know about the contexts and communities and their influence on the shaping of teacher identities into our teacher education programmes to prepare teachers for the challenges of developing strong professional identities in positive ways” (p. 186). When new teachers enter the profession, they have a stronger identity as students than as teachers, and hence they are dependent for the development of their professional identities upon their actual apprenticeship as a new teacher at the school (Lieberman, 2009). Therefore, teacher

⁴⁹ In Section 5.3.3, for example, the ideologies shaping the discourses of the participants is exposed in the analysis of the participants’ accounts of their experiences of an ever changing work environment.

education programmes need to prepare them for this apprenticeship. Smith (2006) argued that “middle ground” needs to be created in mathematics teacher education programmes, explaining that these are learning spaces where “multiple identities and forms of accountability can be aligned... where different ways of knowing and being can be coalesced in productive ways” (p. 621), allowing prospective teachers to align their university-based education with how such learning can be enacted in school-based contexts. She explained that: “To develop a middle ground for teaching, prospective teachers would need to feel secure in their own identity so that they can take risks and imagine the teaching of mathematics as if it could be otherwise” (Smith, 2006, p. 622). By creating such “middle ground”, teacher education programmes would prepare new teachers for their participation in the school as a learning community – allowing them “to develop or confirm a teacher professional identity that includes meeting the needs of students and learning from other teachers in order to do so” (Lieberman, 2009, p. 85). Beauchamp and Thomas (2011) refer to this transition from being part of a university community of student teachers to the community as a school as a “boundary space” (p. 6) fraught with “multiple tensions as adaptations and adjustments to identity are necessitated or provoked... an intense identity experience, a time when the new school context causes a beginning teacher to question and perhaps reframe her developing identity” (p. 6). For example, Davis (2006) suggested that it is often the case, in any profession, that the idealism of the new graduate is altered by workplace realities. This is more likely to be the case if the new graduate has not had opportunities to develop a “strong” professional identity during the pre-service teacher education programme. The quandary, however, is that student teachers in pre-service teacher education programmes are unlikely to have teaching stories of their own to share with others in class from which everybody can learn. Moreover, they are unlikely to know in advance which of their own life stories will shape their future professional identities and how. Therefore, in preparing such “middle ground” and negotiating the “boundary space” the teacher educator would have to rely on the stories of other more experienced teachers, for example the narratives of the seven participants in this study, to engage the student teachers in reflections of how professional identities are shaped by particular contexts. I contend that especially the vertical analysis of the selected participants’ narratives would

constitute valuable case studies to be used for this purpose in pre-service teacher education programmes.

Developing sufficiently “strong” professional identities during training is important. As Samuel and Stephens (2000) cautioned, if new teachers enter the profession without having been sufficiently rooted in a teacher identity during their training they are easily swayed by the dominant hegemonic forces and co-opted into the existing school culture, which is often far from ideal: “The student teacher is subtly coerced into maintaining these power bases through the lack of having fully established a confident sense of self and a sense of their roles as teachers” (p. 489). This view of the dominance of the culture of the school in shaping the practices of beginning teachers is shared by Prescott and Cavanagh (2008) who write that beginning teachers: “chose to adopt the style of their colleagues in the hope that their lessons would become easier to prepare, classroom management would improve and their students would see them in a positive light” (p. 412). Moreover, under these restrictive conditions: “One is not free to perform any identity, however, or bring any significance to an existing identity. The identity possibilities accomplished through discourse are constrained by normative beliefs and practices, as well as material conditions, which functionally limit the range of possibilities for a given identity” (Cohen, 2010, p. 475). By critically engaging with the teaching stories of other teachers, such as those of the participants in this study⁵⁰, the student teachers can be prepared for the potential culture shock that awaits them when they enter the profession as novice teachers. It is important to draw education students’ attention to their own mathematical identity and to the bigger picture of teaching mathematics, “[t]o remember how they were taught, to discuss the memories and in doing so to tease out and distil important issues in the complex process of how they learned mathematics, will bring greater awareness to the professional practice which lies ahead of them” (Eaton & OReilly, 2009b, p. 156). This might be achieved indirectly, for example, by getting the education students to reflect on the participants’ narratives of their own teachers as role models and the subsequent effects on their professional identities.⁵¹ Asking

⁵⁰ The participants’ narratives of a changing work environment (see Section 5.3.3) provide pertinent examples of stories that might be useful as case studies.

⁵¹ For an analysis of the participants’ narratives of role models see Section 5.3.2 and for pertinent case studies see P2’s story of an inspiring new teacher in Section 6.5.1 and P7’s story of a “quirky” mathematics teacher in Section 6.71.

them to reflect on the stories of others in class is less threatening than asking them to reflect on their own stories, yet doing so might prompt them to also reflect privately on their own stories. However, to be effective facilitators of the process teacher educators need to know as much as possible about the contexts and communities in which their students will practice and their anticipated influence on the shaping of teacher identities. As Thomas and Beauchamp (2011) concluded, “there is a strong case to be made for engaging pre-service teachers in a variety of dialogues... about the development of their professional identities as part of an effective approach for preparing them for the complex and demanding profession they have chosen” (p. 768). As Thomas and Beauchamp (2011) realized, “the development of a professional identity does not automatically come with experience, and that some form of deliberate action is necessary to ensure that new teachers begin their careers with the appropriate tools to negotiate the rocky waters of the first few years” (p. 767). This suggests that more attention must be paid to the process of professional identity development during teacher education programmes. They concluded that “the more we as teacher educators can learn about the process of developing a teaching identity, the better we can help future teachers prepare to meet these demands [of adapting to the teaching profession] in a positive and professionally satisfying way” (Thomas & Beauchamp, 2011, p. 768). However, in order to prepare student teachers “to face the contradictions between a constantly changing social context and their own beliefs and values... we [teacher educators] must know better what components of teacher professional identity must be brought into focus” (Timoštšuk & Ugaste, 2010, p. 1568). One of the contributions of this study to Mathematics Education is that, through its analysis of the narratives of the seven participating mathematics teachers, it brings into focus important components of teacher professional identity.

7.2.5 Influencing the identities of colleagues and learners

Miller Marsh (2002a), arguing that from a perspective that “teacher thought is socially constructed yet individually enacted” (p. 333), makes the point that as individual teachers piece together their identities from discourses available to them, they simultaneously create possibilities and constraints for the identities of those with whom they are in relationships. For example, in her work on identity construction, Miller Marsh (2002a; 2002b) reflected on the ideologies embedded in discourses of “children at risk”, “child-centeredness”,

“normalisation”, “Behaviourism”, and “Socioculturalism” shape teachers’ professional identities and, as a result, also learner identities. Accepting that teachers’ closest relationships at work are with colleagues and learners, and also accepting the relational aspect of identity construction, one may then argue that the discourses that teachers use to construct their professional identities will have a notable effect on the identities of their colleagues and of their learners. Furthermore, Schultz and Ravitch (2013) reported that new teachers’ professional identities were shaped by their membership of a range of “knowledge communities” (p. 43); more specifically, their narratives of professional identity development were shaped through their relationships with other people, for example, their mentor teachers and students. This was evident in the stories of learning to teach, stories about particular moments and of relationships, that they told and retold (Schultz & Ravitch, 2013). For example, one of the participants in this study explained that “you learn from your colleague a lot. More than from just attending workshops and things like that. Because in the class it comes back to how do you teach this, and how do you teach that” (P2; 1st interview). A key element of learning from colleagues in this way is the notion of “reflective talk” which Cohen (2010) highlighted as an important professional practice shared among teachers. She claims that while reflection is commonly framed as an individual endeavour, “the capacity and the habit of actively reflecting with others [is] a key professional practice” (p. 480). Similarly, Kelchtermans (2013) refers to the crucial influence of “meta-commentary” (p. 3) in successful modelling of teaching. He explained that “Teach as your preach” (enacting the practices one is promoting as a teacher educator) in itself is not enough to make student teachers see and understand why a teacher educator is acting in a particular way. Stepping back and making explicit the rationale behind one’s actions appears to be necessary for students to see and understand the link” (Kelchtermans, 2013, p. 3). Both Cohen (2010) and Kelchtermans (2013) acknowledge the importance of reflection in learning with and from others. Moreover, critical reflection is necessary as not all learning is beneficial (see Miller Marsh, 2002a; 2002b; Gratch, 2000). More positively, Jacobs (2010) shows how Science Engineering and Technology (SET) lecturers can develop professional educator identities through sustained collaboration with academic developers from ‘other’ disciplines such as Education or Language/ Linguistics. Gratch (2000), on the other hand, in an autobiographical study described how the level of agency that she had in constructing

her own identity as a teacher educator and university supervisor had been severely restricted by a senior colleague's teacher-centred and authoritarian style of lecturing a block session during which only one voice (that of the colleague's himself) was valued. She laments that "I had not found the space to develop myself as a teacher during the Methods Block" and as a result lacked a sense of identity as a teacher and supervisor, and hence "I became aware that my input was not valued by the student teacher" (p. 123). However, by reflecting on this experience she has learned to avoid the mistakes of her senior colleague. This study adds a novel contribution to the existing body of knowledge by exposing the narratives that shape the professional identities of seven participating mathematics teachers in the Grahamstown and Port Elizabeth education districts in the Eastern Cape Province and how these narratives shape their professional identities. Furthermore, by putting these narratives into the public domain and demonstrating how the researcher has reflected on them, this study has the potential to influence the professional identities and subsequent practices of the readers who are likely to be mathematics teachers and teacher educators; and thus, indirectly through their practices, also influence the mathematical identities of their learners and the professional identities of their students respectively.

7.2.6 Influencing professional development initiatives

The effects of reform instruments (like curricular frameworks, instructional materials, new types of assessments, and professional development initiatives) are contingent in part on the teachers' capacity to learn from them; and, in turn, this is contingent on their professional identities (Spillane, 2000, pp. 307-308). As research has shown, teachers' identities are central to the beliefs, values, and practices that guide their engagement, commitment, and actions inside and outside of the classroom and it is therefore important to better understand the relationship between teacher identity and the theory of practice and teaching (Cohen, 2008; 2010). Moreover, it is essential to understand "how teachers experience and respond to educational change... if reform and improvement efforts are to be more successful and sustainable" (Hargreaves, 2005, p. 981). In practice, however, the professional development activities are often directed at "finding organizational solutions with the least implications for those involved" (Geijsel & Meijers, 2005, p. 425) and thus concerns mostly reproductive instead of creative identity learning. Thus, as Geijsel and Meijers (2005) suggested: "To enable identity learning, additional platforms for dialogue

need to be created that offer understanding of the professional learning of teachers in terms of constructive sense-making and meaning-giving” (p. 426). Furthermore, they added:

The dialogue concerning meaning-making asks for a discussion about what the problem is, why it is our [the teachers’] problem and how it can be solved. The purpose of this dialogue is showing the necessity of alternative professional behaviour, yielding changes in professional identity, which is probably done by showing failure of the existing behavior (Geijssel & Meijers, 2005, p. 426).

Through their engagement in such reflective dialogue, the teachers will be empowered to evaluate the effects of their professional behaviour and hence will be more likely to accept the necessity for changes in their professional identities and professional behaviour. As Beijaard, Verloop and Vermunt (2000) cautioned: “Teachers’ perceptions of their own professional identity affect their efficacy and professional development as well as their ability and willingness to cope with educational change and to implement innovations in their own teaching practice” (p. 750).

Identity provides a useful theoretical construct for exploring an individual’s relationship to learning in work contexts (Shaw, 2010, p. 85) or professional development initiatives. Therefore, according to Trent and Lim (2010), attention to teacher identity construction can deepen our understanding of school-university partnerships (SUP). A more comprehensive understanding of how to attain those partnership educational goals which are likely to be common across both educational contexts should include an understanding of the teacher participants, which should include an understanding of their participation in the SUP from the perspective of teacher identity construction. The reader is reminded that this study emanated from one such SUP, namely, the MTEP of Rhodes University and its concern with the shaping of a “positive professional identity” (Schäfer, 2011, p. 5).

Commenting on the problem of high teacher turnover, and its subsequent costs, Schultz and Ravitch (2013) suggested that the solution might be in paying attention to the processes through which teachers construct their professional identities and supporting it in teacher preparation programmes:

Among the myriad of reasons for the high teacher turnover... are work conditions in which teacher professional development is often replaced by scripted curricula developed for rather than by and with teachers. Restoring authority to new teachers through explicit discussion of teaching as a profession holds the potential to shift this dynamic... If the practice of teaching is learned through reflection, in collaboration with more experienced mentors, and through discussion of the profession with its responsibilities and rewards, how might all teacher education be restructured to include these components? Under-standing the processes through which teachers take on their

professional identities and finding ways to support teachers to understand and embrace these processes through explicit conversation, writing, and collegueship in teacher preparation programs in an essential first step (Schultz & Ravitch, 2013, p. 44).

“Teachers in all countries need support for their commitment, energy and skill over their careers if they are to grapple with the immense emotional, intellectual and social demands and as they work towards building the internal and external relationships demanded by ongoing government reforms and social movements” (Day, Kington, Stobart, & Sammons, 2006, p. 614). As Day, Elliot and Kington (2005) suggested, the challenge of recruiting, retaining, and sustaining high-quality teachers and teaching, “is to create contexts in which teachers can make connections between the priorities of the school and their individual personal, professional and collective identity and commitment” (p. 575). By documenting the stories of mathematics teachers from different socio-cultural backgrounds in the post-apartheid South African context as they grapple with educational reform issues, this study makes a novel contribution to that “essential first step” (Schultz & Ravitch, 2013, p. 44) in shaping and supporting professional identities in teacher preparation programmes. For example, the seven themes that emerged during the horizontal analysis of participants’ identity-shaping narratives could be useful when designing such a professional development programme, while the role that the narratives played in shaping individual professional identities could be used as exemplars in presenting the programme.

7.2.7 Giving teachers a voice about their own identities

An important part of narrative methods is to ‘give voice’ to marginalised groups by listening to their stories (Tierney, 1995; Larsson & Sjöblom, 2010; Goodson & Deakin Crick, 2009). This is particularly pertinent in teacher professional development initiatives where, through the silencing of their voices, teachers are often marginalised. Hence, Goodson (1997b) suggested that, in teacher professional development initiatives: “What is needed is a focus that listens above all to the person at whom ‘development’ is aimed. This means strategies should be developed which facilitate, maximise and in a real sense legitimate teachers’ voices. These strategies need to develop areas of research, particularly collaborative research, which examine the teachers (*sic*) life and work” (p. 21). Observing the consistent absence of teachers’ voices are from the many complex and contradictory discourses and debates about teacher identity, Cohen (2008, pp. 91-92) argued for continued attention to identity talk by “bringing teachers’ voices more prominently into the debates over the

priorities and practices of formal education” (p. 92). One of the potential contributions of this study to teacher professional development initiatives lies in the way in which it *gives voice* to the seven participating mathematics teachers. It does this by highlighting their personal stories and putting it in the public domain – stories that otherwise would have been silenced and lost to the teacher professional development community of practice. These are great stories that could have a powerful impact on teacher professional development initiatives as they shape not only our understanding of the professional identities of mathematics teachers, but also our understanding of how such professional identities are narratively shaped.

The argument presented so far has been that teachers’ voices should be central in teacher professional development initiatives. In addition, Goodson and Deakin Crick’s (2009) distinction between *curriculum as prescription* and *curriculum as narrative* (see Table 6 underneath) is quite pertinent. Commenting on the unsuitability of the ‘old’ *curriculum as prescription* in the ‘new’ society of risk, instability and rapid change (for instance, knowledge is widely available on the internet) Goodson and Deakin Crick (2009) wrote: “We need, in short, to move from curriculum as prescription to curriculum as identity narration, from prescribed cognitive learning to life management narrative learning” (p. 227). This is a necessary shift, given the temporal and dynamic nature of the teacher’s professional environment and the subsequent demands on the teacher’s professional identity.

Table 6: Curriculum as prescription versus curriculum as narrative

Curriculum as prescription	Curriculum as narrative
• The process of learning is predetermined by the curriculum and assessment requirements, and knowledge is pre-packaged in particular subject areas • The content and outcomes are prescribed in advance and tested at the end of the unit of work • Focus largely on primary learning – 1st degree learning of content which is then remembered and repeated	• The primary way of knowing and learning in indigenous communities • Learning that takes place is personal, transformative and enduring • The learner is co-constructing new knowledge in response to a particular problem – in an outcome which is measurable in the usual way • He or she is narrating his or her own story through the curriculum

This suggested shift in the curriculum is in line with Wojecki (2007) who suggested that classroom pedagogy should be shaped with “the intention to help students narrate new

stories in relation to their capacities for learning in order to tell new stories regarding their designated identities” (p. 4). To be able to do this, however, the educator must understand the origins of the stories that need re-telling. Wojecki (2007) argues that this resistance to learning can often be traced to “low self-image, or poor and unfulfilling relationships with formalised learning” (p. 4). However, “learners... *can* and *do* recover to tell new and inspiring stories about themselves and their capacities for participation in learning” (p. 4). Not only does this suggestion allude to a form of “narrative therapy” (Polkinghorne, 1996, p. 366), but it also underlines the importance of studies, such as this one, which illustrates how a researcher might use narrative inquiry to find and understand the origins of the stories that need re-telling.

Reflecting on the plight of the marginalized in society, Goodson and Deakin Crick, 2009 (2009) wrote: “Indigenous communities are perhaps among those who suffer most in relation to this crisis of curriculum, partly because Indigenous ways of knowing are rooted in narrative and relationship, but also because the legacy of dispossession and colonisation has left them marginalised in terms of the erstwhile social and economic benefits of curriculum as prescription” (p. 227). As pointed out before, there is still a significant gap in the research literature with regard to our understanding of teacher professional identities in the developing countries (Jita & Vandeyar, 2006). One of the contributions of this study is to focus research attention on the narrative shaping of teacher professional identities in South Africa, which is a developing country. Moreover, the Eastern Cape Province is one of the poorest provinces in this country with one of the most unequal and underdeveloped education systems⁵² which makes this study even more pertinent.

Sutherland, Howard, and Markauskaite (2010) explained the notion of *teacher’s voice* as “the measure of the extent to which a person can articulate a personal practical identity image of himself/herself as a teacher... Like other aspects of professional identity formation, the development of a teachers’ voice is conceived as ongoing, developing through peoples’ interpretation and reinterpretation of their experiences” (p. 456). They added: “The full development of a teachers’ voice represents the participants’ membership of the community of practice... It is this community of practice, which gives authority to the teachers to speak about their practices and how these should be constructed and

⁵² See Section 1.3 for a short background to education system in the Eastern Cape Province

implemented” (p. 456). However, as Riessman (cited in Larsson & Sjöblom, 2010, p. 274) holds, “we cannot give voice, but we do hear voices that we record and interpret.” The intended meaning of “giving teachers a voice about their own identities”, as it is used here, is that of listening empathetically to teachers’ stories rather than to impose stories on them.

According to Moen (2006): “The process of claiming voice is therefore basically an interaction between the individual’s beliefs and experiences and past, present and future external voices” (p. 5). In this study, deliberate attempts were made during the interviews to allow the teachers freedom to claim back their voices⁵³ and to speak for themselves. The passion and fervour with which their stories were shared with the interviewer⁵⁴ is evidence of how successfully these strategies were implemented in this study. Perhaps, in future, some of these strategies can be used by other narrative researchers.

Gratch (2000) argued that the “culture of isolation” in schools that prohibits the use of story and narrative, the primary resources for identity construction, also prohibits teachers’ agency in constructing their own professional identities. Hence, this same culture also reifies “taken for granted definitions of teacher as authority” (p. 125). Gratch continues that we must challenge the authoritarian social system of schools in order to move teachers’ voices from the margins to the centre of discourse about teaching and learning; that this act of giving teachers back their voice will challenge the taken for granted social structure of the school. In terms of teacher education programs, Gratch (2000) maintains that this transformation means two changes: Firstly, participation in the narrative discourse about teaching and learning should be initiated as early as possible in the program. And secondly, attention must be given to analysis of culture as well as critical analysis of schools as social systems, with an emphasis on the impact of reproductive versus transformative systems in order for student teachers to have agency in the construction of their identities as teachers. The second point, which alludes to the relationship between the stories and the social context in which they are embedded, is of particular interest to Goodson (1997a) who explained that: “Stories exist in history – they are in fact deeply located in time and space. Stories work differently in different social contexts and historical times – they can be put to

⁵³ See Chapter 4, section 4.4.3 for an explanation of how this was achieved in the interviews.

⁵⁴ Some of the participants, e.g. P2 and P7, claimed that some of their stories had never been shared with anyone else other than with the researcher during the interviews.

work in different ways” (p. 113). The thrust of his argument is that there is a danger in believing that by merely allowing teachers to tell their stories they are given both voice and agency, because, often their stories are nothing more than “a celebration of existing power relation[s]” (p. 114). Linking lives and stories with broader social scripts, Goodson wrote, “they [lives and stories] are not just individual productions they are also social constructions. We must make sure that individual and practical stories do not reduce, seduce and reproduce particular teacher mentalities and lead us away from broader patterns of understanding” (p. 116). He explained that: “The story then provides a starting point for developing further understandings of the social construction of subjectivity. If the teachers’ stories stay at the level of the personal and practical we forego that opportunity... Personal and practical teachers’ stories may, therefore, act not to further our understandings but merely to celebrate the particular constructions of the ‘teacher’ which have been wrought by political and social contestation” (p. 115). Therefore, as he cautioned before: “Stories then should not only be *narrated* but *located*.... we should move beyond the self-referential individual narration to a wider contextualized collaborative mode” (p. 113). For example in health research where, according to Riley and Hawe (2005), the early 1990’s saw the popularization of the words ‘narrative’ and ‘story’ used “as part of an increased emphasis on reflective practice and methods of programme evaluation which gave more control to research participants” (p. 227). Lastly, Atkinson and Delamont (2006) warned against the “recuperative” (p. 166) use of narratives, that is, “giving voice to otherwise muted groups” (p. 166) based on implicit claims that “in-depth interviews or collected narratives are a route into an interior authentic self” (p. 166). They wrote:

While the ‘voices’ of otherwise muted groups may be charged with political significance, we cannot proceed as if they were guaranteed authenticity simply by virtue of narrators’ social positions. The testimony of the powerless and the testimony of the powerful equally deserve close analytic attention. Moral commitment is not a substitute for social-scientific analysis (Atkinson & Delamont, 2006, p. 170).

Narrative methodology provides teachers with an opportunity to tell their own stories of practice and, linked to that telling, various opportunities for reflection and learning; and also: “The process values what teachers do because what they do is subject of the narratives they write” (Richert, 2002, p. 61). Furthermore, according to Richert, the opportunity to be acknowledged and valued as competent knowers in the professional world, to share what they know about their practice through their narratives, is a particularly powerful incentive

for teachers (p. 61). Moreover, through the narrative method teachers are at liberty to explore what they don't know, "[t]o not have that opportunity can leave teachers and their students in a frightening abyss of ignorance leading to unfulfilled hopes and expectations" (p. 61). As Moen (2006) concluded: "Narrative research in which teachers' voices are heard in their stories of experience offers an opportunity to present the complexity of teaching to the public" (p. 10). Samuel and Stephens (2000) concluded that, in addition to the questions: "Who are we?" and "What do we wish to become?" there is a third identifying question that needs to be asked, namely: "What do we bring with us?" (p. 490). The third question is a reference to the "identity baggage" (p. 488) of the teachers. They wrote: "In addressing these questions, researchers and policy makers should adopt a methodology which unashamedly puts the experience and voice of the teacher, whether at the start of her profession or after many years of teaching, at the forefront of the inquiry" (Samuel & Stephens, 2000, p. 490).

Pre-active action effects (*sic*) interactive possibilities. In their collaborative research, teachers as researchers and external researchers need to focus on both the pre-active and the interactive. What this means in short is that we need to look at the full context in which teacher's practice is negotiated, not just at the technical implementation of certain phenomena within the classroom... The lens of inquiry I want to sketch out would focus on the teacher's work and practice in the full context of the teacher's life (Goodson, 1997b, p. 19).

Although Goodson (1997b) did not mention narrative inquiry *per se*, he might have been alluding to it when he added: "The [research] project I am recommending is essentially one of reconceptualising educational research so as to ensure that teachers' voices are heard, heard loudly and heard articulately" (p. 19). So far it has been argued that, as demonstrated in this study, narrative inquiry has the potential to fulfil, not only the role as both an educational research tool (going beyond classroom practices) and a medium for further teacher professional development, but also to make the teachers' voices heard.

7.2.8 Knowing more about the context of practices that shape identities

Kelchtermans (2013) wrote: "in order to properly understand teachers' work lives (and the development of their sense of professional self in it) as well as to prepare future teachers for their job, we need conceptual tools and frameworks to capture and disentangle the multilayered, intertwined reality in classrooms, schools, and educational systems. Part of the complexity is related to the inevitable normativity in education and teaching; however

technical an issue or decision looks, it always involves taking a stance, making value-laden choices, and, therefore, implies a moral commitment from the teacher (educator)” (p. 1). Likewise, stories themselves represent a moral orientation towards the world: “stories have woven into them a sense of the good, of what matters and has meaning, and what does not” (Bullough, Jr. & Baughman, 1996, p. 387). Samuel and Stephens (2000), for example, recommended that policy makers and those involved with the design and implementation of teacher education programmes need to learn much more about the “identity baggage” (p. 488) that new teachers carry into the professional arena, much of which has been acquired during the formative stages of their lives, for example, at home, and in schools where “early role models have shaped positive and negative responses to what it means to be a teacher” (p. 488). Therefore, it is important that the teacher educators know as much as possible about the contexts and communities in which those teachers will practice, and their anticipated influence on the shaping of teacher identities. Kaasila (2007a), for example, maintains that:

[A] (narrative) mathematical identity should not be seen as a stable entity, but as something that people use to justify, explain and make sense of themselves in relation to mathematics and to other people acting in mathematical communities. People adapt their narration to their audiences and to the social conventions of how language is used. Thus, a person’s mathematical identity is context bound (p. 374).

Therefore, the context and community have implications for how mathematical identities are storied and re-storied. As Mair (2010) duly pointed out: “[O]ur social and historical milieu dictates, to a lesser or greater extent, the *narrative possibilities* that exist for us... we are ‘colonised’ by the pre-existing narratives of our social worlds which drive the way we think of ourselves and the very way we live our lives” (p. 157). Mair added, however, that individuals or groups may resist and challenge such *narrative possibilities*, leading to an evolution in our understanding of ourselves and our life options (p. 157). As Wardekker and Miedema (2001) duly pointed out, “a characteristic of our present culture is that cultural practices and traditions manifestly do not form a harmonic ensemble, nor a static one. They interpenetrate each other, and at any given time a person may participate in a number of practices which are not mutually consonant. This is one of the reasons that constructing an identity story is a difficult and continuing task, maybe more so than a number of decades ago” (pp. 37-38). As Bullough, Jr. and Baughman (1996) maintained: “over time stories do

unfold, and selves change despite inherited histories” (p. 388). They cite *narrative theology* as an example of change “driven by a rejection of one’s inherited stories and cultural traditions, where a new story is found to be gripping and the result is conversion, a transformation of self, a telling from a different and more compelling perspective, a changed reading of experience and of history” (p. 388).

Samuel and Stephens (2000) hold that development of a student teacher’s professional identity in a rapidly changing context can be described as the intersection between several competing forces:

- Inertial forces – emanating from their own biographical experiences of teaching and constructed in their own home and schooling environments.
- Programmatic forces – emanating from the teacher education institution’s curriculum and program, which include the influences of student teacher teams and mentor teachers during school based teaching practicum.
- Contextual forces – emanating from the macro-educational environment of changing policy; and the micro-educational environment of changing school culture.

Arguing for a better understanding of teacher educator’s (also applicable to teachers) work lives and the development of their “sense of professional self”, Kelchtermans (2013) concluded that, “it is necessary to integrate not only theories of curriculum and professional learning, but also theoretical frameworks and perspectives that allow for refined conceptualization of the organizational and institutional working conditions in the teacher education institutes. Because teacher educators also work in schools” (p. 3).

Conle (2000a), argued that the curricular use of narrative inquiry has the potential to enhance the interpretive competence of teaching students, across cultural differences.

The mutual exchange of experiential narratives always creates great personal involvement. Being drawn into another’s experience means being pulled into a world that is not one’s own, but that one can nevertheless connect to in some fashion. In this phenomenon, a response through resonance is almost automatic, if curricular setting is such that it allows the offering of personal narratives and does not suppress or ignore immediate, experiential responses (Conle, 2000a, p. 55).

Such interpretive competence is essential in “encounters of difference that are inevitable in a pluralist, multicultural society” (Conle, 2000a, p. 55). In another example, Jacobs (2010, p. 112) documented how, in the context of a University of Technology (previously a

Technikon), the absence of a strong research culture resulted in a weak disciplinary identity amongst lecturers and academic developers. In this situation the Science, Engineering and Technology (SET) lecturers draw on the dominant institutional culture of technology and the institutional discourses valuing links with industry and the practice of their professions (for example as engineers) to shape their disciplinary identities. Rather than seeing ‘the disciplines’ of applied science and engineering as epistemological constructs, the SET lecturers see them as “social constructs embodied in the tangible form of an academic department of colleagues and students or a place of work” (Jacobs, 2010, p. 112). As Jacobs (2010) lamented, “Engagement in disciplinary research seems to be a prerequisite for seeing disciplines as epistemological constructs, and because this was weak, the SET lecturers tended to identify more with the practice of their disciplines, in the world of work, as the space within which they forged their academic identities” (p. 112). The pivotal role of context is further exemplified by Jita and Vandeyar (2006) in their study of the mathematics identities of two primary school teachers working in former ‘whites-only’ schools. They found that these “teachers’ knowledge and beliefs about mathematics, mathematics teaching and mathematics learning were shaped significantly by their previous experiences as students and early experiences as teachers” (p. 49). In this study pertinent examples are the participants’ (especially P2 and P7) narratives about their experiences of a changing work environment.⁵⁵ Albert, Ashforth and Dutton (2000) wrote: “[I]t is because identity is problematic – and yet so critical to how and what one values, thinks, feels, and does in all social domains, including organizations – that the dynamics of identity need to be better understood” (p. 14). This is an important challenge for educational reform. Especially if, as Müller, Norrie, Hernández and Goodson (2010) observed in England and Spain, neither the historical trajectory of educational reform nor the teachers’ experience of such reform is uniform. If that is also the case here in South Africa, then, as Müller, Norrie, Hernández and Goodson (2010) suggested: “The challenge for educational policy consists then in being sensitive to both, the historically grown self-understanding of professional groups involved and the concrete necessities they face in their work. Only then will it be possible to link policy steering to realistic and meaningful educational change” (p. 276). This, however, depends on knowing more about the teachers’ contexts and their particular perspectives

⁵⁵ See Section 5.3.3

thereof as captured in their stories. The narratives of the seven participating mathematics teachers in this study paints a vivid picture of their particular contexts and perspectives and how that shapes their professional identities. In addition, this provides a useful platform for researchers and policymakers intent on a sensitivity towards teachers, their self awareness, contexts and specifically how their contexts shape their professional identities.

7.3 Research limitations

According to Leggo (2004), the challenge faced by all narrative inquirers is to compose a story that represents experiences truthfully, while acknowledging that in all our narrative research we can never tell the whole story as there are far more experiences than we can narrate:

Any story we tell will always be a fragment of the complex and wide-ranging experiences that each of us lives daily in our bodies and imaginations, the experiences we live daily in interconnections with family, colleagues, and community (Leggo, 2004, p. 98).

A potential weakness inherent in all narrative research is that at some stage a call has to be made about which stories to include and which to exclude (Kvale, 1996; Polkinghorne, 2005; Larsson & Sjöblom, 2010; Maple & Edwards, 2010). This study was no exception. One can assume, of course, that every story and every bit of narrative that was shared with the researcher is important enough to be included, and then try to deal with the massive amounts of narrative data; but in reality, however, there seems to be some ranking order – some narratives seem to play a more fundamental identity-shaping role than others. In order to minimize the danger of not selecting the really important stories and, at the same time, to lend more credibility to this study, the selection of which stories to include and which to exclude was made in consultation with the participants as part of the so-called ‘member checks’ (Guba, 1981; Creswell & Miller, 2000). Moreover, in the final interview the participants were asked to rank their stories in terms of personal significance. This is also acknowledgement that these are the participants’ stories after all; and therefore, that they are the ones who are best positioned to decide on the relative importance of their stories. On the other hand, one also needs to acknowledge that there may be equally, if not more important stories that the participants may have consciously decided not to share with the researcher, for whatever personal reasons there might be. These unshared stories are the

narrative silences; the so-called “ghost stories” (Szudy, 2009, p. 306); “secret stories” (Clandinin & Connelly, 1996, p. 25); or, “inner voice” (Seidman, 2006, p. 63); all of which fall outside of the scope of this study which focuses exclusively on the identity shaping narratives that were voluntarily shared with the researcher during the interviews.

Another limitation of narrative research in education is that, because of the extended in-depth interviewing, the samples sizes are usually kept very small; which, in turn, raises questions about the extent to which the findings can be generalized (Cortazzi, 1993). However, according to Firestone (1993), the argument for qualitative research has never been about exceptionally strong claims of generalizability; instead, qualitative research is probably best suited “for understanding the processes that go on in a situation and the beliefs and perceptions of those in it” (p. 22). “The main strength of qualitative research”, according to Bowen (2005, p. 209), “is that it yields data that provide depth and detail to create understanding of phenomena and experiences.” As a form of qualitative research, narrative research is interpretive work; it “engages the meaning embedded in narratives, rather than (*sic*) the external validity of probability claims” (Feldman, Sköldberg, Brown, & Horner, 2004, p. 151). According to Cortazzi (1993), the problem with narrative research is:

The research is peopled with individuals, each with his or her own voice, but do they speak for most teachers? These cases mediate our awareness of the method, but it can be questioned whether they mediate between the particular classroom and education in general (p. 19).

It could be argued, drawing on the distinction made between the two different modes of knowing⁵⁶, that from a narrative knowing (Bruner, 1986) perspective, individuals do not have to speak for most teachers and cases do not have to mediate between the particular classroom and education in general. For example, Emerson and Frosh (2004), arguing for a link between generalizability and validation, suggested that both of these be addressed “not in terms of claims for ‘abstract’ or unitary findings more typical of traditional research goals and dominant formulations, but rather in terms recommending an approach to research as sense-making” (p. 151). They explained that:

From this perspective, our aim has been to warrant interpretations of particular texts which, while not claiming to be the only reading, may stand alongside other possible interpretations (including for instance those constructed on the

⁵⁶ See Chapter 3, section 3.3, for a discussion of the differences between paradigmatic (logico-scientific or mathematical) knowing and narrative knowing.

basis of 'scientific method') as sufficiently warranted to consider plausible and hence able to contribute to changes in thinking and practice (Emerson & Frosh, 2004, p. 151).

It is possible and necessary, therefore, to avoid "falling into the trap of Cartesian dualisms. *Either* the individual voice is privileged *or* collective understandings are made, when both are possible" (Trahar, 2009, p. 6, emphases in original). Cartesian dualisms, Fox (2006) explained, entail a view of "the world as 'out there' and the psychological world as 'in here' in the mind or the head" (pp. 426-427). The middle way, as Feldman, Sköldbberg, Brown and Horner (2004) seem to suggest, is to "expose implicit understandings in narrative, reason, or representational practices, without also claiming that this is the only way to interpret a narrative" (p. 151). In other words, the social world has multiple interpretations because it is populated by people who tell stories that have multiple interpretations. Quite fittingly Feldman, Sköldbberg, Brown and Horner (2004) concluded that: "As with any interpretive research process, the strength of the method relies on the multiple readings that one text invites" (p. 168).

According to Spillane (2000) small sample sizes, for example in case studies, can be both a weakness and a strength; on the one hand, it does not lend itself to findings that can be generalized, but on the other hand, "in-depth single cases highlight questions and provide insights that may be useful in other related contexts" (p. 309). As Phinney (2000) pointed out: "Narrative, like case studies, present an idiosyncratic perspective... they are limited in terms of the generalizations that can be drawn from them" (p. 30). A similar view is held by Jita (2004) who argued that "Although [case studies are] limited in that it does not lend itself to generalisable (*sic*) findings, the case study method allows for a context-specific inquiry into teaching and teacher change. It is from such in-depth context-rich case studies that other researchers working in similar contexts can draw lessons and extend findings" (p. 14). The research reported here also has a small sample of only seven mathematics teachers, much like in case study methods. However, as Dhunpath (2000) has pointed out, this is a necessary constraint imposed on narrative research:

Another perceived limitation of narrative research in education is that it is confined to small samples of educators. The educational life history methodology necessitates small samples or individual subjects because the approach involves protracted observation or extensive interviewing. The emergent narrative therefore achieves a richness of depth which empirical research involving larger samples are unlikely to yield (p. 548).

Therefore, in narrative research, the quest for “transferability” may be replaced with a quest for “adequacy” and “plausibility” (Connelly & Clandinin, 1990, p. 8) where:

A plausible account is one that tends to ring true. It is an account of which one might say ‘I can see that happening.’ Thus, although fantasy may be an invitational element in fictional narrative, plausibility exerts firmer tugs in empirical narratives (Connelly & Clandinin, 1990, p. 8).

The words “adequacy” and “plausibility” are more compelling; moreover, they invite and persuade the listener or reader to reflect on his or her own experiences in terms of the narrative. As Connelly and Clandinin (1990) confirmed:

We [the readers] can understand the narrative writer’s task if we examine significant events in our lives in terms of the criteria here [in the narrative] described. Life, like the narrative writer’s task, is a dialectical balancing act in which one strives for various perfections, always falling short, yet sometimes achieving a liveable harmony of competing narrative threads and criteria (p. 8).

Therefore, as Connelly and Clandinin (1990) clearly articulated:

Like other qualitative methods, narrative relies on criteria other than validity, reliability, and generalizability. It is important not to squeeze the language of narrative criteria into a language created for other forms of research (p. 7).

This is a warning not to judge narrative inquiry using criteria best suited to other research methods. Criteria such as validity, reliability, and generalizability of any preferred method depend on the fit with the stated purpose of the research endeavour. As Giovannoli (2000) warned, in determining the quality of a narrative study, one must “remain mindful of the purposes for which the narrative study is appropriate” (p. 39); a point perhaps best illustrated with reference to positivism:

The positivist tradition has already defined the traditional terms for evaluating a scientific study, and those definitions predictably favor (*sic*) the quantitative methods and, at best, marginalize the qualitative. It is consequently essential to redefine terms that have already been usurped by the traditions of formal science (Giovannoli, 2000, p. 39).

In the natural sciences, the positivist tradition dictates that, validity, reliability, and generalizability (which are often statistically quantifiable) are unavoidable criteria in the investigation of natural phenomena. In the social sciences this is not necessarily the case, for example, the purpose of narrative was summarised by Connelly and Clandinin (1990) as follows:

Stories function as arguments in which we learn something essentially human by understanding an actual life or community as lived. The narrative inquirer

undertakes this mediation from beginning to end and embodies these dimensions as best as he or she can in the written narrative (p. 8).

Thus, generalization of results is not a concern for constructivist researchers; the argument being that: “They [constructivists] are more interested in deeply understanding specific cases within a particular context than in hypothesizing about generalizations... they are suspicious of causal explanations and empirical generalizations applied to complex human interactions and cultural systems” (p. 267). This also holds for narrative researchers as they also work in the constructivist paradigm (Guba & Lincoln, 1994; 2005).

I am particularly drawn to how Liu and Xu (2011) have attempted to address concerns about the trustworthiness of their qualitative data. They did so in two ways: firstly, by securing high quality data through building trust and rapport with the participants so that the stories might be told with fidelity; and secondly, by being transparent about the data analysis so that it might be open to scrutiny and critique. They reiterated that their goal “is not to produce generalizable data, but a rich and nuanced understanding of one teacher’s identity formation” (p. 591). Their study focussed on a single English as a Foreign Language (EFL) teacher in an English Education Department of a university in China, whilst my own study focuses on seven FET mathematics teachers in South Africa, but still it made sense for me to learn from and build their attempt at trustworthiness into my own study. Like them, I also do not make any claims about generalizability of the results of my study. Instead, I concur with Marshall and Rossman (1999) who noted that:

Although no qualitative studies are generalizable in the statistical sense, their findings may be transferable. A discussion of these considerations reminds the reader that the study is bounded and situated in a specific context. The reader, then, can make decisions about its usefulness for other settings (p. 43).

Hence, I attempted to describe the context of my study in as much detail as possible, and then leave it up to the reader to decide on its potential usefulness in other settings. Much like Etherington and Bridges (2011), who commented upon conclusion of their narrative case study: “This [narrative] knowledge, while not claiming generality in a positivistic sense, does offer the reader a chance to discern what of these stories they can apply to their own context, and what they cannot” (p. 21). Therefore, in compliance with the underpinnings of narrative research methods, the final narrative (the research report) will remain open for interpretation by the reader (Moen, 2006).

It has been argued so far that in narrative inquiry, like in most qualitative research, the generalizability of the findings is a clear limitation. This is also the case with this study. The research findings should be applied cautiously in order to safeguard against “overgeneralizing” (Reio Jr, 2005, p. 986) as the teachers who participated in the interviews cannot be considered a representative sample (Lasky, 2005).

Ryan and Bernard (2003) cautioned that in dealing with the “untold stories” or “missing data” (p. 92) there is always the danger that the researcher would find only what they are looking for. They wrote:

Searching for missing information is not easy. People may not trust the interviewer, may not wish to speak when others are present, or may not understand the investigator’s questions. Distinguishing between when informants are unwilling to discuss a topic and when they assume the investigator already knows about the topic requires a lot of familiarity with the subject matter. (Ryan & Bernard, 2003, p. 93).

In this study, only research participants who were willing and able to be interviewed in English were selected for participation – a decision taken at the outset. Fortunately it was not necessary to exclude any potential participants on these grounds as all of the teachers who were approached as potential participants in the study were willing and able to be interviewed in English. Not all of them were first language speakers though. However, it could be argued that there is a weakness in selecting only participants who are willing and able to be interviewed in English as it would exclude the stories of the teachers who are not, like those who prefer Afrikaans or Xhosa. Moreover, it should also be recognized that powerful and emotional stories are best expressed in the native tongue (Jansen, Koza, & Toyana, 2011) or first language of the speaker. Language issues in the expression of experience cannot be discounted. As Polkinghorne (2005) pointed out, “language is our primary access to people’s experiences [and] researchers need to be sensitive to the significance of participants’ use of metaphors and stories in their expressions. They should be attentive to the possibility that the meaning of expressions given by participants whose first language differs from that of the researchers may need to be clarified” (p. 139). Moreover, he cautioned about three specific issues: translations may distort meanings; variations in participants’ facility to explore and express their own experiences in language; and, the loss of information and nuance when oral data are transcribed into written text.

Evidence about human experience has inherent limitations compared with data about human behavior. Because experience is not directly observable, data about it depend on the participants' ability to reflectively discern aspects of their own experience and to effectively communicate what they discern through the symbols of language (Polkinghorne, 2005, p. 138).

Furthermore, Polkinghorne (2005) also expressed concerns about the "construct validity" of the qualitative instrument (in this case the NIG) used to collect the data about experience via participants' self-reports: "[D]oes the instrument's series of questions actually capture the fullness of and variations within the experience?" (p. 138). He does suggest, however, that through appropriate methods of data collection the effects might be lessened⁵⁷.

Another limitation concerns the time-bound nature of the data (Lasky, 2005, p. 904). Although the data collection spanned almost two full years (February 2012 – November 2013), the teacher narratives necessarily represent the political and reform context up to that period, and it is quite possible the teachers' narratives might change as the reform context unfolds in the future.

Finally, another potential limitation that should be mentioned is that the methods used to gather the data were based on self-reports and not based on actual behaviour data. Moreover, as with all narrative research, the data were collected retrospectively (Schepens, Aelterman, & Vlerick, 2009); and, as Slay and Smith (2010) pointed out, "Retrospective accounts are susceptible to a number of biases such as difficulty in recall or exaggeration of a situation's significance or a person's behavior" (p. 103). A self-report interview, for example, might distort the information due to participants' need for social desirability or impression management, as self-reports are inevitably retrospective, which "may result in recall bias such as decay of memory or oversimplification of past experiences" (Hong, 2010, p. 1533). Therefore, according to Polkinghorne (2005), the self-report should "not be misconstrued as mirrored reflections of experience. People do not have complete access to their experiences. He maintained that the capacity to be aware of or to recollect one's experiences is intrinsically limited" (p. 139) and that "reflection on an experience serves to change the experience" (p. 139). In addition: "Although people's experiences are not perfectly transparent to them, they do have at least partial access to them. However, the

⁵⁷ See Chapter 4, section 4.4.3, for a discussion of the interview conditions of this study.

translation of a reflective awareness of an experience into a languaged expression might further distance the evidence of an experience from the experience itself" (p. 139).

7.4 Future research

As mentioned before, the narrative methodology and teacher professional identity is a relatively novel research area: firstly, in the discipline of Mathematics Education; and secondly, in developing countries⁵⁸ such as South Africa. In the exploration of the potential significance of this study in this chapter, particularly in section 7.2 above, several viable areas for future research were identified. It would, for example, be of great interest to know whether the themes which emerged from the *horizontal analysis* of the narratives of the seven participants in this study would re-emerge in similar studies carried out with different mathematics teachers elsewhere.

7.5 Final remarks

In this study, contrary to expectations⁵⁹, references to either mathematics or mathematics teaching were relatively sparse in the participants' narratives. In the horizontal analysis references to mathematics and mathematics teaching were mostly limited to narratives of their mathematics teachers as role models. Although this might be construed as a limitation or weakness of the study, the reader is reminded that all the interpretations are based on the actual narratives of the seven participants in this study. If therefore, contrary to expectations, explicit references to mathematics and mathematics teaching are sparse in the narratives of these seven participating mathematics teachers, this should not be construed as a weakness of the study, but rather as a strength. True to its postmodernist roots, narrative inquiry allows for such anomalies in individual stories, which are often the result of contextual differences. It is worth noting that, perhaps in a different context, the narratives of the same participants might include more explicit references to mathematics and mathematics teaching. Also that the narratives of a different set of participants, who might also be experienced mathematics teachers, could be very different. In this study,

⁵⁸ See chapter 1, section 1.2

⁵⁹ Because all of the participants are mathematics teachers, it is reasonable to expect more references to either mathematics or mathematics teaching in their narratives.

however, the researcher's gaze is restricted to the narratives that were willingly shared by the seven participants.

The reader is also reminded that this study is based on a narrative inquiry which, because of its postmodern roots, does not and cannot culminate in firm conclusions about the professional identities of the seven participating, or any other, mathematics teachers. This is inline with the fluid nature of the teacher professional identities of the participants which are continuously being shaped by their narratives. From a postmodern perspective, however, this inconclusiveness is a strength rather than a weakness of this study. We are reminded by Cook (2001) that, "there is not one narrative in a series or collection of records, but many narratives, many stories, serving many purposes for many audiences, across time and space" (p. 7). More important than firm conclusions is how, through exposure to their identity-shaping narratives, our own professional identities are being shaped.

And finally, just as my own stories have tainted the lenses through which I look at the stories of the seven participants in this study, their stories have also tainted the lenses through which I reflect on my own professional life stories. Therefore I believe that, through our participation in this research project, the participants and I have come to know our own stories better and gained new insights into the meaning of our own professional lives. Hopefully, exposure to our stories in this study will have the same effect on the reader.

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Narrative Interview Guide⁶⁰**Instructions**

I am going to ask you about several specific events that you have experienced. Some of them you may have mentioned before, others perhaps not. Some of these events may even “overlap” or be related. For each event, please describe in as much detail as possible: exactly what happened; where it happened; who was involved; what you did; what you were thinking and feeling at the time; what impact this experience may have had upon who you were then or who you are now as a mathematics learner and teacher. You may talk about these events IN ANY ORDER of your preference.

Event #1: Peak experience.

A peak experience would be a high point in your story about mathematics in your life - perhaps a moment or episode during which you experienced extremely positive emotions; like: joy, excitement, great happiness, uplifting, or even deep inner peace after some mathematics or mathematics teaching experience.

Event #2: Nadir-experience.

A ‘nadir’ is a low point; the opposite of a peak experience. A ‘nadir’ is therefore a low point in your experiences with mathematics. Thinking back over your life, try to remember a specific event or experience which made you feel extremely negative about mathematics or mathematics teaching. You should consider this experience to represent one of the ‘low points’ in your mathematics story.

Event #3: Turning point.

In looking back on one’s life, it is often possible to identify certain key ‘turning points’ — these are episodes through which you, as a person, undergo substantial change in understanding yourself. I am especially interested in turning points in your life-story as a mathematics learner and teacher. Please identify a particular episode in your life-story that you now see as a turning point. If you feel that your mathematics story contains no turning

⁶⁰ Roughly based on the work of McAdams (1993) and Drake, Spillane and Hufferd-Ackles (2001)

points; then, at least describe a particular episode in your life that comes closer than any other to qualifying as a turning point.

Event #4: Important childhood/adolescence/adulthood memory.

Now describe a memory about mathematics or mathematics teaching from your childhood/adolescence/adulthood that stands out in your mind as especially important or significant to you. It does not matter whether it is a big or small event or whether it is a positive or negative memory. It could be anything that you feel may have influenced your relation with mathematics or mathematics teaching later on in your life.

Event #5: One other (possibly) important memory.

Describe one more event, from any point in your life that stands out as being especially important or that you feel might have influenced your relation with mathematics or mathematics teaching later on in your life. Even if you are not sure whether it is really relevant here

Event #6: Influences on the life-story: positive and negative

Looking back over your life-story, please identify the single person, group of persons, or organization/institution that has or have had the greatest positive or negative influence on your perspective of mathematics and your development as a mathematics learner or teacher. Please describe this person, group, or organization and the way in which he, she, it or they have had on your life-story.

Event #7: Life-challenges

Looking back over your life and interactions with mathematics, please describe the single greatest challenge that you have faced. How have you faced, handled, or dealt with this challenge? Have other people assisted you in dealing with this challenge? How has this challenge had an impact on your experiences with mathematics?

THANK YOU FOR PARTICIPATING

Project Information Statement for Research Participants

Narratives that shape the professional identities of mathematics teachers

Dear Participant

My name is Clyde Felix, and I am a PhD student at Rhodes University. I am conducting research in Mathematics Education under the supervision of Professor Marc Schäfer of the Education Department and Chair of the First Rand Foundation Mathematics Education Initiative at Rhodes University.

The proposed study, entitled *Narratives that shape the professional identities of mathematics teachers*, has met all the stringent requirements of the Higher Degrees Committee of Rhodes University and has been approved for the implementation by the university.

The study will be used to:

1. Enhance our understanding of the narratives that shape the professional identities of mathematics teachers, especially in the context of radical educational changes.
2. Improve pre- and in-service teacher education programmes.

Each participant will be asked to share the significant stories that have impacted on their own development as mathematics learners and teachers. These stories will be collected in the course of four interviews, each approximately 40 minutes long, and conducted at a time and place of the participant's convenience. All the information obtained will be treated in strictest confidence. The participants' names will not be used and individual participants will not be identifiable in any of the written reports.

Participation is voluntary and participants are free to withdraw from the project at any time without any penalty.

If you are willing to participate, please complete the attached consent form and return it to Clyde Felix at your earliest convenience.

Thank you for taking the time to read this information.

Clyde Felix
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Participant Consent Form

Narratives that shape the professional identities of mathematics teachers

Statement by Participant:

1. I have read and understood the *Project Information Sheet for Research Participants*.
2. The nature and possible effects of the study have been explained to me.
3. I understand that the study involves a series of *four* semi-structured, in-depth interviews, each one approximately 40 minutes long, which will be audio recorded. I understand that the interviews will be conducted at a time and place of my own convenience. I understand I will be supplied with a copy of interview transcripts, and that I will be able to correct, edit, modify or withdraw data as I see fit.
4. I understand that, while the risk is minimal, there is a possibility of my experiencing emotional or psychological distress as a result of my participation in the study, and that, at any time during an interview, I may ask for the interview to stop.
5. I understand that all research data will be securely stored on the Rhodes University premises for a minimum period of five years, and after that minimum time, and when no longer required, all data will be destroyed.
6. Any questions that I have asked have been answered to my satisfaction.
7. I agree that research data gathered for the study may be published in academic articles, provided that I cannot be identified as a participant.
8. I understand that my identity will be kept confidential and that any information I supply to the researcher will be used only for the purposes of the research.
9. I agree to participate in this investigation and understand that my participation is voluntary and that I may withdraw at any time without any effect.

Name of participant _____

Signature of participant _____ Date _____

Statement by Researcher:

I have explained this project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation.

Name of researcher _____

Signature of researcher _____ Date _____

Appendix D

Participants	Interview Dates and Time							
	1st		2nd		3rd		4th	
	Date	Time (length)	Date	Time (length)	Date	Time (length)	Date	Time (length)
P1	13/03/12	11H28 (35:16min)	05/06/12	09H42 (39:13min)	13/03/13	09H45 (32:59min)	07/10/13	09H05 (23:52min)
P2	24/02/12	10H59 (39:44min)	09/05/12	10H13 (52:33min)	06/06/12	10H31 (18:17min)	05/12/12	12H04 (21:37min)
P3	07/05/12	08H08 (41:21min)	13/06/12	11H07 (35:43min)	27/05/13	14H00 (28:50min)	07/11/13	09H46 (06:39min)
P4	14/03/12	14H55 (47:55min)	07/05/12	13H13 (30:16min)	20/06/12	10H35 (62:11min)	08/11/13	11H02 (17:48min)
P5	07/03/12	11H19 (48:14min)	25/04/12	11H22 (42:17min)	06/06/12	12H00 (16:45min)	15/10/13	10H28 (07:47min)
P6	07/03/12	10H14 (35:18min)	25/04/12	10H11 (26:02min)	21/06/12	09H33 (62:13min)	15/10/13	11H41 (12:06 min)
P7	28/02/12	08H29 (44:33min)	04/05/12	09H07 (39:39min)	12/06/12	10H19 (39:09min)	18/10/13	08H34 (13:00 min)

